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SITE MANAGEMENT PLAN

600 RIVER ROAD SITE

**NYSDEC SITE # C932161
600 River Road
North Tonawanda, New York 14120**

Prepared for:

**Rock One Development, LLC
10151 Main Street
Clarence, New York 14031**

Prepared by:

**Panamerican Environmental, Inc.
2390 Clinton Street
Buffalo, N.Y. 14227
and
Brydges – environment, engineering, energy
33 Washington Highway
Amherst, NY 14226**

OCTOBER 2015

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NIAGARA COUNTY

NORTH TONAWANDA, NEW YORK

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

OCTOBER 2015

CERTIFICATION STATEMENT

I JOHN B. BERRY certify that I am currently a NYS registered professional engineer and that this 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).

[Signature] PE
October 7, 2015 DATE



I JASON M. BRYDGES certify that I am currently a NYS registered professional engineer and that this 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).

[Signature] PE
10-7-15 DATE



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SITE MANAGEMENT PLAN

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Activity-Permit No. GP-0-15-002 (CD only)

List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
GHG	Green House Gas
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	Operations and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective

SMP	Soil Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
SVMS	Soil Vapor Mitigation System
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

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 Site Management Plan:

Site Identification: C932161 - 600 River Road Site, North Tonawanda, New York 14120

Institutional Controls:	<ol style="list-style-type: none">1. The property may be used for restricted residential commercial or industrial use as described in 6 NYCRR Part 375-1.8(g)(2).2. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Niagara 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.3. All ECs must be inspected at a frequency and in a manner defined in the SMP.	
Engineering Controls:	1. Cover system comprised of a minimum of 24 inches of clean soil, asphalt pavement, concrete-covered sidewalks, and concrete building slabs.	
Inspections:		Frequency
1. Cover inspection		Annually
Monitoring:		
None		
Maintenance:		
Cover system if disturbed per Appendix B EWP		

Site Identification: C932161 - 600 River Road Site, North Tonawanda, New York 14120

Reporting:	
1. Periodic Review Report	Annually

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

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the 600 River Road Site located in North Tonawanda, New York (hereinafter referred to as the “Site”). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C932161 which is, administered by New York State Department of Environmental Conservation (NYSDEC).

Rock One Development, LLC entered into a Brownfield Cleanup Agreement (BCA) on October 18, 2013 with the NYSDEC to remediate the site. A figure showing the site location and boundaries of this site is provided in Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix C.

After completion of the remedial work, some contamination was left 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. An Environmental Easement granted to the NYSDEC, and recorded with the Niagara County Clerk, requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index # C932161-05-13 Site # C932161) for the site, 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 SMP.

This SMP was prepared by Panamerican Environmental, Inc./BE3 on behalf of Rock One Development, LLC , 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 SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC’s project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP 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:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- 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.
- 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.
- 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 SMP will include the following notifications:

- 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 the Brownfield Cleanup Agreement (BCA), and all approved work plans and reports, including this SMP.

- 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 6 on the following page 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 6: Notifications*

Name	Contact Information
Timothy Dieffenbach (NYSDEC Project Manager)	716-851-7220 timothy.dieffenbach@dec.ny.gov
Gregory Sutton [NYSDEC Regional HW Engineer]	716-851-7220 gregory.sutton@dec.ny.gov
Bernadette Anderson (Site Control)	518-402-9543 bernadette.anderson@dec.ny.gov

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

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in City of North Tonawanda, Niagara County, New York and is identified as #181.16-1-21.13 on the Niagara County Tax Map. The site is an approximately - 5.952 acre area and is bounded by a health care facility to the north, a commercial boating sales and service facility and marina to the south, River Road to the east, and the Niagara River to the west. The boundaries of the site are more fully described in Appendix C – Environmental Easement (also see Figure 2). The owner of the site parcel at the time of issuance of this SMP is Rock One Development, LLC

2.2 Physical Setting

2.2.1 Land Use

The Site consists of vacant land along the Niagara River, just east of Tonawanda Island, and contains one metal clad storage building which is supplied with electric service only. The building is contained within a perimeter fence around the western portion of the Site. The Site is zoned Waterfront District and is currently vacant. There are no Site occupants.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial properties including a health care facility to the north, a commercial boating sales and service facility and marina to the south, commercial retail properties, including a gas station to the east across River Road, and the Niagara River to the west.

2.2.2 Geology

The property is relatively flat sloping from east to west towards the Niagara River. The surficial geology is fill material overlaying sand and silty clay. The fill varies across the site and consists of brown to reddish brown poorly graded sand and gravel which includes cinders, orange brick fragments, concrete, and coal with noted iron staining at depths ranging from surface to 12 feet below ground surface (bgs). At some locations, white/grey fill material which includes slag and weathered gravel extends to a depth of 12 bgs. Clay with sand exists at depths from 10 to 12 bgs.

Site specific test pit logs are provided in Appendix D.

2.2.3 Hydrogeology

Based on measured groundwater depths from the four on-site monitoring wells, groundwater, as expected, flows towards the river from the southeast to the northwest. The depth to groundwater at the east end of the site (River Road) is approximately 8 feet below grade surface (bgs) and at the west end (Niagara River) is approximately 11 feet bgs.

Groundwater monitoring well construction logs and groundwater elevation data are provided in Appendix D.

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 from at least 1886 through at least 1972 was part of the larger Niagara Iron Works/Tonawanda Iron Works Site, located along the Niagara River north and south of the Site. The site was then vacant until 1988 when AJ Marine Construction, a commercial retailer, began operations and continued until 2008. Since 2008 the metal building on the site has been used as a warehouse.

The Site is identified in the spills and LUST databases; two releases are classified as “closed” for the Site. An adjacent/nearby site is listed on the NYSDEC State Superfund List. The Durez Div. – Occidental Chemical Corp. – Inlet Cove Superfund Site was remediated in 2010, and is currently in active Site Management, including groundwater monitoring, product (NAPL) removal, and ChemOx injection.

The following previous investigations/remedial activities have been completed on the property:

March 2001 – Phase II Environmental Investigation Report - In March 2001, Nature’s Way Environmental Consultants & Contractors, Inc. (Nature’s Way) conducted a Phase II Environmental Investigation. The investigation included the advancement of 18 soil borings and 4 temporary monitoring wells (see Figure 2 – 2001 Phase 2 ESA Boring Location Map). The investigation identified the presence of heavy metals in soils at levels in exceeding regulatory guidelines (NYSDEC TAGM 4046) across the Site. Only two temporary monitoring wells were sampled with no exceedences of volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs). However, heavy metals were detected with only one metal slightly exceeded groundwater standards (see Table 3 – 2001 Phase 2 ESA Groundwater Sample Results).

March 2012 – Phase I Environmental Site Assessment Report - In March 2012, TurnKey, LLC conducted a Phase I Environmental Site Assessment (ESA) on the subject Site. The Phase I noted several Recognized Environmental Conditions (RECs) including:

- A previous investigation conducted on the subject property found evidence of impacts, including elevated SVOCs and metals;
- Historically, the Site was a portion of a greater parcel utilized by Niagara Iron Works/Tonawanda Iron Works from at least 1886 through at least 1972. The historic Site usage included several railroad tracks throughout the property and a pig-iron casting operation;

- On-Site operations have reportedly included an equipment repair operation. The operation was listed as a registered RCRA (lead waste) facility;
- Multiple drums/containers, former automobile/marine parts, and debris piles were noted across the Site;
- Historic adjacent operations included industrial operations (American Radiator Company and Tonawanda Iron Corporation);
- The Site is identified in the spills and LUST databases; two releases are classified as “closed” for the Site; and;
- An adjacent/nearby site is listed on the NYSDEC State Superfund List. The Durez Div. – Occidental Chemical Corp. – Inlet Cove Superfund Site was remediated in 2010, and is currently in active Site Management, including groundwater monitoring, product (NAPL) removal and chemical oxidation (ChemOx) injection.

May 2012 – Phase II Environmental Site Assessment Report - In May 2012, TurnKey, LLC conducted a Phase II Environmental Site Assessment (ESA) on the subject Site. This investigation included the completion of subsurface soil borings and collection of near-surface and subsurface soil samples. The objective was to further assess potential environmental impacts to the Site related to the historic Site use as part of the former Niagara/Tonawanda Iron Works, and more recently as marine construction operation.

The soil investigation included the advancement of ten (10) soil borings across the Site (refer to Figure 3). Soil samples were generally collected within each borehole continuously from the ground surface until approximately 12-16 feet below ground surface (bgs) or until equipment refusal. Soils were field screened in each borehole using a photoionization detector (PID) and noted visual and/or olfactory field observations. Based on the historic use of the Site, soils were screened for radionuclides, utilizing a hand-held radiation detector (Radiation Alert - Inspector EXP) capable of detecting alpha, beta, gamma and x-ray radiation. To assess potential impacts across the Site, soil samples were collected from eight (8) sample locations for analysis of Target Compound List (TCL) SVOCs, Resource Conservation and Recovery Act (RCRA) metals, and polychlorinated biphenyls (PCBs).

March 2001 and May 2012 – Phase II Analytical results

The sampling/analysis was limited to five (5) soil samples obtained from soil borings and 2 water samples during the 2001 Phase II ESA and eight (8) soil samples obtained from soil borings in the 2012 Phase II ESA. The 2012 Phase II ESA report prepared by TurnKey summarized the soil analytical results from both the 2001 and 2012 ESA programs in a table which is presented as Table 1 in this report for reference. The analytical results in the table are compared to NYSDEC Part 375 Soils Cleanup Objectives (SCOs).

Based on the soil sample analytical results from Table 1, near-surface and subsurface soils are impacted by heavy metals and polycyclic aromatic hydrocarbons (PAHs), a subset of SVOCs. A

number of metals were detected above Part 375 Restricted Residential SCOs, with cadmium, barium and arsenic being detected above Commercial SCOs in several samples. Elevated PAHs were also detected above Part 375 Restricted Residential SCOs in several samples.

June 2013 – BCP Remedial Investigation (RI)

RI Surface and Subsurface Soil Investigation

In June 2013 PEI conducted a Remedial Investigation (RI) to further characterize the nature and extent of contamination at the site. The investigation included installing a series of twenty (20) test pits across the site focusing on areas where impacted soils were identified during the previous Phase 2 ESAs and to assess other areas not investigated during the previous Phase II ESAs. Also, a total of four (4) groundwater monitoring wells were installed. Figure 2 shows the location of test pits and wells along with analytical exceedences from soil and groundwater sampling. During the test trenching program excavated material/layers were scanned/monitored for the presence of radioactivity due to the types of material and previous industrial history on the property. Test Trenches were roughly 2-4 feet wide, 8-10 feet deep and 4-6 feet long. Each test trench was backfilled with the removed material prior to moving to the next test trench location. Test trench locations are provided on Figure 2 and test pit logs are provided in Appendix D

The following was completed during each trench excavation,

- a description of the soil stratigraphy was made (refer to attached test trench logs)
- visual observations (staining, odors, etc.) were completed
- total organic vapor monitoring (PID) was completed as each test trench was excavated; and
- a radiation survey was completed as soil/fill was excavated
- depth of fill

A total of five surface and ten subsurface soil samples were collected for analysis for NYSDEC Part 375 brownfield constituents. Samples were collected based on visual observations and to obtain representative soils across the site. Surface soil samples were collected from the upper two inches below the sod prior to advancing a test trench and were not analyzed for volatile compounds. Subsurface soil samples were collected generally from fill materials.

The samples were analyzed for TCL VOCs and SVOCs, VOC/SVOC tentatively identified compounds (TICs), TAL metals + Cyanide, pesticides, and PCBs.

Supplemental Composite Soil Sampling Program

On March 12, 2014 soil samples were collected from an existing on site soil stockpile mound (not previously sampled) and from the surface topsoil layer at the eastern end of the (refer to Figure 4). A backhoe was used to excavate into the stockpile and excavate shallow test pits in the topsoil layer as shown on Figure 4. One composite soil sample was collected from the soil

stockpile and one composite sample collected from each of three test pit rows through the topsoil layer.

A radiological technician from PEI/BE3 performed area surveys of the material from each test pit using a Ludlum 22412 Ratemeter.

The soil samples were analyzed for TCL SVOCs, target analyte list (TAL) metals, PCBs and pesticides. Since the soil sample results from the previous test pit program in the area of the topsoil sampling did not indicate the presence of elevated PCBs or pesticides, the composite samples from this area were only analyzed for SVOCs and metals.

Groundwater Investigation

A total of four (4) groundwater monitoring wells were installed (see Figure 2). All wells were sampled on October 22, 2013.

The following are the measured well depths and water levels from the top of casing at the time of sampling:

- MW-01 – 18.00 feet to bottom of well – 11.00 feet to standing water
- MW-02 – 19.50 feet to bottom of well – 9.85 feet to standing water
- MW-03 – 18.25 feet to bottom of well – 11.20 feet to standing water
- MW-04 – 25.20 feet to bottom of well – 7.67 feet to standing water

One groundwater sample was collected from each of the 4 wells. Well development and sampling was conducted in accordance with the work plan. During well development and sampling, high turbidity and sediment was observed in three of the four wells (above 50 NTU). The high turbidity did not change substantially during development or sampling because of the high fines in the geology. Since high turbidity usually results in elevated metal compounds in the samples, the laboratory was requested to run both filtered and unfiltered samples for metals in three of the samples (MW-1, MW-2 and MW-3). Both filtered and unfiltered sample results for metals are provided in Table 3. Monitoring well logs are provided in Appendix D.

All samples were analyzed for TCL VOCs and SVOCs, VOC/SVOC TICs, TAL metals + Cyanide, pesticides, and PCBs.

Radiological Soil Survey

During the test trenching program excavated material/layers were scanned/monitored for the presence of radioactivity due to the types of material and previous industrial history on the property. Slag material produced at metal and forging operations can contain Technically Enhanced Naturally Occurring Radioactive Material (TENORM) or Naturally Occurring Radioactive Material (NORM). Monitoring and sampling was performed by MJW Corporation Inc. (MJW) under subcontract to PEI.

A radiological technician performed area surveys of the material from each test pit using a Ludlum 22412 ratemeter (s/n 254683) with a Ludlum 44-10 2"x2" NaI probe (s/n PR268511). Surveys were also performed with a tissue equivalent survey meter, the Bicon MicroRem (s/n B971N). Samples of materials presumptively identified as radioactive slag were collected from 5 of the 20 test pits (TP 1, 3, 8, 14 and 17) and submitted for laboratory analysis by gamma spectroscopy.

RI Soil Sampling Analytical Results

The following provides a summary of the BCP RI soil sample/analytical program. Also discussed in this section are the results from historic investigation programs as they relate to the BCP RI results. Compounds detected during historic soil sampling programs are summarized in Table 1 – Historic Soil Sample Analytical Results Summary. Compounds detected from collected soil samples during the BCP RI are summarized in Table 2 and discussed in detail below.

Table's 1 and 2 also provide a comparison of the analytical results with 6 NYCRR Part 375-6.8 Soil Cleanup Objectives. Soil sample results from this RI provided in Table 2 are compared to Restricted Residential SCOs and The NYSDEC required comparison to Unrestricted SCOs.

Elevated concentrations of compounds detected in soil samples from the RI at each sample location are also presented on Figure 2 – Remedial Investigation Program.

RI Surface Soil Samples

A total of five (5) surface soil samples were collected from the following test trench locations: TP-01, TP-08, TP-10, TP-12 and TP-16 (refer to Figure 2). All surface soil samples were analyzed for TCL SVOCs (plus TICs), PCBs, pesticides and TAL metals.

SVOCs

Numerous SVOCs consisting primarily of PAHs were detected in all surface soil samples with the exception of TP-12 where none were detected. The following surface soil samples had PAH compound concentrations that exceeded Part 375 Restricted Residential SCOs:

TP-01

Indeno(1,2,3-cd)pyrene – 0.55 ppm versus 0.5 ppm SCO

TP-08

Benzo(a)anthracene – 3.6 ppm versus 1ppm SCO

Benzo(a)pyrene – 4.9 ppm versus 1 ppm SCO

Benzo(b)fluoranthene – 6.5 ppm versus 1 ppm SCO

Indeno(1,2,3-cd)pyrene – 5.3 ppm versus 0.5 ppm SCO

Dibenz(a,h) anthracene – 1.3 ppm versus 0.33 ppm SCO

Chrysene – 4.6 ppm versus 3.9 ppm SCO

PCBs

PCB compounds Aroclor 1248, 1254 and 1260 were detected in TP-01 (Aroclor 1248 and 1254), TP-08 (Aroclor 1254 and 1260) and TP-10 (Aroclor 1248 and 1254) at concentrations below Part 375 Restricted Residential SCOs. No PCBs were detected in samples TP-12 and TP-16.

Pesticides

Several pesticide compounds were detected in all of the surface soil samples. However, there were no compound concentrations that exceeded Restricted Residential SCOs.

Metals

Metal compounds were detected in all of the surface soil samples. However, only one metal compound exceeded Part 375 Restricted residential SCOs in the following surface soil sample:

TP-08

Manganese – 2590 ppm versus 2000 ppm SCO

RI Subsurface Soil Samples

A total of 10 subsurface soil samples were collected from the following test trench locations: TP-01, TP-06, TP-08, TP-10, TP-13, TP-14, TP-15, TP-16, TP-18 and TP-20 (refer to Figure 2). All subsurface soil samples were analyzed for TCL VOCs (plus TICs), SVOCs (plus TICs), PCBs, pesticides and TAL metals.

Specific subsurface soil sample compound concentrations detected as noted in Table 2 and on Figure 2 are discussed in detail below.

VOCs

VOCs were detected in only two subsurface soil samples at concentrations well below Restricted Residential SCOs.

SVOCs

A number of SVOCs were detected in the subsurface samples with the exception of subsurface samples from TP-01, TP-18 and TP-20. However, only samples from TP- 13 and TP-16 had SVOC concentrations that exceeded Part 375 Restricted Residential SCOs as follows:

TP-13 (4'–4.5')

Benzo(a)anthracene – 2.3 ppm versus 1ppm SCO

Benzo(a)pyrene – 2.2 ppm versus 1 ppm SCO

Benzo(b)fluoranthene – 2.7 ppm versus 1 ppm SCO

Indeno(1,2,3-cd)pyrene – 1.8 ppm versus 0.5 ppm SCO

Dibenz(a,h) anthracene – 0.44 ppm versus 0.33 ppm SCO

TP-16 (3' - 4.5')

Benzo(a)anthracene – 2.8 ppm versus 1ppm SCO
Benzo(a)pyrene – 2.4 ppm versus 1 ppm SCO
Benzo(b)fluoranthene – 2.1 ppm versus 1 ppm SCO
Indeno(1,2,3-cd)pyrene – 1.6 ppm versus 0.5 ppm SCO
Dibenz(a,h) anthracene – 0.35 ppm versus 0.33 ppm SCO

PCBs

No PCBs were detected in seven of the 10 subsurface soil samples analyzed for PCBs. PCB compound concentrations detected in the other three subsurface samples were significantly below Part 375 Restricted Residential SCOs.

Pesticides

Several pesticide compounds were detected in all of the subsurface samples with the exception of subsurface samples TP-10 and TP-18. Pesticide compound concentrations detected in the other eight subsurface samples were significantly below Part 375 Restricted Residential SCOs.

Metals

Metal compounds were detected in all 10 subsurface soil samples. A few metal compounds exceeded Part 375 Restricted Residential SCOs in the following subsurface samples:

TP-01 (3.5'-4.5')

Manganese – 3590 ppm versus 2000 ppm SCO

TP-08 (1.5')

Manganese – 2460 ppm versus 2000 ppm SCO

TP-13 (4'-4.5')

Manganese – 2640 ppm versus 2000 ppm SCO

Arsenic – 19.1 ppm versus 16 ppm SCO

Cadmium – 5.7 ppm versus 4.3 ppm SCO

TP-15 (2.5'-3')

Copper – 751 ppm versus 270 ppm SCO

Supplemental Composite Soil Samples

A total of four (4) composite soil samples were collected from the following test trench locations: SP (stockpiled soil) and samples Comp 1 through 3 from shallow test trenches in topsoil layer (refer to Figure 4).

Specific subsurface soil sample compound concentrations detected as noted in Table 5 and on Figure 4 are discussed in detail below.

VOCs

VOCs were not analyzed for under this program.

SVOCS

Several SVOC compounds (PAHS) were detected in the SP sample at concentrations significantly below Part 375 Restricted Residential SCOs. No SVOCS were detected in samples Comp 1 through 3.

Pesticides

No pesticides were detected in the SP sample. Pesticides were not analyzed for in samples Comp 1 through 3.

PCBs

No PCBs were detected in the SP sample. PCBs were not analyzed for in samples Comp 1 through 3.

Metals

Metal compounds were detected in all 4 composite soil samples. Only one metal compounds exceeded Part 375 Restricted Residential SCOs in the following sample:

Comp 1

Manganese – 3170 ppm versus 2000 ppm Restricted Residential SCO.

Groundwater Sampling Analytical Results

During well development and sampling turbidity levels exceeded 50 NTUs in three of the four wells (MW-1, MW-2 and MW-3). Since high turbidity usually results in elevated metal compounds in the samples the laboratory was requested to run both filtered and unfiltered samples for metals in three of the four well samples.

Analytical results (refer to Table 3) for groundwater samples collected from all four wells indicated that no VOCs, SVOCS, PCBs or pesticides were present in any of the samples that exceeded TOGs Groundwater Standards. As anticipated, a number of metals were detected in both the filtered and unfiltered groundwater samples from each of the four wells. All analytical results were compared to NYSDEC Technical and Operational Guidance Series (TOGs) 1.1.1 GA Groundwater Standards (refer to Table 3).

Both the filtered and unfiltered metals analytical results are provided for each sample on Table 3. The following metal compound concentrations exceeded TOGs GA Standards:

MW-2 (Filtered)

Iron – 9790 ppb versus 300 ppb TOGs GA
Lead – 49.6 ppb versus 25 ppb TOGs GA
Manganese – 1540 ppb versus 300 ppb TOGs GA

MW-3 (Filtered)

Selenium – 11.4 ppb versus 10 ppb TOGs GA
Sodium – 102000 ppb versus 20000 ppb TOGs GA

MW-4 (Unfiltered)

Iron – 1410 ppb versus 300 ppb TOGs GA

Radiological Survey Results

For each of the 20 test pits radiological surveys were conducted with both survey instruments discussed in section 2.3 at the surface of each test pit, on the spoils pile and within each test pit. The test pit surface readings on average were at or slightly below general area background for the Western New York area. Background levels in the immediate area ranged from 5.5K counts per minute (cpm) to 6.8K cpm and all survey readings include background

The soil removed from the test pits was elevated to above 2 times background and test pit readings on average approached four times background. It appears that the cause of the elevated readings is the presence the layer of slag that runs across most of the site. Because of the generally low readings it has not been determined if the material is the TENORM slag common to many industrial sites, roadways, parking lots and areas that have been filled in Niagara County as opposed to slag from historic operations at the site. The slag material could be a byproduct of historical industrial operations at the site, possibly phosphate ore process slag

Samples were collected from 5 of the 20 test pits (namely, 1, 3, 8, 14 and 17) and analyzed by gamma spectroscopy. According to analytical data, samples 3, 4 and 5 (from TP-8, TP-14 and TP-17 respectively) are impacted above federal soil cleanup guidelines of 5 pCi/g.

Supplemental Composite Soil Sampling Program RAD Survey March 2014

Most of the area investigated (including test pits) reflected results from previous test pitting efforts (i.e., up to approximately 18k - 20k cpm gamma radiation). This includes surficial readings up to approximately 10k – 11k cpm and test pits up to approximately 18k – 20k cpm.

The only anomaly encountered that day included the test pit within the soil stockpile mound closer to the western fence line. See figure in Appendix E BE3 letter report. This test pit revealed “bottom of test pit” gamma measurements up to approximately 245k cpm. A piece of 6” minus diameter rock-like material was pulled from the test pit at approximately 2’ bgs and read up to approximately 125k cpm outside of the test pit. Once the piece of rock-like material was removed from the test pit, the gamma readings in the test pit were reduced to approximately 50k cpm.

The dose assessment modelling using the measured radiation levels of the slag material indicated that with two feet of soil fill (soil cap) placed over the entire, site radiation dosage levels above

the two feet of fill from the subsurface slag material would more than meet NYSDEC DER 38 dosage guidance values.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in Decision Document dated September 2014 are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

Specific remedial action activities for the site to achieve the RAOs are as follows:

- The removal of the surface topsoil layer and stockpiling the material that meets Restricted Residential Site Cleanup Objectives (SCOs) for future use as part of the soil cover;
- Cover the site with two feet of clean fill (soil cap) from approved off-site sources; and,
- Placement of a geotextile liner between the site original grade and the soil cap.

The rationale for the proposed remedial action is based on the results of the previous assessments, site needs and future development/use.

2.5 Remaining Contamination

2.5.1 Soil

Based on the approved Remedial Action Work Plan (RAWP) the remedy meets Part 375-3.8 Track 4 Restricted Residential requirements. Track 4 requires for Restricted Residential use that the top two feet of all exposed surface soils not covered by the site development (e.g. buildings and pavement) shall not exceed Part 375 -6.8(b) Restricted Residential SCOs. Contaminants remaining below the two feet of clean soil cover include radioactive slag and soils impacted with heavy metals and SVOCs (primarily PAHs) that exceed restricted residential SCOs. The dose assessment modelling using the measured radiation levels of the slag material indicated that with two feet of soil fill (soil cap) placed over the entire, site radiation dosage levels above the two feet of fill from the subsurface slag material would more than meet NYSDEC DER 38 dosage

guidance values. A geotextile demarcation layer was placed at the surface of the existing soils prior to placement of the two foot clean fill layer.

Tables 1, 2 and 5 and Figures 2, 3 and 4 summarize the results of all soil samples collected that exceed the Unrestricted Use SCOs and the restricted residential Use SCOs at the site after completion of remedial action.

2.5.2 Sediment

Not Applicable

2.5.3 Groundwater

The groundwater will not be disturbed by the remedy or accessible for use (per Institutional controls). The groundwater beneath the Site is minimally impacted with heavy metals. As noted in the RI/AAR, only a few elevated metals were detected in the groundwater. Metals are common in groundwater and with the highly industrialized area in which the site is located it is not surprising that there are some impacts to the groundwater. The groundwater beneath the site flows to the Niagara River and will have minimum water quality concerns based on the COCs in the groundwater.

Table 3 and Figure 2 summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action.

2.5.4 Surface Water

Not Applicable

2.5.5 Soil VOC Vapor

Not Applicable

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 SMP and is subject to revision by the NYSDEC.

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 set forth in the Environmental Easement;
- 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 B 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.

3.2 Institutional Controls

A series of ICs is required by the Decision Document 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 restricted residential uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on the Appendix C Environmental Easement Boundary and Topographic Map dated April 18, 2013 and Figure 2. These ICs are:

- The property may be used for restricted residential, commercial and industrial uses as defined by 6 NYCRR Part 375-1.8(g), although land use is subject to local zoning laws use;
- All ECs must be operated and maintained as specified in this SMP;

- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Niagara 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 SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- 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 the Environmental Easement;
- Vegetable gardens and farming on the site are prohibited;

3.3 Engineering Controls

3.3.1 Cover (or Cap)

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 24 inches of clean soil underlain by a demarcation layer, asphalt pavement, concrete-covered sidewalks, and concrete building slabs. It currently consists of a minimum of 24 inches of clean soil underlain by a demarcation layer and the concrete building slab of the on-site storage building. Figure GD-1 As built conditions presents the location of the cover system and applicable demarcation layers. The Excavation Work Plan (EWP) provided in Appendix B outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. 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 and provided in Appendix G.

3.3.2 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.

3.3.2.1 - Cover (or Cap)

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

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. 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 provided in Appendix F.

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:

- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. 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;
- 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 SMP 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 SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date; and

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 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 determined by the NYSDEC. Written confirmation must be provided to the NYSDEC 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.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

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.

No vulnerability assessments have been or are expected to be performed on the site. It is not anticipated that any of the extreme events noted above will affect the site. The new development for the site will have a storm water plan that meets NYS stormwater requirements that will prevent any site flooding or significant erosion conditions.

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 SMP 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).

No green remediation evaluations are anticipated to be completed for this site.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;

- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

No RSO is anticipated at this time.

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 provided in Appendix H. These forms are subject to NYSDEC revision.

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 and summarized in the Periodic Review Report.

Table 7: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually
Periodic Review Report	Annually, or as otherwise determined by the Department

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

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, etc.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- 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;
- Any modifications to the system;
- 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 EQuISTM 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 Department beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. 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 described in Appendix C -Environmental Easement. 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 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.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- 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 will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- 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 RAWP, ROD or Decision Document;
 - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- 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; and
- Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
- The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice 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;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*

- *No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program [and generally accepted engineering practices]; and*
- *The information presented 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, [name], of [business address], am certifying as Owner’s Designated Site Representative I have been authorized and designated by all site owners to sign this certification for the site.”

Every five years the following certification will be added:

- *The assumptions made in the qualitative exposure assessment remain valid.*

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

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as 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, a Corrective Measures Work Plan will be submitted to the NYSDEC 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.

7.4 Remedial Site Optimization Report

No RSO Report is anticipated

8.0 REFERENCES

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – “Technical Guidance for Site Investigation and Remediation”.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

Phase II Environmental Investigation Report - 600 River Road Site; prepared for: Mr. Wayne Miller & Mr. James Ehrig , A.J. Brothers Marine Construction and Mr. Mark Judd Buffalo Industrial Diving Company; prepared by: Nature’s Way Environmental Consultants & Contractors, Inc. (Nature’s Way); March 2001.

Phase I Environmental Site Assessment Report - 600 River Road Site; prepared for: Rock One Development LLC; prepared by: TurnKey, LLC; March 2012.

Phase II Environmental Site Assessment Report - 600 River Road Site; prepared for: Rock One Development LLC; prepared by: TurnKey, LLC; May 2012.

Remedial Investigation/Alternatives Analysis Report - NYSDEC Site No. C932161- 600 River Road Site; prepared for: Rock One Development LLC; prepared by Panamerican Environmental, Inc.; August 2014.

Remedial Action Work Plan - NYSDEC Site No. C932161- 600 River Road Site; prepared for: Rock One Development LLC; prepared by Panamerican Environmental, Inc.; March 2015.

NYSDEC Decision Document - 600 River Road Apartments - North Tonawanda, Niagara County Site No. C932161 September 2014

APPENDIX A – LIST OF SITE CONTACTS

Name	Phone/Email Address
Rock One Development LLC (Lou Visone)	716-207-2021 lou@visoneco.com
Rock One Development LLC (Lou Visone)	716-207-2021 lou@visoneco.com
Peter Gorton (PEI)	716-308-8220 pgorton@panamconsultants.com
Timothy Dieffenbach (NYSDEC Project Manager)	716-851-7220 timothy.dieffenbach@dec.ny.gov
Gregory Sutton [NYSDEC Regional HW Engineer]	716-851-7220 gregory.sutton@dec.ny.gov
Bernadette Anderson (Site Control)	518-402-9543 bernadette.anderson@dec.ny.gov
Craig A. Slater, Esq.	(716) 845-6763 CSlater@CSlaterLaw.com

APPENDIX B – EXCAVATION WORK PLAN (EWP)

B-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Table B1 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 B1: Notifications*

Timothy Dieffenbach (NYSDEC Project Manager)	716-851-7220 timothy.dieffenbach@dec.ny.gov
Gregory Sutton [NYSDEC Regional HW Engineer]	716-851-7220 gregory.sutton@dec.ny.gov
Bernadette Anderson (Site Control)	518-402-9543 bernadette.anderson@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 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 and 29 CFR 1910.120;

- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix G of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). 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 B-6 of this Appendix.

B-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.

B-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision 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 SMP is posed by utilities or easements on 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.

B-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.

Truck transport routes are as follows: (truck routes will be determined at the time a EWP is required). All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes 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; and (g) community input (where necessary)

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.

B-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 in accordance with all local, State (including 6NYCRR Part 360) 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. Unregulated off-site management of materials from this site will not occur without formal NYSDEC 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, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: 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, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

B-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material 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. Any excess contaminated material excavated from below the cover system which cannot be returned to the excavation shall be properly disposed as described in Section B-6 above.

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.

B-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 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.

B-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 RAWP and decision document. The existing cover system is comprised of a minimum of 24 inches of clean soil, asphalt pavement, concrete covered sidewalks and concrete building slabs. The demarcation layer, consisting of orange geotextile or equivalent material will be replaced 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 SMP. 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 SMP.

B-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP 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, or 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 6NYCRR 375-6.7(d). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Rock or stone, consisting of virgin material from a permitted mine or quarry may be imported for use as backfill, without chemical testing provided it contains less than 10% by weight of material which would pass through a size 200 sieve.

Sampling of off-site materials intended for use on the Site, which require chemical testing, will be conducted in accordance DER-10 Table 5.4(e)10, Recommended Number of Soil Samples for Soil Imported To or Exported From a Site. Samples will be analyzed for TCL VOCs, TCL SVOCs, PCBs and Pesticides, and TAL metals.

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.

B-11 STORMWATER POLLUTION PREVENTION

For large excavations, but less than 1 acre, procedures for stormwater pollution prevention should be specified in the EWP. For construction projects exceeding 1 acre, this is required. A Stormwater Pollution Prevention Plan that conforms to the requirements of the NYSDEC Division of Water guidelines and NYS regulations (refer to Appendix I) shall be included as an Appendix to the EWP at the time a EWP is deemed necessary.

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 SMP 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.

B-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.

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, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone 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.

B-13 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.

TABLES, FIGURES AND OTHER APPENDICES TO FOLLOW



TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS
600 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

PARAMETER ¹	Unrestricted SCOs ²	Residential SCOs ²	Restricted - Residential SCOs ²	Commercial SCOs ²	Sample Location (depth)												
					Historical Investigation (2001)					Phase II Investigation (2012)							
					EP-2 (4-10)	EP-6 (2-8)	EP-9 (6-10)	EP-13 (2-8)	EP-15 (6-10)	EP-19 (0-4)	EP-21 (3-7)	EP-22 (0-4)	EP-24 (0-4)	EP-25 (8-12)	EP-26 (0-4)	EP-27 (0-4)	EP-28 (4-7)
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg ³																	
Acenaphthene	20	100	100	500	ND	0.0072 J	ND	0.05 J	2	0.0089 J	0.18 J	0.014 J	ND	ND	ND	ND	ND
Acenaphthylene	100	100	100	500	ND	0.013 J	ND	ND	0.23 J	0.01 J	0.18 J	ND	ND	ND	ND	0.12 J	ND
Anthracene	100	100	100	500	ND	0.033 J	ND	0.11 J	5	0.031 J	0.37	0.039 J	0.017 J	ND	ND	0.066	ND
Benzo (a) anthracene	1	1	1	5.6	0.084 J	0.2	ND	0.45 J	11	0.11 J	1.2	0.18 J	0.083 J	ND	ND	0.76	ND
Benzo (b) fluoranthene	1	1	1	5.6	0.079 J	0.24	ND	0.47 J	10	0.17 J	2.2	0.24	0.14 J	ND	0.22	1.1	ND
Benzo (k) fluoranthene	0.8	1	3.9	56	0.063 J	0.11	ND	0.24 J	6	0.079 J	0.95	0.071 J	0.063 J	ND	0.1 J	0.12	ND
Benzo (a) pyrene	1	1	1	1	0.058 J	0.21	ND	0.41 J	9.2	0.11 J	1.2	0.13 J	0.092 J	ND	0.18 J	0.68	ND
Benzo (g,h,i) perylene	100	100	100	500	ND	0.16 J	ND	0.26 J	7.1	0.14 J	0.6	0.089 J	0.066 J	ND	0.081 J	0.34	ND
Biphenyl	--	--	--	--	ND	ND	ND	ND	ND	0.018 J	0.035 J	ND	ND	ND	ND	ND	ND
Caprolactam	--	--	--	--	ND	ND	ND	ND	ND	0.17 J	0.18 J	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	ND	ND	ND	ND	ND	0.016 J	0.18 J	0.024 J	ND	ND	0.019 J	ND	ND
Chrysene	1	1	3.9	56	0.083 J	0.19	ND	0.46 J	9.4	0.13 J	1.4	0.2	0.12 J	ND	0.18 J	0.75	ND
Dibenzo (a,h) anthracene	0.33	0.33	0.33	0.56	ND	0.047 J	ND	0.085 J	1.5	ND	0.12 J	0.02 J	ND	ND	ND	0.072 J	ND
Dibenzofuran	7	14	59	350	ND	ND	ND	ND	ND	0.043 J	0.14 J	0.012 J	ND	ND	ND	ND	ND
Fluoranthene	100	100	100	500	0.17 J	0.33	ND	0.77 J	23	0.17 J	1.7	0.3	0.11 J	ND	0.34	1.5	ND
Fluorene	30	100	100	500	ND	0.01 J	ND	0.034 J	2.4	0.012 J	0.13 J	ND	ND	ND	ND	ND	ND
Indeno (1,2,3 - cd) pyrene	0.5	0.5	0.5	5.6	ND	0.12 J	ND	0.21 J	5.7	0.038 J	0.64	0.088 J	0.063 J	ND	0.083 J	0.35	ND
2 - Methylnaphthalene	--	--	--	--	ND	ND	ND	ND	ND	0.13 J	0.28	0.023 J	0.015 J	ND	ND	0.074 J	ND
Naphthalene	12	100	100	500	ND	ND	ND	ND	2	0.077 J	0.27	ND	ND	ND	ND	0.061	ND
Phenanthrene	100	100	100	500	0.084 J	0.19	ND	0.53 J	19	0.19 J	1.1	0.19 J	0.052 J	ND	0.16 J	0.17	ND
Pyrene	100	100	100	500	0.13 J	0.3	ND	0.7 J	19	0.14 J	ND	0.3	0.12 J	ND	0.3	1.6	ND
Metals - mg/Kg																	
Aluminum	--	--	--	--	13700	10200	16600	22500	20700	--	--	--	--	--	--	--	--
Arsenic	13	16	16	16	6.8	13.5	3.89	5.59	8.65	12.7	16.1	16.2	7	5.2	7	10.2	3.9
Barium	350	350	400	400	90.6	82.8	85.1	128	103	417	73.1	148	82.8	117	243	171	222
Beryllium	7.2	14	72	590	1.19	1.71	2.04	3.22	2.86	--	--	--	--	--	--	--	--
Cadmium	2.5	2.5	4.3	9.3	10.5	33.5	11.2	11.6	19.7	0.43	0.63	1.5	0.7	ND	0.36	1.2	ND
Calcium	--	--	--	--	50300	40400	5860	60300	62900	--	--	--	--	--	--	--	--
Chromium	30	36	180	1500	13.6	21.8	8.34	12.7	23.2	12.2	61.2	17.5	22.7	6.6	18.8	19.4	3.6
Cobalt	--	--	--	--	4.98	8.24	3.27	3.72	6.74	--	--	--	--	--	--	--	--
Copper	50	270	270	270	46.3	46.1	14.3	13.9	29.4	--	--	--	--	--	--	--	--
Iron	--	--	--	--	48700	130000	47000	51600	87800	--	--	--	--	--	--	--	--
Lead	63	400	400	1000	32.7	427	3.94	12.8	17	249	135	167	79.7	9.7	55.6	163	2
Magnesium	--	--	--	--	9970	4890	11300	21800	14600	--	--	--	--	--	--	--	--
Manganese	1600	2000	2000	10000	1010	2210	1210	1970	1660	--	--	--	--	--	--	--	--
Mercury	0.18	0.81	0.81	2.8	0.324	0.144	0.09	0.096	0.098	0.047	0.091	0.1	0.096	ND	0.031	0.089	ND
Nickel	30	140	310	310	12.4	17.1	3.08	4.73	9.08	--	--	--	9.08	--	--	--	--
Potassium	--	--	--	--	1890	659	1380	1010	1120	--	--	--	1120	--	--	--	--
Selenium	3.9	36	180	1500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.8
Sodium	--	--	--	--	741	540	536	454	365	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	34.9	89.7	37.1	38.4	66.3	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	19.2	35.2	16	17.39	29.3	--	--	--	--	--	--	--	--
Zinc	109	2200	10000	10000	126	2530	3.23	16.8	48.1	--	--	--	--	--	--	--	--

Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006).
3. Laboratory analytical reported parameters in ug/kg. Values were converted to mg/kg for comparison to SCOs

Definitions:

-- = No SCO has been established for subject parameter; Sample was not analyzed for this parameter.
ND = Parameter not detected above laboratory detection limit.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

	Exceeds Part 375 Unrestricted SCOs.
	Exceeds Part 375 Residential SCOs.
	Exceeds Part 375 Restricted-Residential SCOs.
	Exceeds Part 375 Commercial SCOs.

TABLE 2 - 600 RIVER ROAD - RI SOIL SAMPLE ANALYTICAL RESULTS SUMMARY * PAGE 1 of 2																	
Sampling Program	PEI - REMEDIAL INVESTIGATION (RI) TEST TRENCH SOIL SAMPLING PROGRAM																
Sample Number (600RR)	TP-01A	TP-01B	TP-06B	TP-08A	TP-08B	TP-10A	TP-10B	TP-12A	TP-13B	TP-14B	TP-15B	TP-16A	TP-16B	TP-18B	TP-20B	NYSDEC	NYSDEC
Sample Date	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	PART 375	PART 375
Sample depth (bgs)	2"	3.5'- 4.5'	1.5'	2"	1.5'	2"	3.5'- 4.5'	2"	4'- 4.5'	5'- 6.5'	2.5'- 3'	2"	3'- 4.5'	4.5'- 5'	2.5'- 3'	Restrict-Res	Unrestricted Use
Compounds	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Metals																	
Cyanide Total	ND	ND	ND	0.66	1.4	ND	2.1	ND	1.4	0.78	0.76	0.73	1.17	ND	13.7	27	27
Mercury	ND	0.02	0.29	ND	0.1	0.2	ND	ND	0.76	0.114	ND	ND	ND	0.022	0.041	0.81	0.18
Aluminum	18600	9600	3750	11400	19000	10700	18400	10700	10000	8800	12200	12500	8340	6270	13400	N/A	N/A
Antimony	ND	3.18 J	4.44	8.63	7.79	ND	ND	ND	14.3	3.22 J	6.85 J	ND	3.55 J	ND	4 J	N/A	N/A
Arsenic	6.74	8.12	13.1	13.2	12.9	4.33	5.38	11	19.1	7.31	12.2	4.95	9.27	3.35	13.2	16	13
Barium	99.1	45.6	60	102	150	73	91.9	77.3	124	56.2	86.6	79.6	89.5	28.5	108	400	350
Beryllium	1.61	1.08	0.86	1.47	2.71	0.89	1.78	1.6	1.18	0.62	0.95	0.93	0.9	ND	1.09	72	7.2
Cadmium	1.77	1.5	1.51	3.84	4.02	0.77	1.04	1.56	5.69	1.24	2.17	0.94	1.81	0.54	2.24	4.3	2.5
Calcium	80600	80100	13000	63600	124000	87600	134000	143000	49400	67000	31500	71000	88900	90000	31600	N/A	N/A
Chromium	29.4	13.3	9.57	56.6	39.2	20.2	13.5	16.6	56.6	18.6	34.1	22.2	24.7	9.52	19.9	110	30
Cobalt	9.83	5.33	4.85 J	7.92	6.44	5.81	4.61 J	4.64 J	11.2	6.35	8.8	7.55	5.97	4.21 J	8.64	N/A	N/A
Copper	29.9	19	27	112	45.7	24.4	21.7	30.5	145	54.4	751	22.2	32.4	26.9	42.5	270	50
Iron	49700	69100	51700	108000	111000	17000	41700	30500	144000	43200	89900	22000	67600	12900	80700	N/A	N/A
Lead (Axial)	49.9	11.8	138	149	219	30.7	25.2	55	215	41.5	75.4	25.5	67	14.4	43.5	400	63
Magnesium	16500 DJ	4990 J	1700 J	5930 J	5130 J	32800 J	7770 J	33800 J	6630 J	20200 J	3980 J	18000 J	7670 J	45400 J	3480 J	N/A	N/A
Manganese	621 M	3590	699	2590	2460	745	1310	1150	2640	846	1990	772	1230	945	1950	2000	1600
Nickel	21.9	8.07	9.17	27.6	15	14.6	9.67	15.4	41.8	17.7	33.1	18.2	18.2	9.86	16.2	310	30
Potassium	2670	853	492	1390	2540	1770	1940	1450	1230	1270	2700	2190	1040	1820	1520	N/A	N/A
Selenium	ND	1.18	1.39	3.25	2.96	0.87 J	1.87	1.22	1.8	0.96 J	0.92 J	0.84 J	0.85 J	ND	1.43	180	3.9
Silver	3.84	5.53	4.7	10	9.36	1.57	3.09	2.72	12.1	3.74	7.72	1.99	5.42	1.37	6.14	180	2
Sodium	412	236 J	ND	338	521	192 J	375	354	270 J	167 J	1330	217 J	195 J	ND	212 J	N/A	N/A
Thallium	1.3 JM	ND	ND	ND	ND	ND	1.72 J	3.17	ND	ND	ND	ND	ND	1.72 J	ND	N/A	N/A
Vanadium	26.7	24	9.84	22.6	25.7	17.3	12.4	11	35.7	19.2	18.9	21.2	14.7	12	196	N/A	N/A
Zinc	162	43.1	137	558	962	114	69.5	277	790	173	372	72.9	228	73.1	209	10000	109
PCBS																	
PCB-1248	0.0967	ND	ND	ND	ND	0.0731	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	0.1
PCB-1254	0.0938	0.0289 J	ND	0.0174 J	ND	0.0692	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	0.1
PCB-1260	ND	ND	ND	0.034	ND	ND	ND	ND	0.0302 J	0.0166 J	ND	ND	ND	ND	ND	1	0.1
Pesticides																	
4,4-DDE	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.086 J	0.007 JN	ND	ND	8.9	0.0033
4,4-DDD	ND	ND	0.004 CJN	0.005 CJN	0.002 JCN	ND	ND	0.006 J	0.005 CJN	ND	ND	0.041 J	0.006 C	ND	0.002 JC	13	0.0033
4,4-DDT	0.01 M	ND	ND	0.007 CJ	ND	0.004	ND	ND	0.003 JCN	0.003 J	0.002 J	0.03 J	0.007	ND	ND	7.9	0.0033
Aldrin	ND	0.002 J	0.002 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.005
beta-BHC	ND	ND	0.004 CJN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36	0.036
delta-BHC	0.006MCJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	0.04
Dieldrin	0.003MCJ	ND	0.003 JC	0.003 JCN	ND	ND	ND	ND	0.004 CJN	ND	ND	ND	ND	ND	ND	0.2	0.005
Endrin Aldehyde	ND	ND	0.003 CJ	0.003 JCN	ND	ND	ND	0.049 JN	0.002 JC	ND	ND	ND	ND	ND	ND	NA	N/A
alpha-BHC	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	0.02
Endrin	ND	ND	ND	0.004 CJN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	0.014
Heptachlor Epoxide	0.014 M	ND	ND	ND	ND	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	N/A
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24	2.4
Endrin Ketone	ND	ND	0.002 CJN	0.005JN	0.004	ND	ND	0.004 JC	ND	ND	ND	ND	ND	ND	ND	NA	N/A
Methoxychlor	0.015 M	ND	0.002 JCN	0.009 C	ND	ND	ND	0.107 CJ	ND	ND	ND	ND	0.003 CJN	ND	ND	NA	N/A

TABLE 2 - 600 RIVER ROAD - RI SOIL SAMPLE ANALYTICAL RESULTS SUMMARY * PAGE 2 of 2																	
Sampling Program	PEI - REMEDIAL INVESTIGATION (RI) TEST TRENCH SOIL SAMPLING PROGRAM																
Sample Number (600RR)	TP-01A	TP-01B	TP-06B	TP-08A	TP-08B	TP-10A	TP-10B	TP-12A	TP-13B	TP-14B	TP-15B	TP-16A	TP-16B	TP-18B	TP-20B	NYSDEC	NYSDEC
Sample Date	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	6/20/2013	PART 375	PART 375
Sample depth (bgs)	2"	3.5'- 4.5'	1.5'	2"	1.5'	2"	3.5'- 4.5'	2"	4'- 4.5'	5'- 6.5'	2.5'- 3'	2"	3'- 4.5'	4.5'- 5'	2.5'- 3'	Restrict-Res	Unrestricted
Compounds	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
VOCs																	
Naphthalene	0.229 J	ND	ND	N/A	ND	N/A	ND	N/A	ND	ND	ND	N/A	ND	ND	ND	100	12
Tetrachloroethene	N/A	ND	ND	N/A	ND	N/A	ND	N/A	0.01	0.008	ND	N/A	ND	ND	ND	19	1.3
m,p-Xylene	N/A	ND	ND	N/A	ND	N/A	ND	N/A	ND	ND	ND	N/A	ND	ND	ND	100	0.26
TICs (Total)	N/A	ND	ND	N/A	ND	N/A	ND	N/A	ND	ND	ND	N/A	0.5	ND	ND	NA	NA
SVOCs																	
Acenaphthylene	ND	ND	ND	2.36	0.32 J	ND	ND	ND	0.99	ND	ND	ND	0.28 J	ND	ND	100	100
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	0.27 J	ND	ND	ND	0.28 J	ND	ND	100	20
Anthracene	ND	ND	ND	1.85	0.19 J	ND	ND	ND	1.44	ND	ND	ND	1.2	ND	ND	100	100
Benzo(a)anthracene	0.495	ND	ND	3.55	0.39	0.28 J	0.25 J	ND	2.33	0.23 J	ND	ND	2.82	ND	ND	1	1
Benzo(a)pyrene	0.466	ND	ND	4.89	0.65	0.30 J	0.28 J	ND	2.21	0.22 J	ND	ND	2.38	ND	ND	1	1
Benzo(b)fluoranthene	0.512	ND	ND	6.46	0.79	0.30 J	0.31 J	ND	2.71	0.22 J	ND	ND	2.1	ND	ND	1	1
Benzo(g,h,i)perylene	0.32	ND	ND	4.92	0.62	0.22 J	0.20 J	ND	1.63	ND	ND	ND	1.28	ND	ND	100	100
Benzo(k)fluoranthene	0.379	ND	ND	2.06	0.52	0.22 J	0.22 J	ND	1.5	ND	ND	ND	1.8	ND	ND	3.9	0.8
Chrysene	0.598	ND	ND	4.63	0.53	0.30 J	0.28 J	ND	2.37	0.22 J	ND	ND	2.52	ND	ND	3.9	1
Dibenz (a,h) anthracene	ND	ND	ND	1.25	ND	ND	ND	ND	0.44	ND	ND	ND	0.35	ND	ND	0.33	0.33
Fluoranthene	1.29	ND	ND	4.1	0.45	0.55	0.46	ND	3.46	0.42	ND	ND	5.03	ND	ND	100	100
Flourene	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J	ND	ND	ND	0.43	ND	ND	100	30
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	0.33
Indeno(1,2,3-cd)pyrene	0.545	ND	0.229 J	5.31	0.77	0.41	0.4	ND	1.75	0.35	0.24 J	0.253 J	1.59	ND	ND	0.5	0.5
Phenanthrene	1.08	ND	ND	1.1	ND	0.28 J	0.20 J	ND	1.95	0.31 J	ND	ND	3.2	ND	ND	100	100
Pyrene	0.985 M	ND	ND	4.21	0.49	0.45	0.41	ND	3.2	0.36	ND	ND	4.2	ND	ND	100	100
TICs (Total)	4.1	0.9	8.3	24.6	2.3	0.7	2.4	23.5	4.5	0.4	0.2	0.2	10.9	0.1	1.1	NA	NA

* All Data Has Been Validated

ND - Non-Detect NA - Not Available

Shaded Value - Exceeds Part 375 Restricted Residential SCO

TICs - Tentitively Identified Compounds

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

C - Calibration acceptability criteria exceeded for this analyte

"D" = Duplicate results outside QC limits. May indicate a non-homogenous matrix.

J - Estimated value-below calibration range N - Analysis indicates tentative analyte identification

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 3 - 600 RIVER ROAD RI GROUNDWATER SAMPLE ANALYTICAL RESULTS SUMMARY								
Sample Number (RiR)	MW-01	MW-01	MW-02	MW-02	MW-03	MW-03	MW-04	NYSDEC
Sample Date	10/22/2013	10/22/2013	10/22/2013	10/22/2013	10/22/2013	10/22/2013	10/22/2013	TOGs 1.1.1. GA
Compounds	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Metals	Filtered (1)	Unfiltered	Filtered (1)	Unfiltered	Filtered (1)	Unfiltered	Unfiltered	
Aluminum	ND	9030	16000	37800	ND	22100	1850	N/A
Arsenic	ND	6.87 J	5.05 J	19.5	ND	13.8	ND	25
Barium	ND	80.4 J	224	340	54.8 J	211	ND	1000
Beryllium	ND		2.55 J	3.48 J	ND	ND	ND	3
Calcium	76000	91800	204000	185000	119000	163000	109000	N/A
Chromium	ND	16.4	10.8	53.7	ND	31.1	ND	50
Copper	ND	16.2 J	17 J	69	ND	33.4	ND	200
Iron	ND	16700	9790	49200	ND	33300	1410	300
Lead	ND	24	49.6	89.1	ND	29.8	ND	25
Magnesium	55700	59400	23800	29300	13000	21900	21900	N/A
Manganese	280	569	1540	1800	51.5	485	67.1	300
Mercury	0.12	ND	ND	0.3	N/D	0.16 J	ND	0.7
Nickel	ND	ND	ND	47.5	ND	34.2 J	ND	100
Potassium	13000	15400	23100	24800	12000	17100	7680	N/A
Selenium	ND	ND	ND	ND	11.4	12.8	ND	10
Sodium	8200	8470	14700	14100	102000	107000	15100	20000
Vanadium	ND	23.1	13.7 J	56.4	ND	48.3	ND	N/A
Zinc	ND	89.8	165	319	ND	159	ND	N/A
SVOCs								
TICs	13.1	N/A	55.2	N/A	16.5	N/A	17.3	N/A
VOCs								
TICs	ND	N/A	15 J	N/A	ND	N/A	15.2	N/A
Pesticides								
Alpha-BHC	ND	N/A	ND	N/A	ND	NA	0.35 B	N/A
PCBs								
PCBs	ND	ND	ND	ND	ND	ND	ND	N/A
Field Parameters								
Turbidity (NTU)	56.1	56.1	1954	1954	1255	1255	28.7	N/A
pH	7.87	7.87	8.4	8.4	8.24	8.24	7.1	N/A
Dissolved Oxygen	4.27	4.27	3.01	3.01	3.43	3.43	6.25	N/A
Temp (degrees C)	3.6	3.6	15.5	15.5	14	14	13.7	N/A
Conductivity	0.82	0.82	0.48	0.48	1.11	1.11	0.7	N/A

Data has been validated

(1) - Dissolved TAL Metals (ICP) - Results lab filtered due to high groundwater sediment/turbidity in wells (NTU >50)

N/A - Not Applicable ND - Non-detect

TOGs 1.1.1 GA - Technical and Operational Guidance Series (1.1.1) Source of Drinking Water (Groundwater)

Shaded and bold typeface - Results above TOGs 1.1.1 GA

J - Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection

Limit (MDL). Concentrations within this range are estimated.

"B" = Method blank contained trace levels of analyte.

TABLE #3

Analytical Results, Metals - Groundwater Samples

A. J. Brothers
 600 River Road
 E. P. A. 6061B Metals

Samples taken on 3/6/01 (in ppm)

Analyte	EPMW-4	EPMW-13	NYS Ambient Water Quality Standards and/or GV's
Aluminum	0.725	0.755	0.1
Antimony	-	-	.003
Arsenic	-	0.009	.025
Barium	0.053	0.020	1.0
Beryllium	-	-	.003
Cadmium	0.001	0.002	.005
Calcium	163	53.8	N/A
Chromium	-	0.004	.050
Cobalt	-	-	.005
Copper	0.057	0.055	0.20
Iron	1.52	3.33	0.30
Lead	-	-	.008
Magnesium	42.7	1.21	35.0
Manganese	0.140	0.022	0.3
Mercury	-	-	.0007
Nickel	0.006	0.009	0.1
Potassium	15.9	8.19	N/A
Selenium	-	-	.0046
Silver	-	-	.0001
Sodium	13.0	11.8	20.0
Thallium	-	-	.0005
Vanadium	0.004	0.023	.014
Zinc	0.027	0.025	.066

Bolded Intervals Exceed NYS Ambient Water Quality and/or Guidance Values
 (-) = Below Laboratory Detection Limits

Sampled By: Steve Gingrich
 Laboratory: Lozier Analytical

Method: Metals 6061B
 Date Sampled: 3/6/01

TABLE 4 - 600 River Rd. Boring/Sample Location Coordinates		
Sample Identification	Coordinates-North American Datum 1983	
	Latitude	Longitude
<u>Test Pits</u>		
TP-01	43.03493500000	-78.88717000000
TP-02	43.03493400000	-78.88672400000
TP-03	43.03507400000	-78.88638500000
TP-04	43.03538300000	-78.88655200000
TP-05	43.03521200000	-78.88703500000
TP-06	43.03526100000	-78.88752900000
TP-07	43.03553700000	-78.88760800000
TP-08	43.03585000000	-78.88776800000
TP-09	43.03599700000	-78.88736500000
TP-10	43.03583900000	-78.88723300000
TP-11	43.03565700000	-78.88692700000
TP-12	43.03580800000	-78.88708900000
TP-13	43.03606900000	-78.88678300000
TP-14	43.03579000000	-78.88651000000
TP-15	43.03595800000	-78.88575600000
TP-16	43.03617100000	-78.88605600000
TP-17	43.03636700000	-78.88619500000
TP-18	43.03608400000	-78.88535000000
TP-19	43.03625500000	-78.88557900000
TP-20	43.03651500000	-78.88559600000
<u>Monitoring Wells</u>		
MW-1	43.03500700000	-78.88767400000
MW-2	43.03493000000	-78.88727600000
MW-3	43.03563500000	-78.88767400000
MW-4	43.03627200000	-78.88550900000

TABLE 5 - 600 RIVER ROAD - STOCKPILED SOIL & TOPSOIL COMPOSITE SAMPLE ANALYTICAL RESULTS SUMMARY						
Sampling Program	PEI - STOCKPILE SOIL AND TOPSOIL COMPOSITE SAMPLING PROGRAM					
Sample Number	SP	COMP 1	COMP 2	COMP 3	NYSDEC	NYSDEC
Sample Date	3/12/2014	3/12/2014	3/12/2014	3/12/2014	PART 375	PART 375
Sample depth (bgs)	Stockpile	2' - 6'	2' - 6'	2' - 6'	Restrict-Res	Unrestricted-Use
Compounds	ppm	ppm	ppm	ppm	ppm	ppm
Metals					(a)	(b)
Arsenic	3.13	9.08	3.41	3.75	16	13
Barium	33.9	193	56.8	57.7	400	350
Beryllium	ND	4.18	ND	ND	72	7.2
Cadmium	ND	ND	ND	ND	4.3	2.5
Chromium	11.2	17.5	13.7	10.2	180	30
Copper	19.1	27.9	22.1	14.5	270	50
Lead	34.7	59.4	23.4	14.9	400	63
Manganese	183	3170 (a)(b)	472	353	2000	1600
Mercury	0.166	ND	0.0600	0.0650	0.81	0.18
Nickel	11.0	10.5	12.9	8.94	310	30
Selenium	ND	ND	ND	ND	180	3.9
Silver	ND	ND	ND	ND	180	2
Zinc	92.7	156	97.6	51.8	10000	109
PCBS						
PCBs	ND	ND	ND	ND	1	0.1
Pesticides						
Pesticides	ND	ND	ND	ND	8.9	0.0033
SVOCs						
Benzo (a) anthracene	0.326	ND	ND	ND	1	1
Benzo (a) pyrene	0.338	ND	ND	ND	1	1
Benzo (b) fluoranthene	0.356	ND	ND	ND	1	1
Chrysene	0.388	ND	ND	ND	3.9	1
Fluoranthene	0.593	ND	ND	ND	100	100
Phenanthrene	0.376	ND	ND	ND	100	100
Pyrene	0.529	ND	ND	ND	100	100

ND - Non-Detect NA - Not Available

Shaded Value - Exceeds Part 375 Restricted Residential and/or Unrestricted Use SCOs

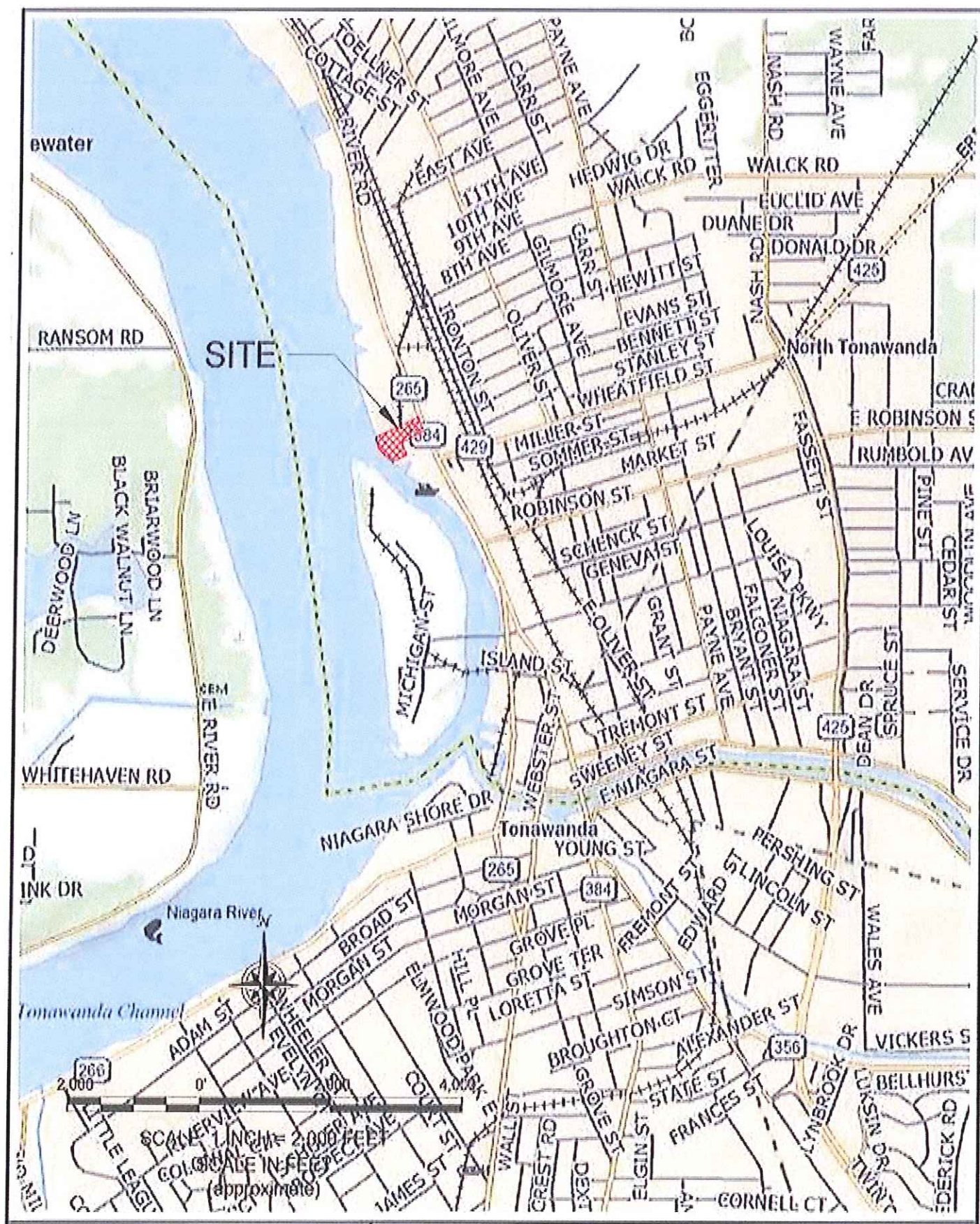


Figure 1. Project location within North Tonawanda, Niagara County, New York.

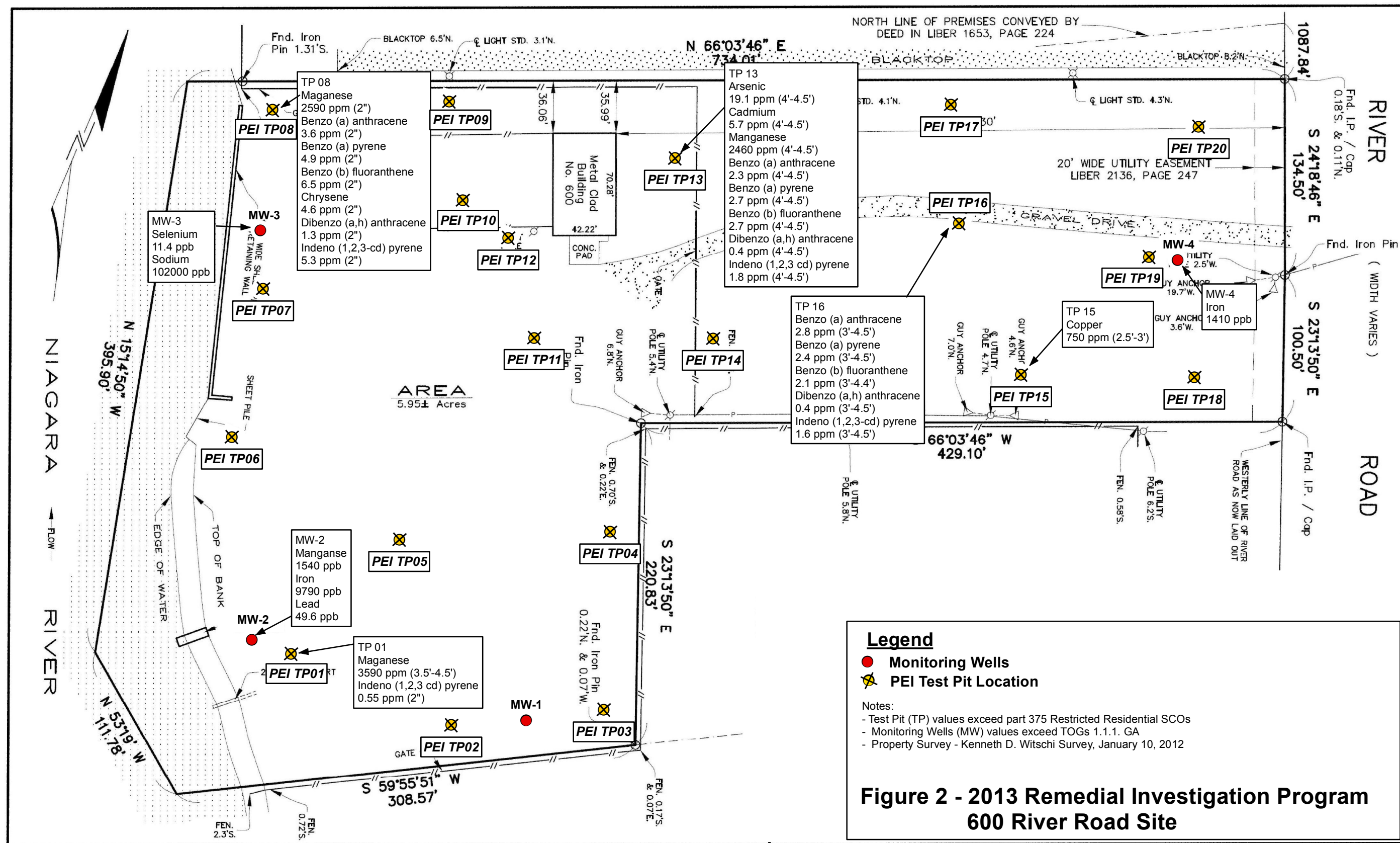


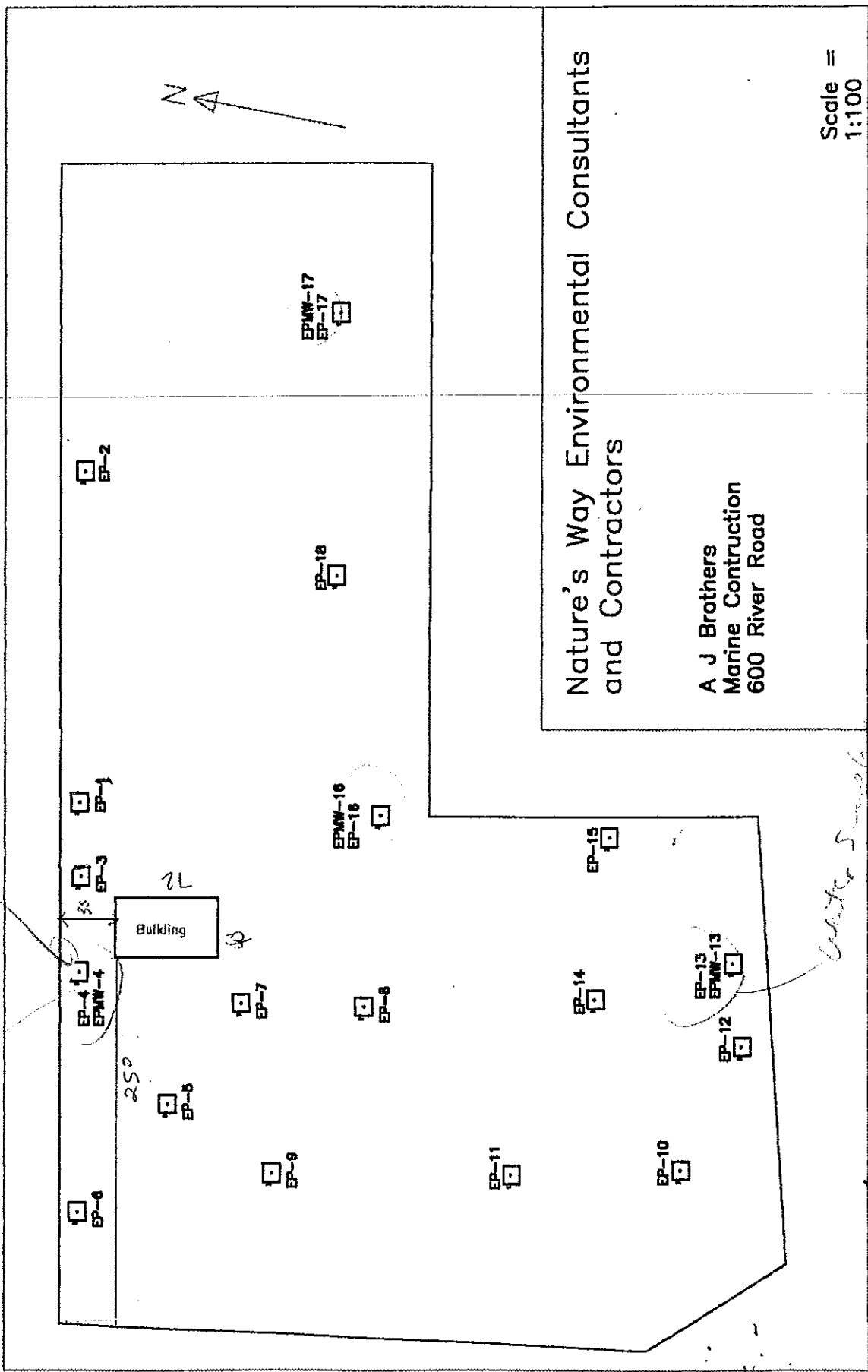
FIGURE #2
Soil Boring Location Map

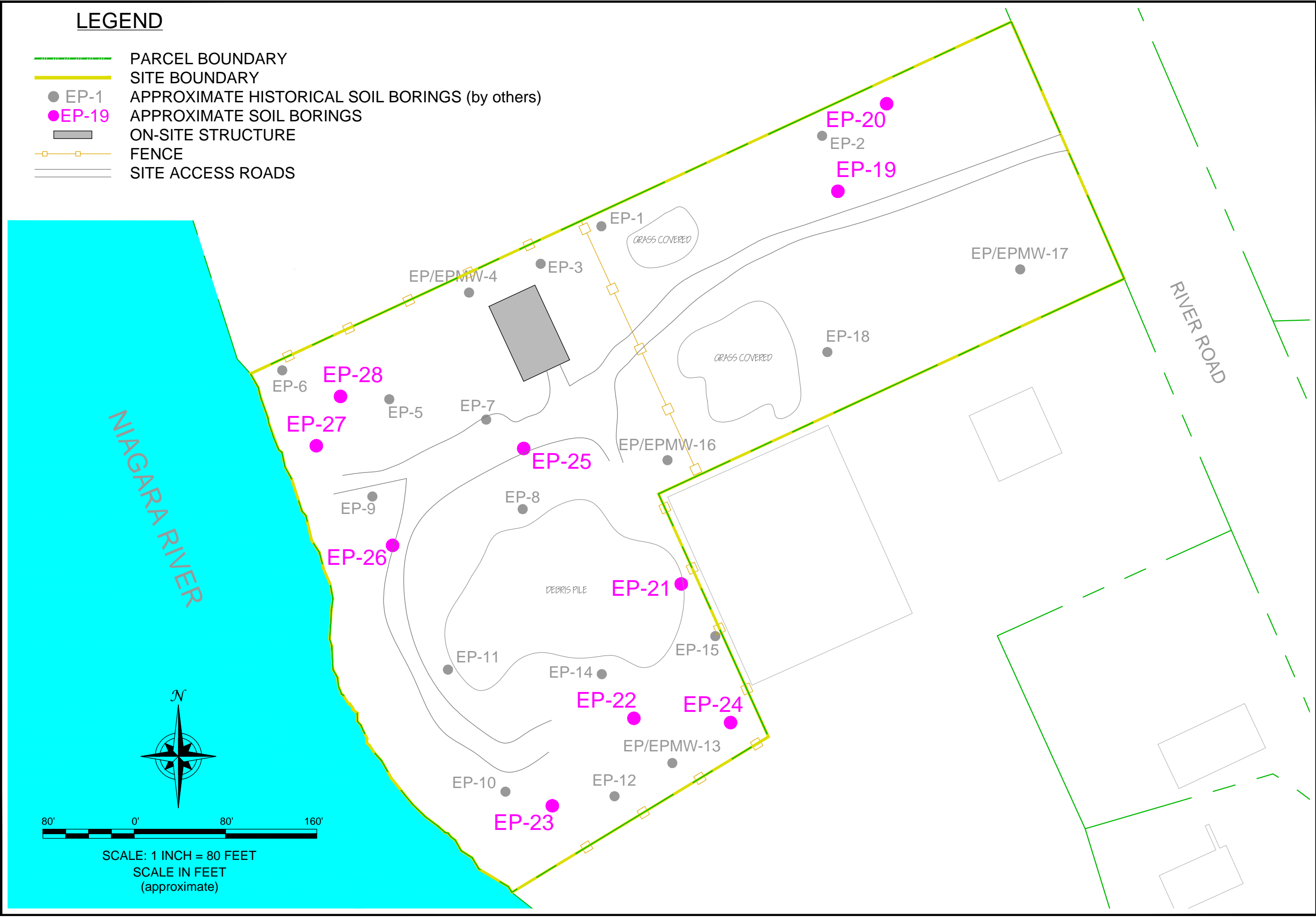
19 2/3 38

18 2/3 33

Water Sample

Soil





2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

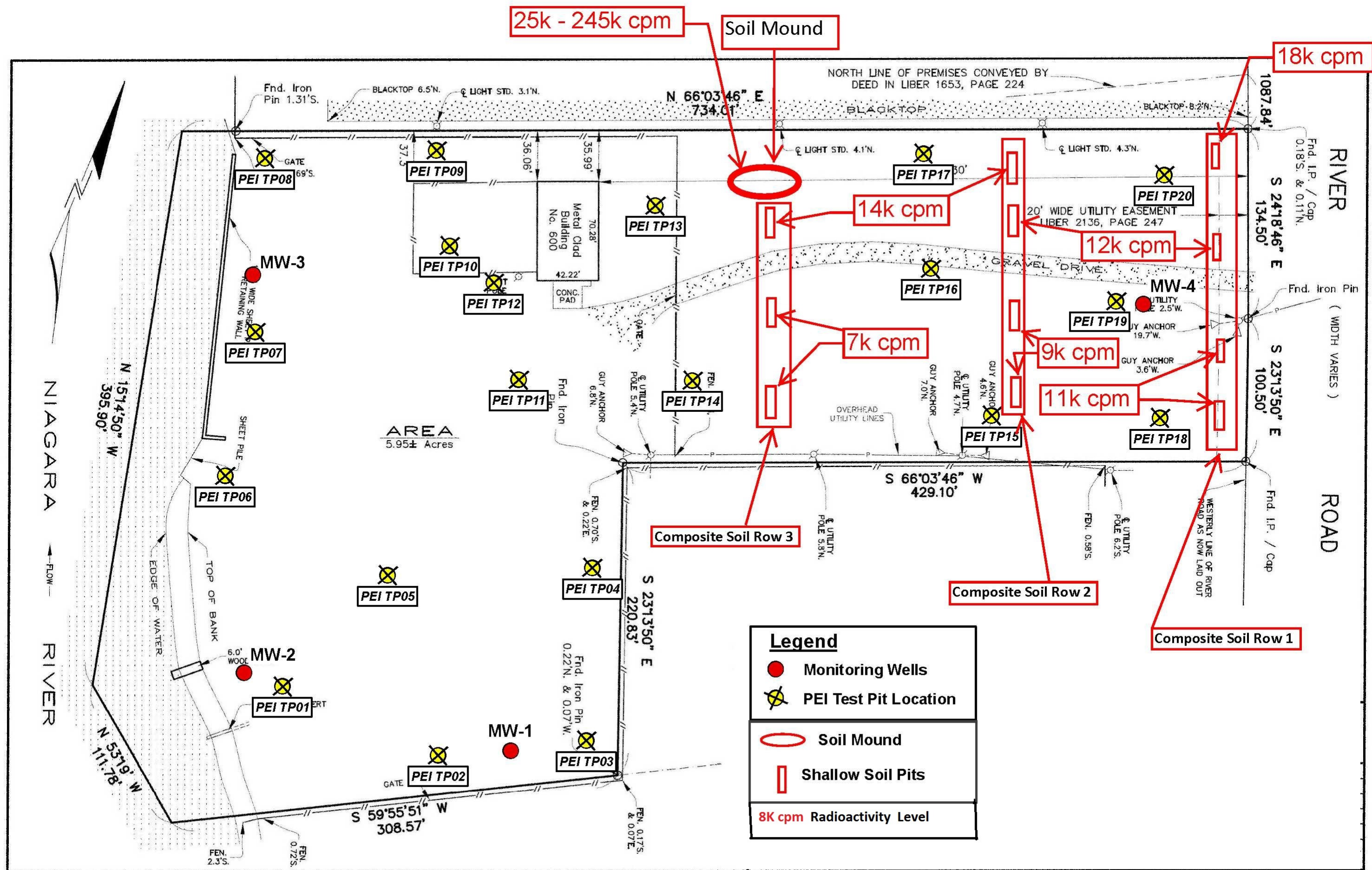


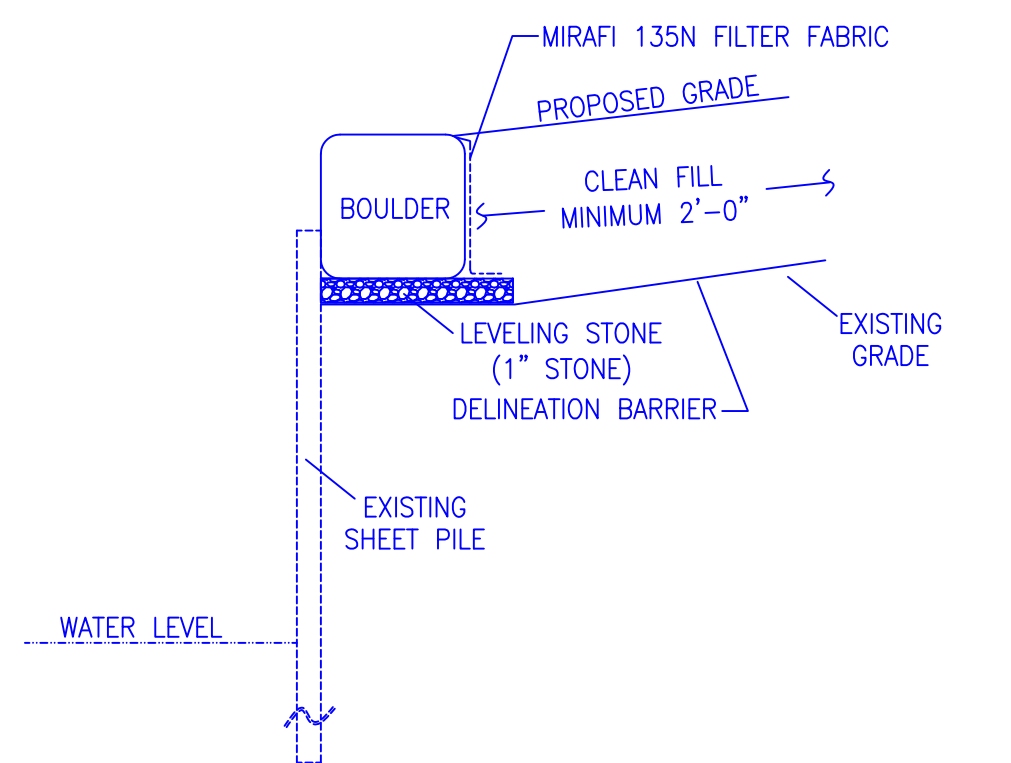
JOB NO.: 0247-012-100

INVESTIGATION SAMPLE LOCATIONS

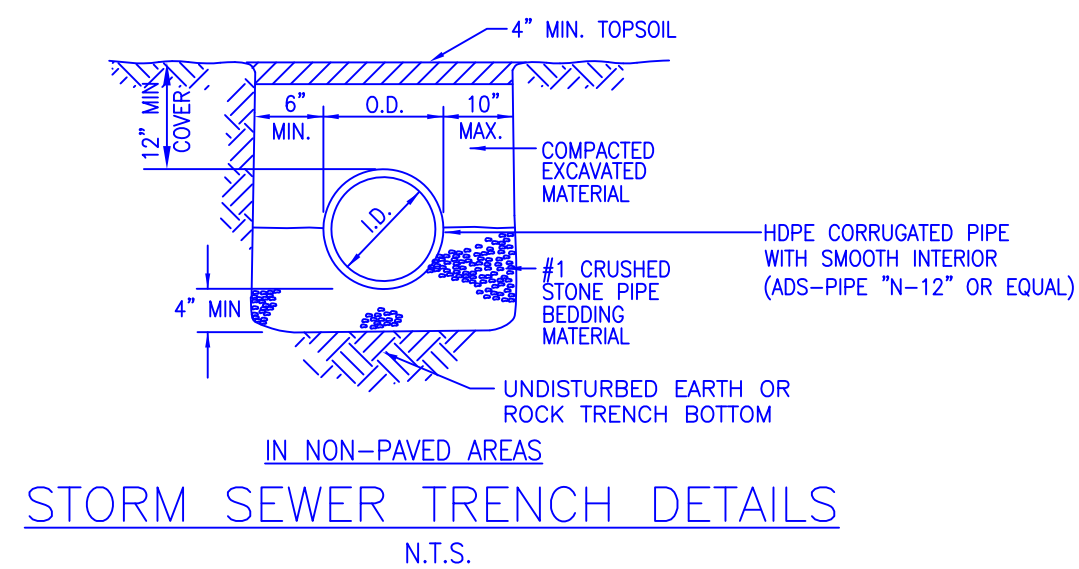
PHASE II ENVIRONMENTAL SITE INVESTIGATION REPORT
600 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK
PREPARED FOR
ROCK ONE DEVELOPMENT, LLC

FIGURE 3

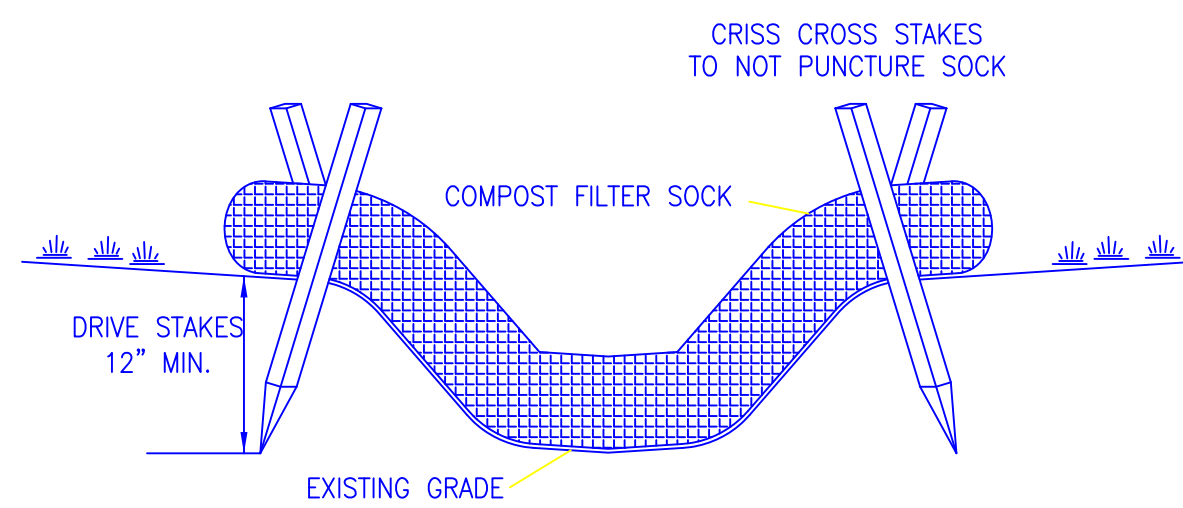




BOULDERS ALONG EXISTING SHEETPILE WALL
N.T.S.



STORM SEWER TRENCH DETAILS
N.T.S.

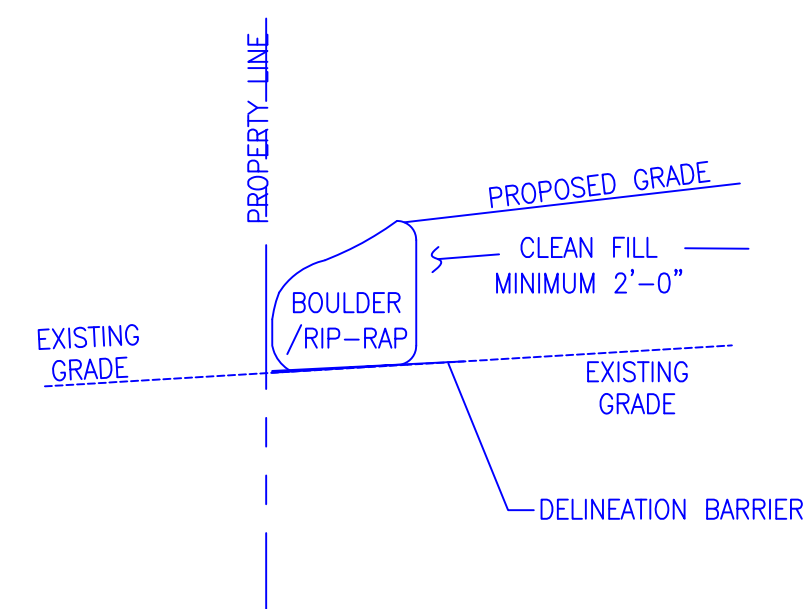


NOTES:

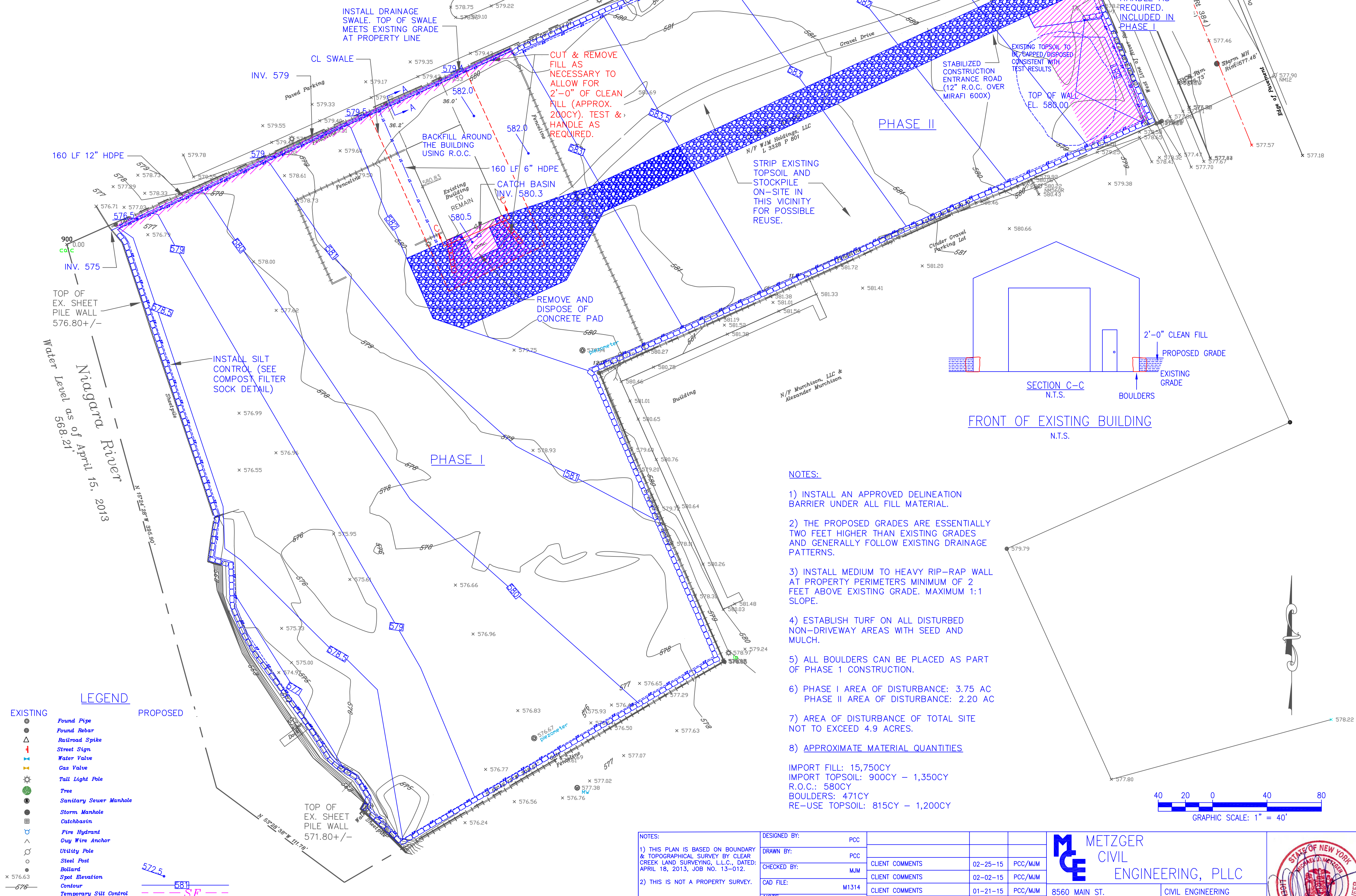
1. 8" MINIMUM COMPOST FILTER SOCK MUST CONFORM TO USACOE PWTB 200-1-62 (FILTREXX SILTXXX OR APPROVED EQUAL).

MINIMUM SOCK SPACING		
SLOPE %	8 INCH SOCK	12 INCH SOCK
0-2%	300'	375'
2-5%	200'	250'
5-10%	100'	125'

COMPOST FILTER SOCK
N.T.S.



BOULDERS/RIP-RAP ALONG PROPERTY LINES
N.T.S.



NOTES:

- 1) INSTALL AN APPROVED DELINEATION BARRIER UNDER ALL FILL MATERIAL.
- 2) THE PROPOSED GRADES ARE ESSENTIALLY TWO FEET HIGHER THAN EXISTING GRADES AND GENERALLY FOLLOW EXISTING DRAINAGE PATTERNS.
- 3) INSTALL MEDIUM TO HEAVY RIP-RAP WALL AT PROPERTY PERIMETERS MINIMUM OF 2 FEET ABOVE EXISTING GRADE. MAXIMUM 1:1 SLOPE.
- 4) ESTABLISH TURF ON ALL DISTURBED NON-DRIVEWAY AREAS WITH SEED AND MULCH.
- 5) ALL BOULDERS CAN BE PLACED AS PART OF PHASE 1 CONSTRUCTION.
- 6) PHASE I AREA OF DISTURBANCE: 3.75 AC
PHASE II AREA OF DISTURBANCE: 2.20 AC
- 7) AREA OF DISTURBANCE OF TOTAL SITE NOT TO EXCEED 4.9 ACRES.
- 8) APPROXIMATE MATERIAL QUANTITIES
IMPORT FILL: 15,750CY
IMPORT TOPSOIL: 900CY - 1,350CY
R.O.C.: 580CY
BOULDERS: 471CY
RE-USE TOPSOIL: 815CY - 1,200CY

NOTES:
1) THIS PLAN IS BASED ON BOUNDARY & TOPOGRAPHICAL SURVEY BY CLEAR CREEK LAND SURVEYING, L.L.C., DATED: APRIL 18, 2013, JOB NO. 13-012.
2) THIS IS NOT A PROPERTY SURVEY.

DESIGNED BY: PCC
DRAWN BY: PCC
CHECKED BY: MUM
CAD FILE: M1314

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW

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02-02-15	PCC/MJM	
01-21-15	PCC/MJM	
12-12-14	PCC/MJM	
9-3-14	PCC/MJM	
REVISIONS	DATE	BY/CHECK

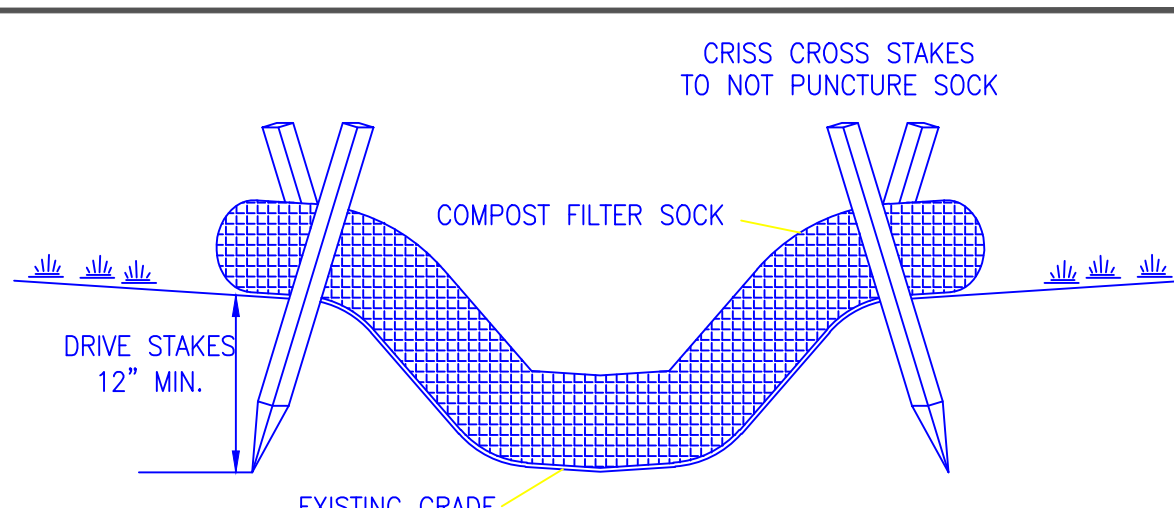
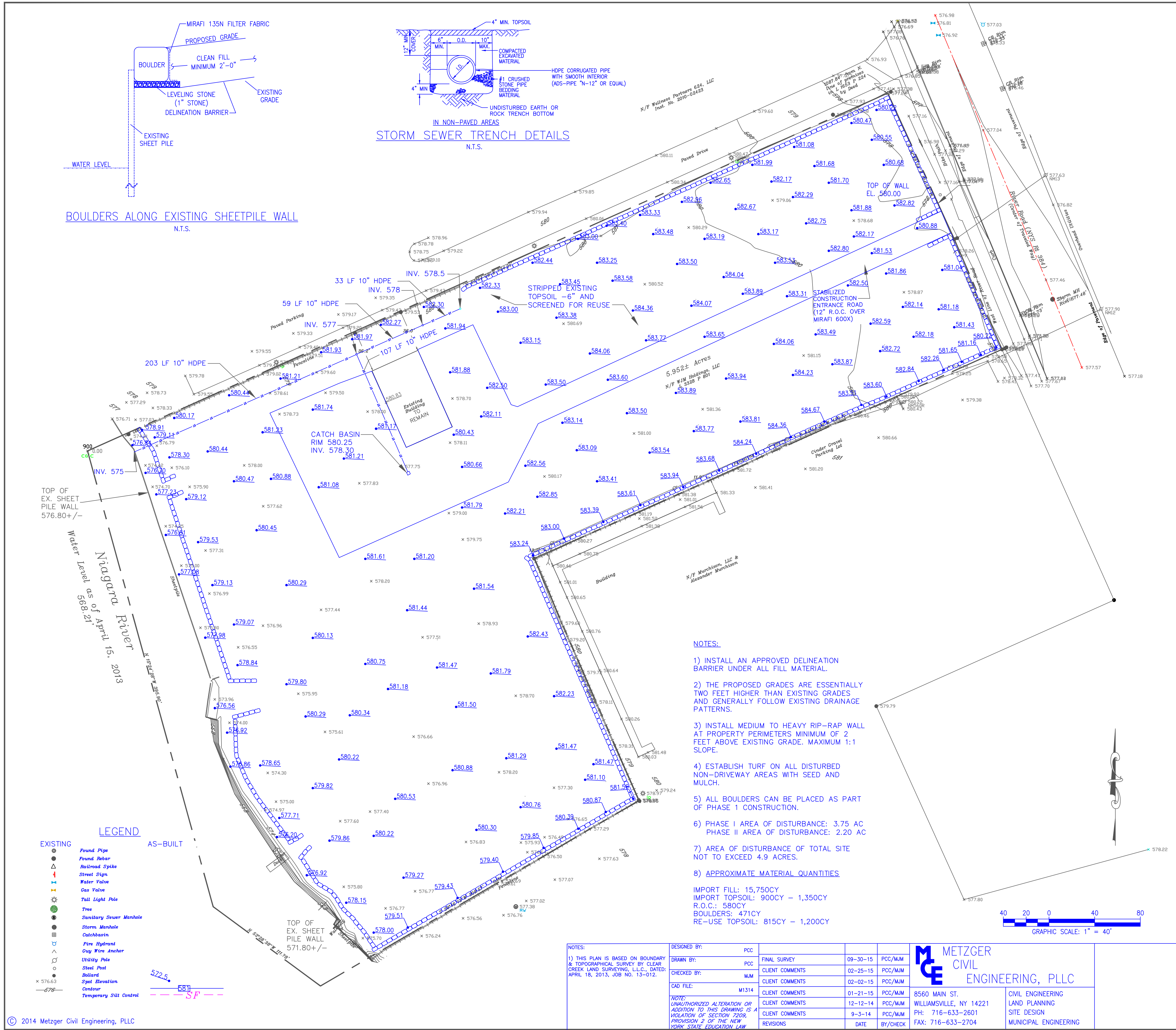
ME METZGER CIVIL ENGINEERING, PLLC
8560 MAIN ST.
WILLIAMSVILLE, NY 14221
PH: 716-633-2601
FAX: 716-633-2704



600 RIVER ROAD
TWO FOOT (2') CLEAN FILL CAP
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK
GRADING AND SOIL EROSION/SEDIMENT CONTROL (SWPPP) PLAN

SCALE: AS NOTED
DATE: FEBRUARY 25, 2015
JOB NO: M-1314
DRAWING NO:

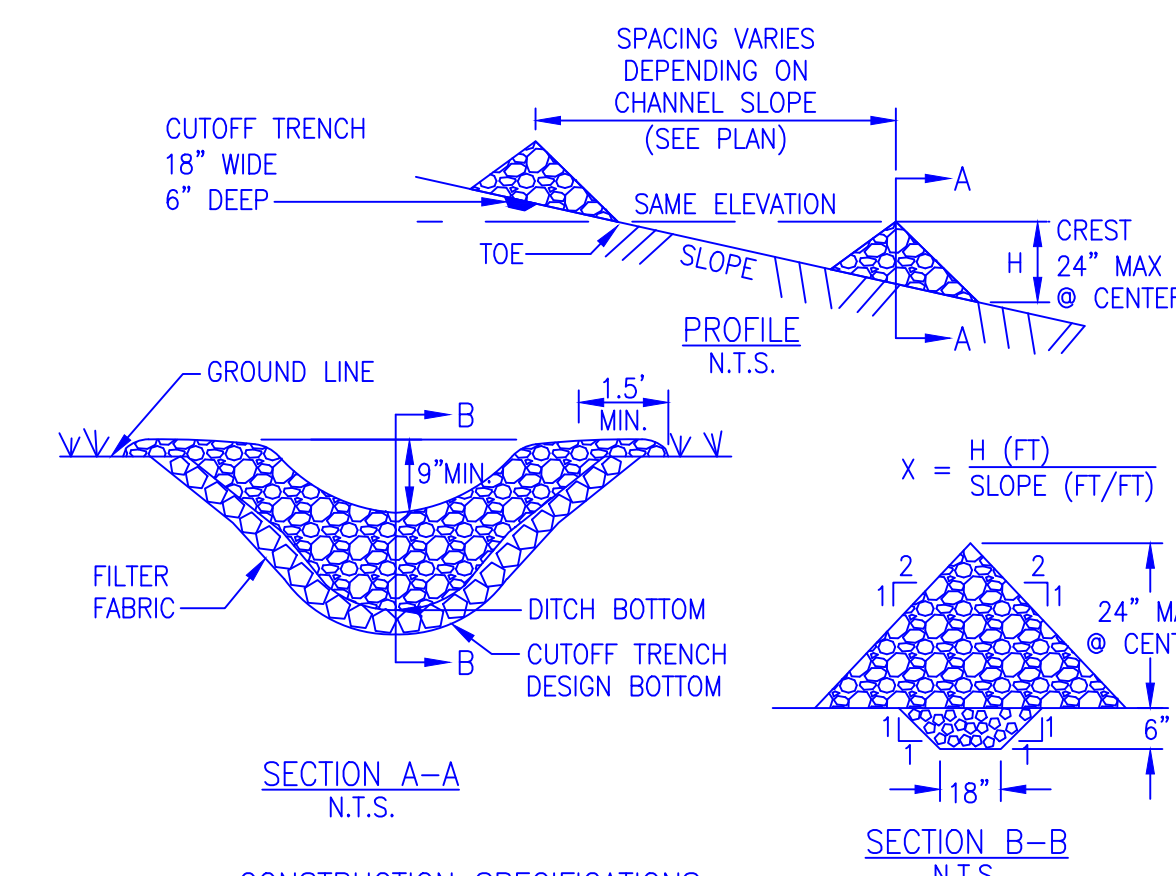
GD-1



NOTES:
1. 8" MINIMUM COMPOST FILTER SOCK MUST CONFORM TO USACOE PWTB 200-1-62 (FILTREXX SILTXXX OR APPROVED EQUAL).

MINIMUM SOCK SPACING		
SLOPE %	8 INCH SOCK	12 INCH SOCK
0-2%	300'	375'
2-5%	200'	250'
5-10%	100'	125'

COMPOST FILTER SOCK
N.T.S.



CONSTRUCTION SPECIFICATIONS
1) STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2) SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3) EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4) PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5) ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

TEMPORARY STONE CHECK DAM
N.T.S.

NOTES: 1) THIS PLAN IS BASED ON BOUNDARY & TOPOGRAPHICAL SURVEY BY CLEAR CREEK LAND SURVEYING, LLC, DATED: APRIL 18, 2013, JOB NO. 13-012.		DESIGNED BY: PCC	FINAL SURVEY: 09-30-15	PCC/MJM
		DRAWN BY: PCC	CLIENT COMMENTS: 02-25-15	PCC/MJM
		CHECKED BY: MUM	CLIENT COMMENTS: 02-02-15	PCC/MJM
		CAD FILE: M1314	CLIENT COMMENTS: 01-21-15	PCC/MJM
			CLIENT COMMENTS: 12-12-14	PCC/MJM
			CLIENT COMMENTS: 9-3-14	PCC/MJM
			REVISIONS	DATE BY/CHECK

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8560 MAIN ST.
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PH: 716-633-2601
FAX: 716-633-2704
CIVIL ENGINEERING
LAND PLANNING
SITE DESIGN
MUNICIPAL ENGINEERING

600 RIVER ROAD
TWO FOOT (2') CLEAN FILL CAP
CITY OF NORTH TONAWANDA, NIAGARA COUNTY, NEW YORK
GRADING AND SOIL EROSION/SEDIMENT CONTROL (SWPPP) PLAN
SCALE: AS NOTED
DATE: FEBRUARY 25, 2015
JOB NO: M-1314
DRAWING NO: GD-1

APPENDIX C

ENVIRONMENTAL EASEMENT



NIAGARA COUNTY CLERK

WAYNE F. JAGOW

RECEIPT

Receipt Date: 09/15/2014 09:39:40 AM

RECEIPT # 2014211509

Recording Clerk: MKS

Cash Drawer: CASH4

Rec'd Frm: PARALEGAL SERVICES OF BUFFALO

Rec'd In Person

Instr#: 2014-15381

DOC: EASEMENT

DEED STAMP: 833

OR Party: ROCK ONE DEVELOPMENT LLC

EE Party: PEOPLE OF THE STATE OF NEW
YORK

Recording Fees

Cover Page	\$8.00
Recording Fee	\$32.00
Cultural Ed	\$14.25
Records Management - County	\$1.00
Records Management - State	\$4.75
TP584	\$5.00

Transfer Tax

Transfer Tax	\$0.00
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DOCUMENT TOTAL: ----> \$65.00

Misc Fees

Copies	\$6.50
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Receipt Summary

TOTAL RECEIPT: ---->	\$71.50
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TOTAL RECEIVED: ---->	\$71.50
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CASH BACK: ---->	\$0.00
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PAYMENTS

Check # 40667 ->	\$71.50
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PARALEGAL SERVICES OF BUFFALO



NIAGARA COUNTY – STATE OF NEW YORK
WAYNE F. JAGOW – NIAGARA COUNTY CLERK
P.O. BOX 461, LOCKPORT, NEW YORK 14095-0461

COUNTY CLERK'S RECORDING PAGE

THIS PAGE IS PART OF THE DOCUMENT – DO NOT DETACH



INSTRUMENT #: 2014-15381

Receipt#: 2014211509

Clerk: MKS

Rec Date: 09/15/2014 09:39:39 AM

Doc Grp: DEED

Descrip: EASEMENT

Num Pgs: 10

Party1: ROCK ONE DEVELOPMENT LLC

Party2: PEOPLE OF THE STATE OF NEW YORK
NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

Town: NORTH TONAWANDA

Recording:

Cover Page	8.00
Recording Fee	32.00
Cultural Ed	14.25
Records Management - Coun	1.00
Records Management - Stat	4.75
TP584	5.00

Sub Total: 65.00

Transfer Tax

Transfer Tax 0.00

Sub Total: 0.00

Total: 65.00

**** NOTICE: THIS IS NOT A BILL ****

***** Transfer Tax *****

Transfer Tax #: 833

Transfer Tax

Consideration: 0.00

Total: 0.00

Record and Return To:

SLATER LAW FIRM
26 MISSISSIPPI ST
SUITE 400
BUFFALO NY 14203

WARNING***

** Information may change during the verification
process and may not be reflected on this page.

Wayne F. Jagow
Niagara County Clerk

**ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36
OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW**

THIS INDENTURE made this 4th day of September, 2014, between Owner **Rock One Development, LLC**, having an office at 10151 Main Street, Clarence, NY 14031, County of Erie, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 600 River Road in the City of North Tonawanda, County of Niagara and State of New York, known and designated on the tax map of the County Clerk of Niagara as tax map parcel numbers: Section 181.16 Block 1 Lot 21.13, being the same as that property conveyed to Grantor by deed dated May 17, 2012 and recorded in the Niagara County Clerk's Office in Liber 2012 Page 10425. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 6.02 +/- acres, and is hereinafter more fully described in the Land Title Survey dated April 18, 2013 and revised on July 9, 2014 prepared by William J. Tucker II PLS of Clear Creek Land Surveying, LLC which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

ORIGINAL FILED

SEP 15 2014

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C915271, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

- A. (1) The Controlled Property may be used for: Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv);
- (2) All Engineering Controls, if applicable, must be operated and maintained as specified in the Site Management Plan (SMP);
- (3) All Engineering Controls, if applicable, must be inspected at a frequency and in a manner defined in the SMP;
- (4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Niagara 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;
- (5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;
- (6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- (7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) 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 Environmental Easement.

B. The Controlled Property shall not be used for raising livestock or producing animal products for human consumption, and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

- (1) The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3);
- (2) The owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;
- (3) Nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;
- (4) The report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;
- (5) To the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and
- (6) The information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C932161
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Rock One Development, LLC:

By: Lucian Visone

Lucian Visone, President

Date: 7/14/14

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Erie)

On the 14 day of July, in the year 2014, before me, the undersigned, personally appeared Lucian Visone, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Karen A. Lipuma
Notary Public - State of New York

KAREN A. LIPUMA
Notary Public, State of New York
Registration #0116084831
Qualified in Erie County
My Comm Expires December 2014

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By:



Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 4th day of September, in the year 2014, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.



Notary Public - State of New York

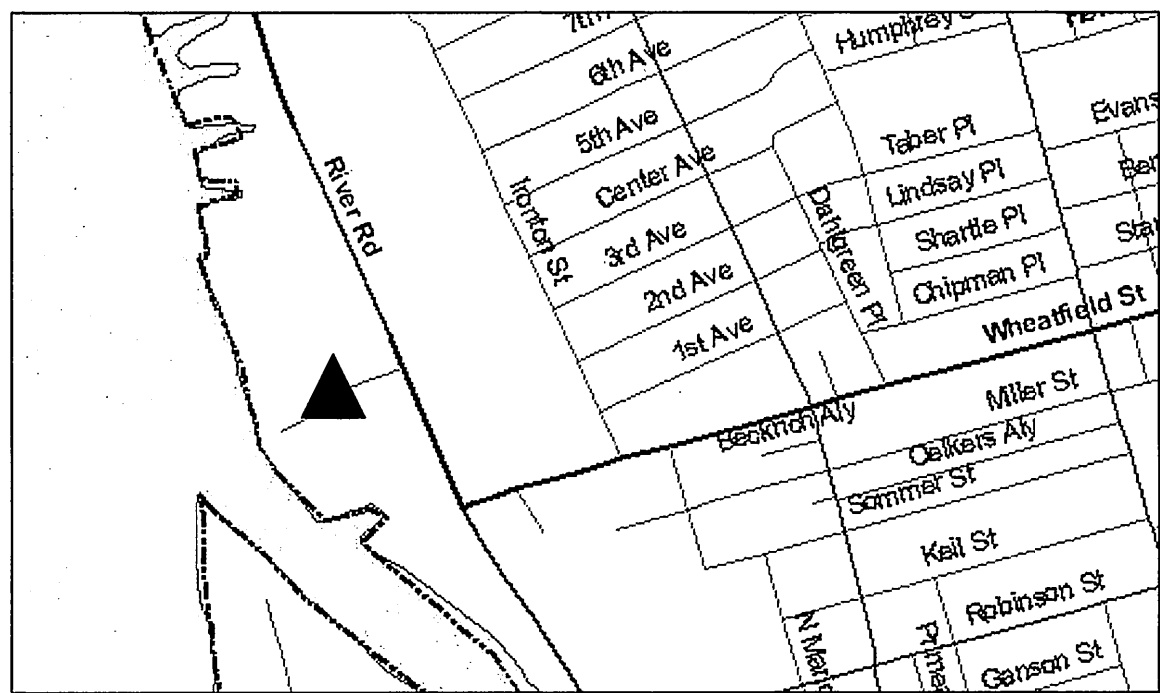
David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

Environmental Easement Description
For 600 River Road Site
BCP Site No. C932161

ALL THAT TRACT OR PARCEL OF LAND, situate in the city of North Tonawanda, County of Niagara and State of New York being part of Lot 75 of the Mile Reserve, bounded and described as follows:

BEGINNING at a point in the west line of River Road as now laid out, distant southerly 1087.84 feet from the north line of premises conveyed by deed recorded in the Niagara County Clerk's Office in Liber 1653 of Deeds at page 224; thence southerly along the westerly line of River Road, $24^{\circ} 18' 46''$ East, 134.50 feet to an angle point therein; thence along the westerly line of River Road, South $23^{\circ} 13' 50''$ East, a distance of 100.50 feet to a point; thence South $66^{\circ} 3' 45''$ West, a distance of 429.10 feet to a point; thence South $23^{\circ} 13' 50''$ East, a distance of 220.83 feet to a point; thence South $59^{\circ} 55' 51''$ West, a distance of 308.57 feet to a point; thence North $53^{\circ} 19'$ West, a distance of 111.78 feet to a point; thence North $15^{\circ} 14' 50''$ West, a distance of 395.90 feet to a point; thence North $66^{\circ} 3' 46''$ East, a distance of 734.01 feet to the westerly line of River Road being the point or place of beginning.

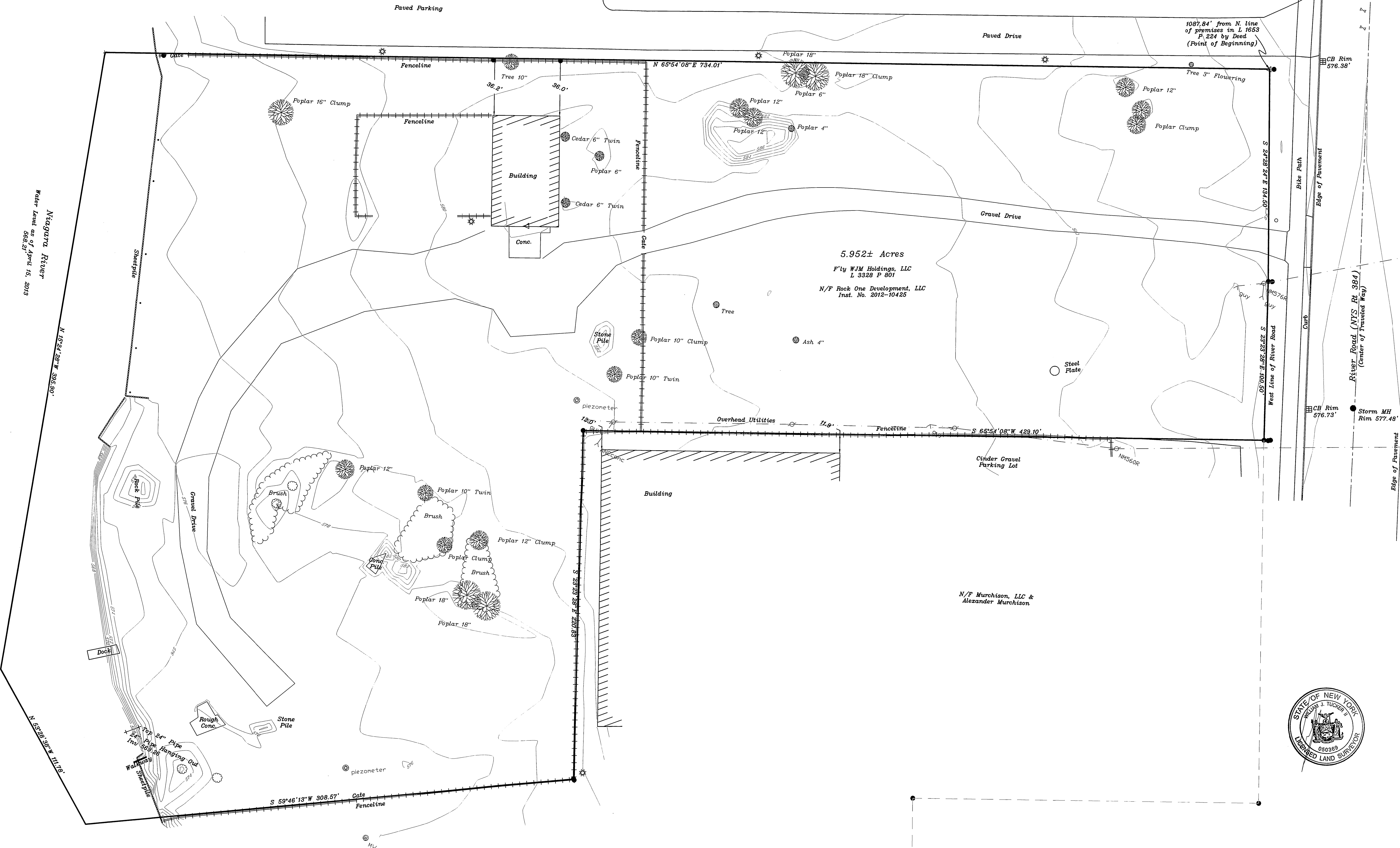


Site Location Map
Not To Scale

RECORD LEGAL DESCRIPTION FOR 600 RIVER ROAD
ALL THAT TRACT OR PARCEL OF LAND situate in the City of North Tonawanda, County of Niagara, State of New York, being part of Lot 75 of the Mile Reserve, bounded and described as follows:
Beginning at a point in the west line of River Road, as now laid out, distant southerly 1087.84 feet from the north line of premises conveyed by deed recorded in the Niagara County Clerk's office in Liber 1653 of Deeds at Page 224. Thence southerly along the westerly line of River Road 24°18'46" East a distance of 134.50 feet to an angle point therein; Thence along the westerly line of River Road, South 23°13'50" East a distance of 100.50 feet to a point; Thence South 66°03'46" West a distance of 429.10 feet to a point; Thence South 23°13'50" East a distance of 220.83 feet to a point; Thence South 59°55'51" West a distance of 308.57 feet to a point; Thence North 53°19' West a distance of 111.78 feet to a point; Thence North 15°14'50" West a distance of 395.90 feet to a point; Thence North 66°03'46" East a distance of 734.01 feet to the westerly line of River Road being the point or place of beginning.

**ENVIRONMENTAL EASEMENT DESCRIPTION FOR 600 RIVER ROAD
BASED ON RECORD LEGAL DESCRIPTION**
ALL THAT TRACT OR PARCEL OF LAND situate in the City of North Tonawanda, County of Niagara, State of New York, being part of Lot 75 of the Mile Reserve, bounded and described as follows:
Beginning at a point in the west line of River Road, as now laid out, distant southerly 1087.84 feet from the north line of premises conveyed by deed recorded in the Niagara County Clerk's office in Liber 1653 of Deeds at Page 224. Thence southerly along the westerly line of River Road 24°18'46" East a distance of 134.50 feet to an angle point therein; Thence along the westerly line of River Road, South 23°13'50" East a distance of 100.50 feet to a point; Thence South 66°03'46" West a distance of 429.10 feet to a point; Thence South 23°13'50" East a distance of 220.83 feet to a point; Thence South 59°55'51" West a distance of 308.57 feet to a point; Thence North 53°19' West a distance of 111.78 feet to a point; Thence North 15°14'50" West a distance of 395.90 feet to a point; Thence North 66°03'46" East a distance of 734.01 feet to the westerly line of River Road being the point or place of beginning.

N/F Wellness Partners 624, LLC
Inst. No. 2010-02423



General Notes

Legend

- Found Pipe
- Found Rebar
- Railroad Spike
- Street Sign
- Water Valve
- Gas Valve
- Tall Light Pole
- Tree
- Sanitary Sewer Manhole
- Storm Manhole
- Catchbasin
- Fire Hydrant
- Guy Wire Anchor
- Utility Pole
- Steel Post
- Bollard

Notes:

This survey was prepared for Lou Visone.

This map of survey dated April 18, 2013, was prepared from an instrument survey, with field work completed on April 15, 2013.

This survey was prepared for the parties and purpose indicated hereon. Any extension of the use beyond the purpose agreed to, exceeds the scope of the engagement.

It is a violation of New York State Education Law for any person, unless acting under the direction of a licensed surveyor, to alter in any way.

Only copies of this survey marked with an original signature and an original embossed or ink seal are the product of the land surveyor.

This plan NOT valid with an Affidavit of No Change.

This survey was prepared without the benefit of an up to date abstract of title and is subject to any state of facts revealed by an examination of such.

Lands on this survey are based on the references as indicated and a survey map prepared by Kenneth D. Witschi dated January 10, 2012.

Distance shown are deduced and measured, unless otherwise indicated.

Elevations are referenced to NAVD83 by GPS Observation.

Symbols are graphical representations and not to scale.

Only visible utility services and/or encumbrances were located and shown.

Remove not the ancient landmark, which thy fathers have set. Prov. 22:28
Cursed be he that removeth his neighbor's landmark. And the people shall say Amen. Deuteronomy 27:17

Survey by William J. Tucker, II PLS #50369
Clear Creek Land Surveying, L.L.C.
P.O. Box 435, Springville, NY 14141
Phone 716-592-5800 Fax 716-592-5566

2014-07-09 Added Legal Descriptions and Site Map

Project
13-012 Visone

Date
April 18, 2013

Scale
1"=30'

Firm Name and Address
Clear Creek Land Surveying, LLC
PO Box 435
Springville, NY 14141
ph. 716-592-5800
fax 716-592-5566

Project Name and Address
Lands Surveyed:
Boundary & Topographical
Survey of #600 River Road
Part of Lot 75 Mile Reserve
City of North Tonawanda
Niagara County
State of New York

GRAPHIC SCALE
1 inch = 30 ft.

APPENDIX D

TEST PIT AND MONITORING WELL BORING/CONSTRUCTION LOGS

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-01		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1	01A		- Sandy silt topsoil
2			- Fill, gravel, stone. 2-in pipe. Orange and seam observed at 1.5bgs
3			
4	01B		
5			
6			
7			- Grey and blue, slag and cinder.
8			
9			
10			Ended test trench @ 10 ft. bgs due to hard slag
11			
12			

COMMENTS: Size of Test Pit: 10'D x 3'W x 9'L
 Surface and Subsurface Soil samples were taken at this location (0-0.5' and 3.25-3.75' bgs)
 MS/MSD samples also taken at this location
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-02	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			- Sandy silt and gravel fill with some brick
3			
4			- Grey/blue slag and cinder
5			
6			
7			
8			- Sandy silt. Wet at bottom with traces of silty clay.
9			
10			Ended test trench @ 10 ft. bgs
11			
12			

COMMENTS: Size of Test Pit: 10'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-03		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			- Dark sandy silt and gravel fill
3			
4			- Grey/blue slag and cinder with some reddish sandy cinders and slag
5			
6			
7			
8			- Sandy silt. Wet at bottom with traces of silty clay.
9			
10			Ended test trench @ 9 ft. bgs
11			
12			

COMMENTS: Size of Test Pit: 9'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-04		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Dark brown sandy silt topsoil
2			- Dark sandy silt fill with some gravel
3			
4			
5			- Grey/blue slag and cinder
6			
7			
8			
9			- Dark to very dark brown silty clay; moist to wet at 9ft bgs
10			Ended test trench @ 10 ft. bgs due to perched water
11			
12			

COMMENTS: Size of Test Pit: 10'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-05		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Dark brown sandy silt topsoil
2			- Grey slag and cinder
3			
4			Ended test trench @ 4 ft. bgs due to hard slag
5			
6			
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 4'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-06		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
1	06B		- Dark brown sandy silt fill with some black and reddish cherty cinder/ash material and some gravel
2			
3			
4			
5			
6			- Grey and blue, slag and cinder. Layer is wet to very wet from 8ft bgs.
7			
8			
9			
10			Ended test trench @ 10 ft. bgs
11			
12			

COMMENTS: Size of Test Pit: 10'D x 3'W x 9'L
 Suburface Soil samples were taken at this location (1.5' bgs)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-07		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			- Dark brown sandy silt and gravel fill
3			
4			
5			
6			- Grey and blue, slag and cinder. Layer is wet to very wet from 8ft bgs.
7			
8			
9			
10			Ended test trench @ 9 ft. bgs
11			
12			

COMMENTS: Size of Test Pit: 9'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-08		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
	08A		- Sandy silt topsoil
1			- Dark brown sandy silt, stone and gravel fill with rail road ties
	08B		
2			
3			
4			
5			- Grey and blue, slag and cinder with some stone.
6			
7			
8			Ended test trench @ 8 ft. bgs
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 8'D x 3'W x 9'L
 Surface and Subsurface Soil samples were taken at this location (0-0.5' and 1.5' bgs)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-09		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			
3			- Dark brown/black, sand to sandy silt
4			
5			
6			- Grey and blue, slag and cinder with some red brick and red slag.
7			
8			Ended test trench @ 7 ft. bgs
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 7'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-10		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1	10A		- Sandy silt topsoil
2			- Dark brown sandy silt with stone
3			
4	10B		
5			- Grey and blue and red, slag and cinder.
6			
7			Ended test trench @ 7 ft. bgs
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 7'D x 3'W x 9'L
 Surface and Subsurface Soil samples were taken at this location (0-0.5' and 3.25-3.75' bgs)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-11		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			
3			- Dark brown/black sand to sandy silt
4			
5			
6			- Grey and blue, slag and cinder with some red brick and red slag.
7			
8			Ended test trench @ 7 ft. bgs
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 7'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-12		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with gravel - stained (oily)
2			
3			- Dark brown sandy silt with gravel and stone
4			
5			- Grey and blue, slag and cinder with some red.
6			Ended test trench @ 5 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 5'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 of 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-13	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			- Brown sandy silt with stone and a slab of blacktop
3			
4	13B		- C&D debris including brick, stone, concrete and metal. Some black/red sand and cinder.
5			
6			
7			Ended test trench @ 7 ft. bgs due to hard slag
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 7'D x 3'W x 9'L
 Subsurface Soil samples were taken at this location (4.5' bgs - within black/red material)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-14	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with some gravel
2			
3			- Dark brown sandy silt with stone, brick and concrete (large cylinder of concrete)
4			
5			
6	14B		- Dark reddish brown sandy silt
7			
8			- Grey/blue slag and cinder
9			
10			Ended test trench @ 9 ft. bgs
11			
12			

COMMENTS: Size of Test Pit: 9'D x 3'W x 9'L
 Subsurface Soil samples were taken at this location (5-6.5' bgs - within reddish-brown sandy silt)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-15	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil
2			- Sandy silt with small amounts of slag
3	15B		- Hard reddish-black sandy cinder and slag with silver specs
4			
5			- Clayey silt
6			Ended test trench @ 6 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 6'D x 3'W x 9'L
 Subsurface Soil samples were taken at this location (2.5-3' bgs - within reddish-black sand)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-16	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
	16A		- Sandy silt topsoil
1			
2			- Fill, gravel, stone. 2-in pipe. Orange and seam observed at 1.5bgs
3			
4	16B		- Grey and blue with some red slag and cinder.
5			Ended test trench @ 4.5 ft. bgs due to hard slag
6			
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 4.5'D x 3'W x 9'L
 Surface and Subsurface Soil samples were taken at this location (3-4.5' bgs within the grey and reddish slag/cinder)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-17	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with some coarse gravel
2			- Brown sandy silt with gravel and stone
3			- Grey slag
4			- C&D debris including brick, large stones.
5			
6			Ended test trench @ 5.5 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 5.5'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-18	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with some gravel
2			
3			- Dark brown sandy silt with coarse stone
4			
5	18B		- Silty clay - moist to wet.
6			Ended test trench @ 5.5 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 5.5'D x 3'W x 9'L
 Subsurface Soil samples were taken at this location (4.75-5.25' bgs)
 PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development	JOB NUMBER: BCP#932161	
CONTRACTOR: Panamerican Environmental, Inc.	LOCATION: 600 River Rd, North Tonawanda	
DATE STARTED: June 20, 2013	GROUND ELEVATION: N/A	
DATE COMPLETED: June 20, 2013	OPERATOR: Lou Visone	
PIT NUMBER: 600 RR TP-19	GEOLOGIST: Peter J. Gorton	
	GROUND WATER: N/A	

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with some gravel
2			
3			- Dark brown sandy silt with coarse stone
4			
5			- Silty clay - moist to wet.
6			Ended test trench @ 5.5 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 5.5'D x 3'W x 9'L
PID "real time" samples at background

TEST PIT LOG

PROJECT: 600 River Road Apartments - BCP#932161		SHEET: 1 OF 1
CLIENT: Rock One Development		JOB NUMBER: BCP#932161
CONTRACTOR: Panamerican Environmental, Inc.		LOCATION: 600 River Rd, North Tonawanda
DATE STARTED: June 20, 2013		GROUND ELEVATION: N/A
DATE COMPLETED: June 20, 2013		OPERATOR: Lou Visone
PIT NUMBER: 600 RR TP-20		GEOLOGIST: Peter J. Gorton
		GROUND WATER: N/A

DEPTH (FT)	SAMPLE		DESCRIPTION
	NO.	TYPE	
1			- Sandy silt topsoil with some gravel
2			- Dark brown sandy silt
3	20B		
4			- Silty clay
5			
6			Ended test trench @ 6 ft. bgs
7			
8			
9			
10			
11			
12			

COMMENTS: Size of Test Pit: 6.0'D x 3'W x 9'L
 Subsurface Soil samples were taken at this location (2.5-3' bgs)
 PID "real time" samples at background

Panamerican Environmental, Inc. 600 River Road, North Tonawanda, NY				
Well Number	MW1	MW2	MW3	MW4
Total Depth	15.7	19.5	16.39	22.59
Depth to Water	7.71	7.33	8.58	5.03
Water Column	7.99	12.17	7.81	17.56
Well Diameter	2"	2"	2"	2"
Well Volume	1.35	2.06	1.32	2.98
Volume Removed	4.5	6.5	4.5	10

NOTES:

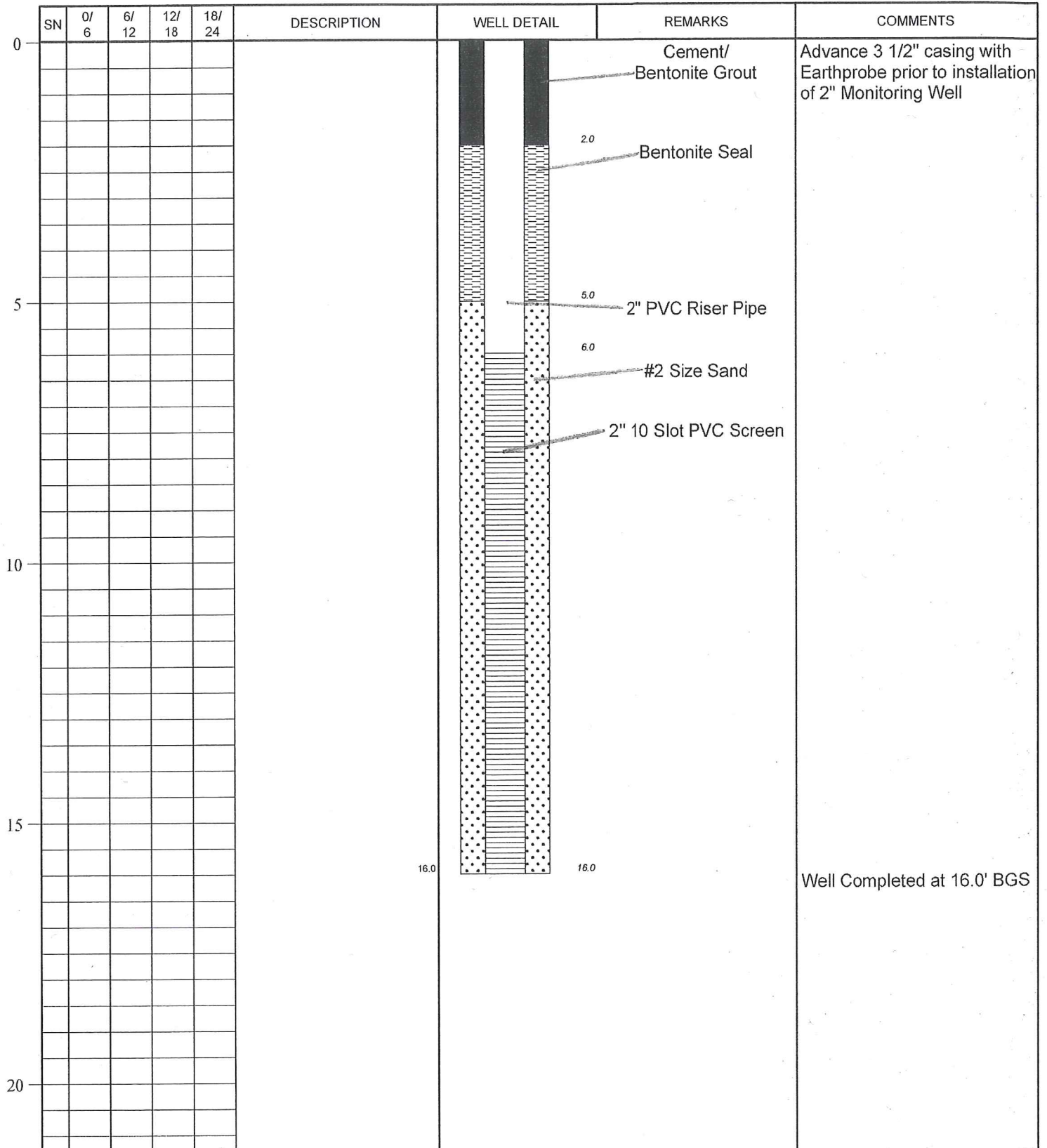
Well Number	Well Volume	PH	Temp. °C	Conductivity	Turbidity
MW 1	1	8.36	15.3°	927	
	2	8.48	14.7°	827	
	3	8.66	14.6°	772	
	Observations Very Cloudy, dark brown with suspended silt				
MW 2	1	8.82	16.8°	622	
	2	9.08	16.9°	527	
	3	9.06	17.1°	513	
	Observations Very Cloudy, dark brown with suspended silt				
MW 3	1	9.12	15.5°	1153	
	2	9.21	15.7°	1092	
	3	9.16	15.7°	1073	
	Observations Very Cloudy, dark gray, silty				
MW 4	1	7.03	15.1°	860	378.9
	2	7.04	14.2°	888	91.14
	3	7.1	14.0°	892	79.78
	Observations Cloudy, light brown				

HOLE NUMBER: MW 1

Monitoring Well Installation at

600 River Road, North Tonawanda, NY

Panamerican Environmental, Inc.



PAGE 1 of 1

HOLE NUMBER: MW 2

CLIENT: Panamerican Environmental, Inc.

SN	0/6	6/12	12/18	18/24	DESCRIPTION	WELL DETAIL	REMARKS	COMMENTS
0								Drill without sampling 4 1/4" HSA
5								
10								
15								
19.5						19.5		Well Completed at 19.5' BGS
20								

HOLE NUMBER: MW 3

CLIENT: Panamerican Environmental, Inc.

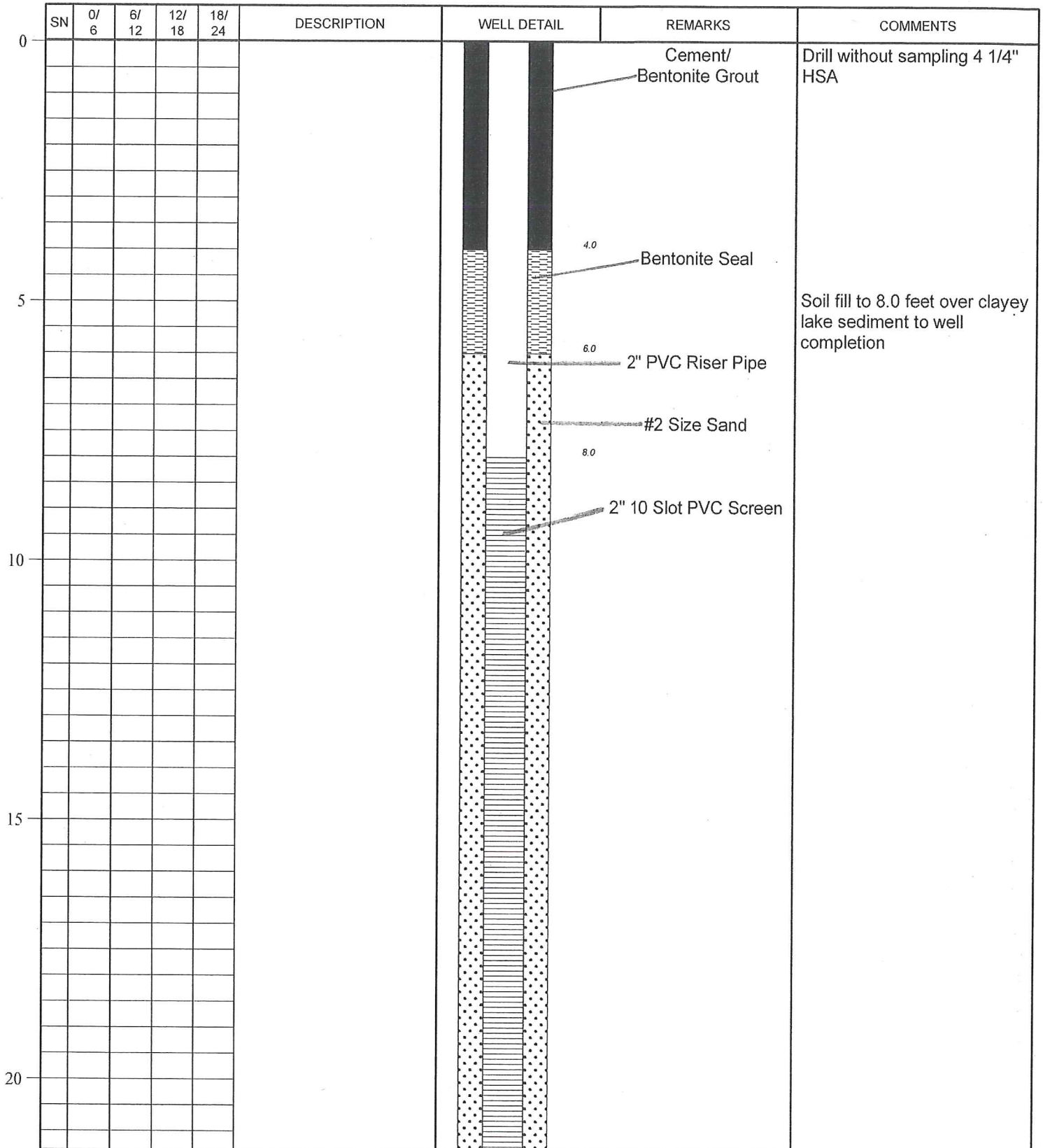
SN	0/6	6/12	12/18	18/24	DESCRIPTION	WELL DETAIL	REMARKS	COMMENTS
0								Drill without sampling 4 1/4" HSA
5								
10								
15								
18.0								Well Completed at 18.0' BGS
20								

HOLE NUMBER: MW 4

Monitoring Well Installation at

600 River Road, North Tonawanda, NY

Panamerican Environmental, Inc.



LOGGED BY: Dale M. Gramza / Senior Geologist

PAGE 1 of 2

HOLE NUMBER: MW 4

Monitoring Well Installation at

600 River Road, North Tonawanda, NY

Panamerican Environmental, Inc.

[illegible]

Client: Panamerican
Location: 600 River Road Tonawanda NY

Date: 10/22/2013
Groundwater Monitoring Event

Paradigm Environmental
GROUND-WATER SAMPLING LOG

Sampling Personnel: Craig Stiles & Pete Gorton

Well ID: MW-1

Weather: MOSTLY SUNNY; MODERATE WNW WIND; 45-50°F

Time In: Time Out:

WELL INFORMATION

(record from top of inner casing at minimum)

	TIC	TOC	BGS
Well Depth (feet) (inches)	18.00'		
Water Table Depth (feet) (inches)	11.0'		

check where appropriate

Well Type: Flushmount ☐ Stick-Up ☒
Well Locked: Yes ☐ No ☒
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: _____

WELL WATER INFORMATION

Length of Water Column: (feet) (inches)	7.0'
Volume of Water in Well: (gal)	1.14 - GAL
Pumping Rate of Pump: (mL/min)	
Pumping Rate of Pump: (GPM)	
Minutes of Pumping:	
Total Volume Removed: (gal)	

Casing in inches	Gallons/foot	Casing in inches	Gallons/foot
1	0.041	7	1.999
2	0.163	8	2.611
3	0.367	9	3.305
4	0.653	10	4.08
5	1.02	11	4.934
6	1.469	12	5.875

EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Tubing Used: New Dedicated ☒ Deconned ☐
Sampling Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Did well go dry? Yes ☐ No ☒

Water Quality Meter Type: _____

Time	1 1047	2 1105	3 1253	4	5	6	7	8	9
Parameter	Initial		SAMPLE						
Volume Purged (gal)		3.5							
Depth to Water (ft. TIC)	11.0'	~17.0'							
pH		8.05	7.87						
Conductance (mS/cm)		0.76	0.82						
Turbidity (NTUs)		685	56.1						
DO (mg/L)		4.53	4.27						
Temp (°C)		13.6	13.9						
ORP (mV)		129.0	139.3						

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE NEGATIVE FOR FREE Cl@ 1257

Client: Panamerican
Location: 600 River Road Tonawanda NY

Date: 10/22/2013
Groundwater Monitoring Event

Paradigm Environmental
GROUND-WATER SAMPLING LOG

Sampling Personnel: Craig Stiles & Pete Gorton

Well ID: MW-2

Weather: MOSTLY SUNNY; MODERATE WNW WIND; 45-50°F

Time In: Time Out:

WELL INFORMATION

(record from top of inner casing at minimum)

	TIC	TOC	BGS
Well Depth (Feet) (inches)	19.50'		
Water Table Depth (Feet) (inches)	9.85'		

check where appropriate

Well Type: Flushmount ☐ Stick-Up ☒
Well Locked: Yes ☐ No ☒
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: _____

WELL WATER INFORMATION

Length of Water Column: (Feet) (inches)	9.65'
Volume of Water in Well: (gal)	1.57-GAL
Pumping Rate of Pump: (mL/min)	
Pumping Rate of Pump: (GPM)	
Minutes of Pumping:	
Total Volume Removed: (gal)	

Casing in inches	Gallons/foot	Casing in inches	Gallons/foot
1	0.041	7	1.999
2	0.163	8	2.611
3	0.367	9	3.305
4	0.653	10	4.08
5	1.02	11	4.934
6	1.469	12	5.875

EVACUATION INFORMATION

Evacuation Method:

Bailer ☒

Peristaltic ☐

Other Pump ☐

Tubing Used:

New-Dedicated ☒

Deconned ☐

Sampling Method

Bailer ☒

Peristaltic ☐

Other Pump ☐

Did well go dry?

Yes ☐

No ☒

Water Quality Meter Type: _____

Time	1	2	3	4	5	6	7	8	9
Parameter	Initial		SAMPLE						
Volume Purged (gal)		5.0'							
Depth to Water (ft. TIC)	9.85'	~14'							
pH		8.36	8.40						
Conductance (mS/cm)		0.67	0.478						
Turbidity NTUs		>2000	1954						
DO (mg/L)		1.34	3.01						
Temp (°C)		15.0	15.5						
ORP (mV)		76.3	58.3						

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE NEGATIVE FOR FREE Cl @ 1330

Client: Panamerican
Location: 600 River Road Tonawanda NY

Date: 10/22/2013
Groundwater Monitoring Event

Paradigm Environmental
GROUND-WATER SAMPLING LOG

Sampling Personnel: Craig Stiles & Pete Gorton

Well ID: MW3

Weather: MOSTLY SUNNY, MODERATE WNW WIND; 45-50°F

Time In: Time Out:

WELL INFORMATION

(record from top of inner casing at minimum)

	TIC	TOC	BGS
Well Depth (feet) (inches)	18.35'		
Water Table Depth (feet) (inches)	11.2'		

check where appropriate

Well Type: Flushmount ☐ Stick-Up ☒
Well Locked: Yes ☐ No ☒
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: _____

WELL WATER INFORMATION

Length of Water Column: (feet) (inches)	7.15'
Volume of Water in Well: (gal)	1.16'
Pumping Rate of Pump: (mL/min)	
Pumping Rate of Pump: (GPM)	
Minutes of Pumping:	
Total Volume Removed: (gal)	

Casing in inches	Gallons/foot	Casing in inches	Gallons/foot
1	0.041	7	1.999
2	0.163	8	2.611
3	0.367	9	3.305
4	0.653	10	4.08
5	1.02	11	4.934
6	1.469	12	5.875

EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Tubing Used: New-Dedicated ☒ Deconned ☐
Sampling Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Did well go dry? Yes ☐ No ☒

Water Quality Meter Type: _____

Time	1 1148	2 1205	3 1356	4	5	6	7	8	9
Parameter	Initial		SAMPLE						
Volume Purged (gal)		3.5							
Depth to Water (ft. TIC)	11.2'	14.5'							
pH		8.41	8.24						
Conductance (mS/cm)		1.14	1.11						
Turbidity NTUS		>2,000	1255						
DO (mg/L)		5.17	3.43						
Temp (°C)		14.7	14.0						
ORP (mV)		95.6	55.2						

MISCELLANEOUS OBSERVATIONS/PROBLEMS

Slight H₂S odor

SAMPLE NEGATIVE FOR FREE Cl @ 1405.

Client: Panamerican
Location: 600 River Road Tonawanda NY

Date: 10/22/2013
Groundwater Monitoring Event

Paradigm Environmental
GROUND-WATER SAMPLING LOG

Sampling Personnel: Craig Stiles & Pete Gorton

Well ID: MW4

Weather: MOSTLY SUNNY, MODERATE WNW WIND; 45-50°F

Time In: Time Out:

WELL INFORMATION

(record from top of inner casing at minimum)

	TIC	TOC	BGS
Well Depth (feet) (inches)	25.2'		
Water Table Depth (feet) (inches)	7.67'		

check where appropriate

Well Type: Flushmount ☐ Stick-Up ☒
Well Locked: Yes ☐ No ☒
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

WELL WATER INFORMATION

Length of Water Column: (feet) (inches)	17.53'
Volume of Water in Well: (gal)	2.4 GAL
Pumping Rate of Pump: (mL/min)	
Pumping Rate of Pump: (GPM)	
Minutes of Pumping:	
Total Volume Removed: (gal)	

Casing in inches	Gallons/foot	Casing in inches	Gallons/foot
1	0.041	7	1.999
2	0.163	8	2.611
3	0.367	9	3.305
4	0.653	10	4.08
5	1.02	11	4.934
6	1.469	12	5.875

EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Tubing Used: New-Dedicated ☒ Deconned ☐
Sampling Method: Bailer ☒ Peristaltic ☐ Other Pump ☐
Did well go dry? Yes ☐ No ☒

Water Quality Meter Type:

Time	1 1000	2 1028	3 1221	4	5	6	7	8	9
Parameter	Initial		SAMPLE						
Volume Purged (gal)		8.7							
Depth to Water (ft. TIC)	7.67	~19'							
pH		6.81	7.10						
Conductance (mS/cm)		0.93	0.70						
Turbidity NTUs		>2.23	28.7						
DO (mg/L)		4.63	6.25						
Temp (°C)		11.6	13.7						
ORP (mV)		263.9	168.2						

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE NEGATIVE FOR FREE Cl @ 1226
Slight H₂S odor

APPENDIX E

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN

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FIELD SAMPLING PLAN (SOIL AND WATER)

1.0 INTRODUCTION

This Field Sampling Plan (FSP) is designed to provide procedures for the field activities outlined in the SMP and/or work plan where soil and groundwater investigation/sampling may be required. It will serve as the field procedures manual to be strictly followed by all personnel. Adherence to these procedures will ensure the quality and usability of the field data collected. In addition to the field procedures outlined in this document, all personnel performing field activities must comply with:

- The appropriate Health and Safety guidelines found in the Health and Safety Plan (HASP) Appendix G;
- The Quality Assurance/Quality Control measures outlined in Appendix F; and
- The scope of work outlined in a specific work plan required under the SMP.

2.0 SOIL SAMPLING/INVESTIGATIONS

2.1 Soil Sampling

This section discusses the procedures for collecting an aliquot of sample for chemical analysis. Soil samples will be obtained as outlined in the Work Plan. The detailed procedure is outlined below:

1. Inspect test pit and/or boring core stratigraphy, sample soil and records depth interval. Record any physical characteristics (e.g., obvious contamination, odor, or discoloration) in the field logbook. Simultaneously place the probe of a calibrated PID into the exposed soil. Record the instrument readings in the field logbook.
2. Samples are to be collected at locations and frequency as discussed in the Work Plan and the Appendix C QA/QC Plan.
3. If not dedicated, decontaminate sampling implements after use and between sample locations (in most cases dedicated sampling equipment will be used).
4. Record field sampling information in the field logbook. Label each sample container with the appropriate sample identification data and place sample in a cooler (cooled to 4 degrees C.) for shipment to the laboratory.
5. Initiate chain-of-custody procedures.

2.1.1 Test Pit Procedures

Summary

Test pit sampling is a standard method of soil sampling to obtain representative samples for identification as well as to serve as a means of obtaining a large amount of information about the subsurface.

The following steps describe the procedures for test pit operations.

Field Preparation

1. Verify underground utilities have been found.
2. Review scope of work, safety procedures and communication signals with all site personnel. Identify local suppliers of sampling expendable and overnight delivery services. Pre-clean the sampling equipment prior to use, as necessary.
3. Mark/review trench locations. The specific locations will be determined in the field. Trench locations will be selected based on several factors, including areas of visible potential surface contamination/debris, pre-determined locations to examine representative areas across the site, and vegetative obstructions.
4. After completing each trench and sampling (as described above), subsurface soil will be backfilled. Backfilling will occur in the order in which the soil was removed. The backhoe will then be decontaminated over the test pit. The pit will then be filled in with clean overburden/topsoil and/or the fill that was previously on the surface, as available.

Excavation and Sample Collection

1. Maneuver the backhoe into position
2. Commence excavation with the backhoe positioned upwind of the excavation. Conduct continuous air monitoring with appropriate air monitoring equipment. Screen the soil for volatile organic compounds as it is placed on the soil pile.
3. Test trenching will be carried out in the following manner and as directed by PEI's site representative:
 - For each test trench, topsoil and/or cover soil (if any) will be excavated and placed on plastic sheeting.
 - Soil/fill below the topsoil will be excavated to the depth directed by PEI's site representative and placed on plastic sheeting separate from the topsoil/cover soil.
 - At completion of excavation all equipment in contact with the soil/fill will be steam cleaned over the trench after backfilling.
 - All trenches will be backfilled with indigenous soil in the order in which the material was removed with the topsoil/cover soil placed last to cover the trench.
4. A geologic log will be recorded as each trench is excavated. Upon completing the excavation of the pit, visually inspect the horizons of the soil for discoloration or staining and photo document the pit. The following information will be recorded for each test pit on the Test Pit Log:
 - The total depth, length, and width of the excavation.
 - The depth and thickness of distinct soil or lithologic units.
 - A lithologic description of each unit.
 - A description of any man-made materials or apparent contamination.
 - Elevation of incoming water, if encountered.
 - Depth to groundwater and/or bedrock.
 - Using dedicated stainless steel spoons collect soil samples as detailed in Section 2.1. Soil samples will be collected directly from the bucket of the backhoe.

The backhoe will collect a sample from a specific soil horizon and bring the sample back to the ground surface. **No personnel shall enter the excavation to collect samples unless a confined permit has been obtained.** Each soil sample will be placed directly into appropriate sample bottles/jars.

5. Carefully and clearly label the sample bottles and jars with the appropriate bottle label.
6. Place each jar in an ice-filled cooler.
7. Use the chain-of-custody form to document the types and numbers of test pit samples collected and logged.
8. Record the time and date of sample collection as well as a description of the sample and any associated air monitoring measurements in the field logbook.
9. All excavated soil will be returned to the trench following completion of excavation activities at each individual trench location. Each test pit will be backfilled and compacted prior to moving to the next. During the test pit operations an attempt will be made to segregate clean from dirty soil using visual observations and PID screening. When the test pit is being filled, if dirty soil was encountered, it will be placed in the bottom of the pit and covered with clean soil.
10. Decontamination sampling equipment-Decontaminate backhoe bucket prior to commencing and between locations.

Post Operations

1. Organize field notes. All relevant information recorded in the field logbook and the Test Pit Log.
2. All samples should be shipped to the laboratory as soon as possible, but no more than 24 hours after being collected.

2.1.2 Geoprobe Drilling Program

Soil sampling may also be conducted using Geoprobe drilling methods.

Macro Core Drilling Procedures:

Summary

Geoprobe Macro Core direct push sampling is a standard method of soil sampling to obtain representative samples for identification as well as to serve as a means of obtaining a specific amount of information about the subsurface.

The following steps describe the procedures for Macro Core direct push drilling operations.

Field Preparation

1. Verify underground utilities have been found.

2. Review scope of work, safety procedures and communication signals with all site personnel. Identify local suppliers of sampling expendable and overnight delivery services. Pre-clean the sampling equipment prior to use, as necessary.
3. Mark/review boring locations. The specific locations will be determined in the field. Boring locations will be selected based on several factors, including areas of visible potential surface contamination, pre-determined locations to examine representative areas across the site, and vegetative obstructions.
4. After completing each boring hole, subsurface soil will be backfilled. The boring hole will then be filled in with spoils and/or clean sand, if any available.

Excavation and Sample Collection

1. Maneuver the Geoprobe rig into position.
2. Commence drilling with the Geoprobe rig positioned upwind of the excavation. Conduct continuous air monitoring with appropriate air monitoring equipment. Screen the soil for volatile organic compounds as it is placed in a staged area.
3. Geoprobe borings will be carried out in the following manor and as directed by PEI's site representative:
 1. Start up drill rig and raise mast.
 2. If there is pavement use star bit with rig in rotary setting to penetrate pavement.
 3. If you are setting a road box excavate a hole large enough to set the road box before you advance the borehole.
 4. Unthread the bottom of the sample tube and inset a new sample liner. Thread the shoe on the bottom of the sample tube.
 5. Thread the drive cap on the top of the sample tube.
 6. Align the sample tube so it is plumb in both directions. The will assure you drill a straight borehole. It is important to drill a straight borehole.
 7. Drive the top of the sample tube to ground surface.
 8. Unthread the drive cap and thread on the pull cap.
 9. Pull the sample tube from the ground. Use caution so as not to pinch your hand between the drill rods, pull cap or rig during any of these steps.
 10. With the sample tube from the ground unthread the cutting shoe and pull the sample liner from the sample tube. You may need to use needle nose pliers to reach in the sample tube and grab the liner. Cut the sample liner lengthwise in two places and take it to the client.
 11. Insert a new liner and thread on the cutting shoe.
 12. Align the sample tube so it is plumb in both directions. The will assure you drill a straight borehole. It is important to drill a straight borehole.
 13. Push the sample tube to ground surface and thread a four-foot long drill rod onto the top of the sample tube. Thread on the drive cap and drive the top of the drill rod to ground surface.
 14. Unthread the drive cap and thread on the pull cap.
 15. Pull the drill rod from the ground.

16. Remove the pull cap from the drill rod and thread it on the sample tube
 17. Pull the sample tube from the ground.
 18. Repeat step 14, 15, 16 and 17.
 19. After completing 17 add a second drill rod and drive it to ground surface. The borehole should now be 12 feet deep.
 20. This procedure is repeated until the desired depth or refusal is reached.
 21. For each Geoprobe boring, the sleeve/core will be placed on plastic sheeting.
 22. The soil stratigraphy will be excavated to the depth directed by PEI's site representative and placed on plastic sheeting.
 23. At completion of probe excavation all equipment in contact with the soil/fill will be cleaned in a decontamination area using Alconox and water.
 24. All probe holes will be backfilled with indigenous soil in the order in which the material was removed with the topsoil/sand/cover soil placed last to cover the hole.
4. A geologic log will be recorded as each borehole is excavated. Upon completing the excavation of the borehole, visually inspect the horizons of the soil for discoloration or staining and photo document the pit. The following information will be recorded for each boring on the Geoprobe Log:
 - The total depth, length, and width of the excavation.
 - The depth and thickness of distinct soil or lithologic units.
 - A lithologic description of each unit.
 - A description of any man-made materials or apparent contamination.
 - Elevation of incoming water, if encountered.
 - Depth to groundwater and/or bedrock.
 5. Using dedicated stainless steel spoons, collect soil samples as detailed in Section 2.1. Soil samples will be collected directly from the plastic sleeve of the probe core. Each soil sample will be placed directly into appropriate sample bottles/jars.
 6. Carefully and clearly label the sample bottles and jars with the appropriate bottle label. Place each jar in an ice-filled cooler.
 7. Use the chain-of-custody form to document the types and numbers of borehole samples collected and logged.
 8. Record the time and date of sample collection as well as a description of the sample and any associated air monitoring measurements in the field logbook.
 9. All excavated soil will be returned to the probe hole following completion of excavation activities at each individual trench location. Each probe hole will be backfilled and compacted prior to moving to the next.
 10. Decontamination sampling equipment - Decontaminate all rods, shoes, and other geoprobe tools prior to commencing and between locations.

Post Operations

1. Organize field notes. All relevant information recorded in the field logbook and the Boring Log.
2. All samples should be shipped to the laboratory as soon as possible, but no more than 24 hours after being collected.

Reference: American Society for Testing Material (ASTM), 1992, ASTM D1586-84, Standard Method for Penetration Test and Split Barrel Sampling of Soils.

3.0 GROUNDWATER INVESTIGATION

3.1 Monitoring Well Installation Procedures

Summary

The following procedure outlines a NYSDEC-approved method of constructing groundwater monitoring wells within unconsolidated material which enables monitoring of groundwater elevation and acquiring groundwater samples for laboratory testing. The open hole method means you simply place the well screen and riser inside the drilled borehole. For this method to be used the borehole must remain open to the required total depth of the well. Stick-up or road box will be installed at completion. The following is a step-by-step method for the open-hole method of installing a monitoring well.

Procedure

1. Thread a cap on the bottom section of well screen.
2. If more than one section of well screen is required, thread it to the bottom section
3. Having the riser section close at hand lower the screen into the borehole.
4. Add the riser sections to the screen. Do not drop the screen in the borehole.
5. Add riser sections as required until the bottom screen section touches the bottom of the borehole.
6. If completing the well with a road box, mark the riser so it will be two inches below the lid of the road box and then cut the riser.
7. Place a slip cap over the top of the rise section.
8. Place sand in the space between the borehole and the PVC screen and riser to the depth the inspector request. Place the sand in very slowly so it does not bridge in the well bore.
9. Place bentonite and cement above the sand-pack.
10. Grout in the road box with concrete mix.

3.2 Well Development Procedures

Summary

Following completion of drilling and well installation, and no sooner than 24 hours after installation, each well will be developed by a surge block method followed by pumping or bailing until the discharged water is relatively sediment free and the indicator parameters (pH, temperature, and specific conductivity) have reached steady-state. Developing the well not only removes any sediment, but may improve the hydraulic properties of the sand pack. Well development water will be placed on the ground surface downgradient of the well.

The effectiveness of the development measures will be closely monitored in order to keep the volume of discharged waters to the minimum necessary to obtain sediment-free samples. Steady-state pH, temperature, and specific conductivity readings will be used as a guide for discontinuing well development.

Procedure

- 1) An appropriate well development method should be selected, depending on water level depth, well productivity, and sediment content of the water. Well development options include: (a) bailing; (b) manual pumping; and (c) submersible pumps. Any of these options may be exercised in concert with surging of the well screen using an appropriately sized surge block.
- 2) Equipment should be assembled, decontaminated, if necessary, and installed in the monitoring well. Care should be taken not to introduce contaminants to the equipment during installation.
- 3) Well development should proceed by repeated removal of water from the well until the discharged water is relatively sediment-free. Volume of water removed, pH and conductivity measurements, are recorded on the Well Development/Purging Logs.
- 4) Well development will occur no sooner than 24 hours after installation. Well development will continue until readings of <50 NTUs are obtained.

3.3 Groundwater Well Purging/Sampling

Summary

To collect representative groundwater samples, groundwater wells must be adequately purged to sampling. Purging will require removing three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rates. Sampling should commence as soon as adequate recharge has occurred.

The wells will be sampled following procedures found in Section 3.5. The samples will be labeled and shipped following procedures outlined in Sections 6.0 and 7.0 and analyzed according to the program outlined in the QA/QC Plan (Appendix C).

3.4 Well Purging Procedures

Procedure

- 1) The well cover will be carefully removed to avoid any foreign material enter the well. The interior of the riser pipe will be monitored for organic vapors using a PID. If reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before pumping is started.

- 2) Using an electronic water level indicator, the water level below top of casing will be measured. Knowing the total depth of the well, it will be possible to determine the volume of water in the well. The end of the probe will be washed with soap and rinsed with deionized-water between wells.
- 3) Dedicated new polyethylene discharge and intake tubing (½ inch diameter HDPE) will be used for each well. Evacuation of the well will be accomplished using bailers. Bailing will continue until the required volumes are removed. If the well purges to dryness and recharges rapidly (within 15 minutes), water will continue to be removed as it recharges until the required volumes are removed. If the well purges to dryness and is slow recharge (greater than 15 minutes), evacuation will be terminated.
- 4) Purging will continue until three volumes of water have been removed. Well volumes will be calculated. Measurements for pH, temperature, turbidity, and conductivity will be recorded during the purging along with physical observations.
- 5) Well purging data are to be recorded in the field notebook and on the Well Development/Purging Log.

3.5 Groundwater Sampling Procedures

Procedure

- 1) Well sampling may be performed on the same date as purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If a well does not contain or yield sufficient volume for all required laboratory analytical testing, then a decision will be made to prioritize analyses. If a well takes longer than 24 hours to recharge, then a decision will be made after consultation with NYSDEC whether the sample will be considered valid.
- 2) After well purging is complete and the well has recharged sufficiently per the previous item, a sample will be collected by use of bailers into appropriate containers.
- 3) All sample bottles will be labeled in the field using a waterproof permanent marker. Procedures outlined in Section 6.0 will be followed.
- 4) Samples will be collected into verifiably clean sample bottles (containing required preservatives) and placed on ice in coolers for transport to the analytical laboratory. Chain-of-custody will be initiated. The analytical laboratory will certify that the sample bottles are analyte-free.
- 5) A separate sample will be collected into a 120 milliliter (mL) plastic specimen cup to measure pH, conductivity, turbidity, and temperature off the well in the field.

- 6) Well sampling data are to be recorded in the field notebook and on the Well Development/Purging Log.

4.0 SAMPLE DOCUMENTATION-SOIL/WATER

Summary

Each subsurface test pit and boring core will be logged in a bound field notebook during drilling by the supervising geologist. Field notes will include descriptions of subsurface material encountered during test pit and drilling, sample numbers and types of samples recovered from the test pits and wells. Additionally, the geologist will note time and material expenditures for later verification of contractor invoices.

Upon completion of daily drilling activities, the geologist will complete the Daily Drilling Record and initiate chain-of-custody on any samples recovered for geotechnical or chemical testing. Following completion of the drilling program, the geologist will transfer field logs onto standard boring log forms and well completion logs for the site investigation report.

5.0 SAMPLING CONTAINER SELECTION-SOIL/WATER

The selection of sample containers is based on both the media being sampled and the analysis of interest.

6.0 SAMPLE LABELING-SOIL/WATER

Summary

In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the procedures listed below will be followed:

Procedure: Affixed to each sample container will be a non-removable (when wet) label. The sample bottle will be wrapped with 2-inch cellophane tape. Apply label and wrap with tape to cover label. The following information will be written with permanent marker:

1. Site name
2. Sample identification
3. Project number
4. Date/time
5. Sampler's initials
6. Sample preservation
7. Analysis required
8. Site name
9. Sample identification

10. Project number
11. Date/time
12. Sampler's initials
13. Sample preservation
14. Analysis required

Each sample of each matrix will be assigned a unique identification alpha-numeric code. An example of this code and a description of its components is presented below:

Examples:

1. PEI-BI-ss1
Where: PEI= Panamerican Environmental, Inc.
BI = Bush Industries
SS-1 = surface soil sample 1
2. PEI-BI-TP1-2-3
Where: TP1 = Test Pit 1
2-3 = Sample Depth in feet

List of Abbreviations

Sample Type

TP	=	Test Pit
BH	=	Geoprobe Borehole
SW	=	Surface Water
SED	=	Sediment
SB	=	Soil Boring
SS	=	Surface Soil (0-2" depth)
MSB	=	Matrix Spike Blank
NSS	=	Near Surface Soil (1' - 2' depth)
EB	=	Equipment Rinse Blank
HW	=	Hydrant Water (Decon/Drilling Water)
GW	=	Groundwater
TB	=	Trip Blank
RB	=	Rinse Blank
MS/MSD	=	Matrix Spike/Matrix Spike Duplicate

7.0 SAMPLE SHIPPING-SOIL/WATER

Summary

Proper documentation of sample collection and the methods used to control these documents are

referred to as chain-of-custody procedures.

Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in the pre-design field activities follow the chain-of-custody guidelines outlined in *NEIC Policies and Procedures*, prepared by the National Enforcement Investigations Center (NEIC) of the USEPA Office of Enforcement,

Procedure:

- 1) The chain-of-custody record should be completely filled out with all relevant information.
- 2) The white original travels with the samples and should be placed in a Ziplock bag and taped inside the sample cooler.
- 3) Place about 3 inches of inert cushioning material (such as vermiculite or zonolite) in bottom of cooler.
- 4) Place bottles in cooler so they do not touch (use cardboard dividers).
- 5) Put VOA vials in Ziplock bags and place them in the center of the cooler.
- 6) Pack bottles, especially VOA vials, in ice in plastic bags.
- 7) Pack cooler with ice in Ziplock plastic bags.
- 8) Pack cooler with cushioning material.
- 9) Put paperwork in plastic bags and tape with masking tape to inside lid of cooler.
- 10) Tape drain shut.
- 11) Wrap cooler completely with strapping tape at two locations. Secure lid by taping. Do not cover any labels.
- 12) Place lab address on top of cooler.
- 13) Ship samples via overnight carrier the same day that they are collected.
- 14) Put "This side up" labels on all four sides and "Fragile" labels on at least two sides.
- 15) Affix numbered custody seals on front right and left of cooler. Cover seals with wide, clear tape.

8.0 INDOOR/OUTDOOR AIR SAMPLING PROCEDURES

The indoor air and outdoor air sampling procedures are summarized below:

- Place the indoor air Summa canister/flow controller inlet at breathing height in the approximate center of the space being sampled, or, for the outdoor air sample, elevated on a table or other object in a location upwind of the building being sampled. The breathing height is defined as four to six feet above the floor or ground. As an option, a length of Teflon tubing can be attached to the Summa canister/flow controller inlet and raised to breathing zone height.

- Record the canister and flow controller serial numbers on the canister identification tag, COC and the Summa Canister Data Sheet
- Assign sample identification to the canister identification tag, and record on the COC and the Summa Canister Data Sheet.
- Remove brass plug from canister fitting and save.
- Attach a pre-calibrated/certified 8-hour flow controller and particulate filter to the Summa canister. For the outside air sample, also connect the laboratory supplied “candy cane” fitting to the flow controller.
- Open canister valve to initiate sample collection and record start time, date and gauge vacuum reading on the canister identification tag and on the Summa Canister Data Sheet provided by the laboratory..
- Take a photograph of canister setup and surrounding area.
- After 8 hours, record the gauge vacuum reading, close the Summa canister valve completely and record the end time on the Summa Canister Data Sheet. There should still be a slight vacuum in the Summa canister. If no vacuum remains in the canister, or the canister does not show a significant net loss in vacuum after sampling, the sample should be re-collected using a new Summa canister and flow controller.
- Disconnect any tubing and candy cane fittings from the Summa canister and remove the flow controller.
- Replace the brass plug on the canister.
- Ship canister, with COCs, overnight, to the selected laboratory

8.1 Quality Control

Field duplicates for indoor air and outdoor air samples will be collected by attaching the T-fitting supplied by the laboratory to two Summa canisters with attached regulators. For indoor and outdoor air samples, any tubing used to raise the sampling height will also be attached to the inlet of the T fitting. For sampling, both Summa canister valves are opened and closed simultaneously.

8.2 Sample Labeling

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedures will be used:

Procedure: Each sample will have the following information placed on the laboratory supplied sample label:

- Site name
- Sample identification – see below
- Date/time
- Sampler's initials
- Analysis required

The serial number of the canister and regulator used during sampling will also be noted on the Summa canister identification tag and on the COC.

Each indoor air and outdoor air sample will be assigned a unique alpha-numeric code. An example of this code and a description of its components is presented below (see also Section C7.0).

Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the date of collection, the letters FD (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on February 22, 2009 would be assigned the following sample number using the code shown below:

YYYYMMDD-FD-1 = 20090222-FD-1

Subsequent duplicates collected on the same day will be assigned FD-2, FD-3 etc. Field sampling crew will record the duplicate sample information on the Summa Canister Data Sheets and also in the field book.

8.3 Field Documentation

Field notebooks will be used during all on-site work. A dedicated field notebook will be maintained by the field technician overseeing the site activities. Sampling procedures should be photo-documented.

The field sampling team will maintain sampling records that include the following data:

- Sample Identification
- Date and time of sample collection
- Identity of samplers
- Sampling methods and devices
- Purge volumes (soil vapor)
- Volume of soil vapor sample extracted
- The Summa canister vacuum before and after samples collected
- Chain of Custody and shipping information

The proper completion of the following forms/logs will be considered correct procedure for documentation during the indoor air-sampling program:

1. Field Log Book - weather-proof hand-bound field book
2. Summa Canister Data Sheet
3. Chain of Custody Form

8.4 Sample Shipping

Summary: Proper documentation of sample collection and the methods used to control these

documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this off-site vapor intrusion study follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

Procedure:

- The chain-of-custody (COC) record should be completely filled out, with all relevant information.
- The original COC goes with the samples. It should be placed in a Ziplock bag and placed inside the box containing a Summa canister. The sampler should retain a copy of the COC.
- Summa canisters are shipped in the same boxes the laboratory used for shipping.
- Place the lab address on top of sample box/cooler. Affix numbered custody seals across box lid flaps and cooler lid. Cover seals with wide, clear tape.
- Ship samples via overnight carrier within three days of sample collection if possible.

8.5 Field Sampling Instrumentation

Owned and rented field sampling equipment will require no maintenance beyond decontamination between sampling locations. The use of disposable filters for photoionization detectors, if used, is recommended. Calibration procedures for electronic instruments can be found in the equipment operating manuals. Calibration and maintenance procedures for the common instrumentation that will be used during field investigations are discussed in the equipment operating manuals. A copy of the manufacturer's operating manual for each instrument will be kept with the instrument or the operator. All field sampling equipment will be calibrated as recommended by the manufacturer. The calibration procedures and results will be recorded in the field notebook.

APPENDIX F

QUALITY ASSURANCE PROJECT PLAN

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QUALITY ASSURANCE/QUALITY CONTROL PLAN

1.0 INTRODUCTION

This Quality Assurance/Quality Control Plan is designed to provide an overview of QA/QC procedures. It will give specific methods and QA/QC procedures for chemical testing of environmental samples obtained from the site. In addition, it will ensure the quality of the data produced.

The organizational structure for this project is presented in the Work Plan. It identifies the names of key project personnel. The project manager will be responsible for verifying that QA procedures are followed in the field. This will provide for the valid collection of representative samples. The Project Manager will be in direct contact with the analytical laboratory to monitor laboratory activities so that holding times and other QA/QC requirements are met. The numbers of soil/water samples that may be collected and analytical parameters/methods are provided in Table-1 below.

The Project Field Inspector will be responsible for coordinating the activities of all personnel involved with implementing the project in the field, and will be in daily communication with the Project Manager. This person will verify that all field investigation sampling work is carried out in accordance with the approved project Field Sampling Plan (Appendix D).

In addition to overall project coordination, the Project Manager will be responsible for overseeing both the analytical and field QA/QC activities. The ultimate responsibility for maintaining quality throughout the project rests with the Project Manager.

TABLE-1
ANALYTICAL SUMMARY TABLE – SOIL/WATER

CONFIRMATION SAMPLING:

<u>PARAMETER</u>	<u>EPA METHOD (1)</u>	<u>SOIL (2)</u>	<u>GW (3)</u>
TCL VOCs	8260B	TBD	TBD
TCL SVOCs	8270C	TBD	TBD
TICs VOC/SVOC		TBD	TBD

- (1) SVOCs analyses per EPA Method 8270C
VOCs analyses per EPA Method 8260B and additional compounds,
Tentatively Identified Compounds (TICs)
 - (2) Excavation confirmation samples
 - (3) Future monitoring well samples
- TBD – To Be Determined

NEW EXCAVATIONS - INVESTIGATION PROGRAM SAMPLING:

<u>PARAMETER</u>	<u>EPA METHOD</u>	<u>SOIL</u>
------------------	-------------------	-------------

TCL VOCs	8260B	TBD
TCL SVOCs	8270C	“
TICs VOC/SVOC		
TAL Metals + Cyanide	6010/7470/7471	“
PCBs	8082	“
Pesticides	8082	“

Technical Holding Times: 8270C - 7 days till extraction, 40 days till analysis (soils)
8260B -14 days till analysis.

The analytical laboratory proposed for use for the analysis of samples will be a certified NYSDOH ELAP laboratory for the appropriate categories. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated.

2.0 DATA QUALITY OBJECTIVES

2.1 Background

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required supporting the investigation for the site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing the definitive data category, as outlined in *Guidance for the Data Quality Objectives Process*, EPA QA/G-4 (September 1994). All sample analyses will provide definitive data, which are generated using rigorous analytical methods, such as reference methods approved by the United States Environmental Protection Agency (USEPA). The purpose of this investigation is to determine the nature and extent of contamination at the site.

Within the context of the purpose stated above, the project DQOs for data collected during this investigation are:

- To assess the nature/extent of contamination in surface and subsurface soil, and groundwater.
- To maintain the highest possible scientific/professional standards for each procedure.
- To develop enough information to assess if the levels of contaminants identified in the media sampled exceed regulatory guidelines.

2.2 QA Objectives for Chemical Data Measurement

Sample analytical methodology for the media sampled and data deliverables will meet the requirements in NYSDEC Analytical Services Protocol, July 2005 edition. Laboratories will be instructed that completed **Sample Preparation and Analysis Summary forms** are to be

submitted with the analytical data packages. The laboratory also will be instructed that matrix interferences must be cleaned up, to the extent practicable. Data usability summary reports (DUSRs) will be generated. In order to achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during offsite chemical analysis.

2.2.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision. RPD criteria must meet the method requirements identified in the attached table.

2.2.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceeds the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

2.2.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures, as described in the Field Sampling Plan (Appendix D), have been selected with the goal of obtaining representative samples for the media of concern.

2.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete

field documentation will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representative-ness, completeness, comparability), because only when precision and accuracy are known can data sets be compared with confidence. In order for data sets may be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

2.2.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained in order to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC and PEI project personnel will determine whether the deviations might cause the data to be rejected.

3.0 SAMPLING LOCATIONS, CUSTODY, HOLDING TIMES, & ANALYSIS

Sampling locations and procedures are discussed in Work Plan. Procedures addressing field and laboratory sample chain-of-custody and holding times are presented in the Appendix D - Field Sampling Plan. All holding times begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory must meet the method required detection limits which are referenced within the methods.

4.0 CALIBRATION PROCEDURES AND FREQUENCY

In order to obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

4.1 Analytical Support Areas

Prior to generating quality data, several analytical support areas must be considered; these are detailed in the following paragraphs.

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall

continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two Class AS" weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised and the integrity of the analytical samples is upheld. Appropriate acceptance ranges (2 to 6°C for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 Laboratory Instruments

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to specified methods.

In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken as discussed in Section 7.0. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures.

The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented within the referenced analytical methods.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

5.1 Batch QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. A MSB will be performed for each matrix and organic parameter only.

5.2 Matrix-Specific QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix.

Matrix Duplicates - The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers, in order to best achieve representative samples. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible.

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank

should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks - Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

6.0 CALCULATION OF DATA QUALITY INDICATORS

6.1 Precision

Precision is evaluated using analyses of a field duplicate and/or a laboratory MS/MSD which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

X_1 = Measured value of sample or matrix spike

X_2 = Measured value of duplicate or matrix spike duplicate

Precision will be determined through the use of MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

6.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed through the use of known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles, semivolatiles, PCB), and is calculated as follows:

$$Accuracy (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

X_s - Measured value of the spike sample

X_u - Measured value of the unspiked sample

K - Known amount of spike in the sample

6.3 Completeness

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness (\%C) = \frac{(X_v - X_n)}{N} \times 100\%$$

where:

X_v - Number of valid measurements

X_n - Number of invalid measurements

N - Number of valid measurements expected to be obtained

7.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

7.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The PEI Project Manager shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.2 Sample Holding Times

If any sample extraction and/or analyses exceed method holding time requirements, the PEI Project Manager shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.3 Instrument Calibration

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

7.4 Reporting Limits

The laboratory must meet the method required detection limits listed in NYSDEC ASP, 10/95 criteria. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify PEI project personnel for problem resolution. In order to achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures in an attempt to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the PEI Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

7.5 Method QC

All QC method-specified QC samples, shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed and/or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed and/or re-extracted/redigested, then reanalyzed at no cost to the PEI. PEI shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

7.6 Calculation Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

8.0 DATA REDUCTION, VALIDATION, AND USABILITY

8.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with a particular analysis and knowledgeable of requirements will perform data reduction.

8.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical results from soil and initial and final rounds of groundwater samples will have ASP Category B deliverables and DUSRs. The data validation will be in accordance with DER-10 Section 2.2 with ASP- Cat B data deliverables provided by the laboratory and a Data Usability Summary Report provided for validation.

- Technical holding times will be in accordance with NYSDEC ASP, 7/2005 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 7/2005 edition. Data will be qualified if it does not meet NYSDEC ASP, 7/2005 criteria.

Where possible, discrepancies will be resolved by the PEI project manager (i.e., no letters will be written to laboratories).

9.0 REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy , Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures*. Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC) 2005. *Analytical Services Protocol*, (ASP) 7/2005 Edition. Albany: NYSDEC.

NYSDEC “DER-10 Technical Guidance for Site Investigation and Remediation (DER-10),” dated May 3, 2010, Appendix 2B

APPENDIX G

HEALTH & SAFETY PLAN

APPENDIX G

HEALTH AND SAFETY PLAN

**SITE INVESTIGATIONS
AND
REMEDIAL OVERSIGHT**

**SITE # C932161
600 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK 14120**

Prepared for:

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September 2015

**Peter J. Gorton, MPH, CHCM
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HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

The following health and safety procedures will be followed by PEI personnel and their immediate subcontractors performing construction oversight/monitoring activities described in the Remedial Action Work Plan and Site Management Plan (SMP) related to chemically impacted materials. Please note, however, contractors are required to develop and follow their own plans meeting these requirements minimally. A separate HASP will be prepared by the contractor who may be required to handle/remove radioactive related material discussed in the RA Work Plan and/or SMP.

1.1 Purpose

Directed at protecting the health and safety of the field personnel during field activities, the following site-specific Health and Safety Plan (HASP) was prepared to provide safe procedures and practices for personnel engaged in conducting the field activities associated with this plan. The plan has been developed using the Occupational Safety and Health Administration (OSHA) 1910 and 1926 regulations and NYSDEC Brownfields DER-10 as guidance. The purpose of this HASP is to establish personnel protection standards and mandatory safety practices and procedures for this task specific effort. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during the field efforts.

1.2 Applicability

The provisions of the plan are mandatory for all personnel engaged in field activities. All personnel who engage in these activities must be familiar with this plan and comply with its requirements. The plan is based on available information concerning the project area and planned tasks. If more data concerning the project area becomes available which constitute safety concerns, the plan will be modified accordingly. One crew member of each contractor will be designated Field Safety Officer and will be responsible for in-field safety. Any necessary modifications to the plan will be made by the Field Safety Officer after discussion with the PEI Project Manager and Safety Manager. All modifications will be documented in the HASP plan and field book and provided to the Project Manager and the Health and Safety Manager for approval. A copy of this plan will be available for review by all on- site personnel. In addition, a copy of the plan will be provided to all subcontractors prior to their initial entry onto the site.

Before field activities begin, all personnel will be required to read the plan. All personnel must agree to comply with the minimum requirements of the site-specific plan, be responsible for health and safety, and sign the Statement of Compliance for all on-site employees before site work begins.

1.3 Field Activities

The work includes the implementation of interim remedial measures (IRM) as described in the IRM work plan.

Field Soil Sampling

Field soil sampling will be conducted which will include collecting confirmation soil samples from completed excavations. Specific health and safety requirements to be adhered to for these tasks are covered in this HASP.

1.4 Personnel Requirements

Key personnel are as follows:

Project Manager and Corporate health and Safety - Peter J. Gorton, MPH, CHCM
Project Engineer - John B. Berry, P.E.
Project Geologists – Kevin Williamson
Field Inspection/Health and Safety – Peter J. Gorton
Project QA/QC – Jason Brydges PE
Analytical Laboratory - To be named - DEC and ELAP Approved

Site personnel and their duties are outlined below.

The Project Manager will be responsible for all PEI personnel and their subcontractors' on-site duties.

The Project Manager has the primary responsibility for:

1. Assuring that personnel are aware of the provisions of the HASP and are instructed in the work practices necessary to ensure safety for planned procedures and in emergencies;
2. Verifying that the provisions of this plan are implemented;
3. Assuring that appropriate personnel protective equipment (PPE), if necessary, is available for and properly utilized by all personnel;
4. Assuring that personnel are aware of the potential hazards associated with site operations;
5. Supervising the monitoring of safety performances by all personnel to ensure that required work practices are employed; and,
6. Maintaining sign-off forms and safety briefing forms.

Field Health and Safety/oversight Inspector:

1. Monitor safety hazards to determine if potential hazards are present;
2. Determine changes to work efforts or equipment needed to ensure the safety of personnel;
3. Evaluate on-site conditions and recommend to the Project Manager modifications to work plans needed to maintain personnel safety;
4. Determine that appropriate safety equipment is available on-site and monitor its proper use;
5. Monitor field personnel and potential for exposure to physical hazards, such as heat/cold stress, safety rules near heavy equipment and borings;
6. Halt site operations if unsafe conditions occur or if work is not being performed in compliance with this plan;
7. Monitor performance of all personnel to ensure that the required safety procedures are followed. If established safety rules and practices are violated, a report of the incident will be filed and sent to the Project Manager within 48 hours of the incident; and,

8. Conduct safety meetings as necessary.

Field Personnel: The responsibility of each field crew member is to follow the safe work practices of this HASP and be familiar with and comply with the Contractor's HASP and in general to:

1. Be aware of the procedures outlined in this plan;
2. Take reasonable precautions to prevent injury to him/herself and to his/her co-workers;
3. Perform only those tasks that he/she believes can be done safely and
4. Immediately report any accidents or unsafe conditions to the safety personnel and Project Manager;
5. Notify the safety personnel and Project Manager of any special medical problems (i.e., allergies or medical restrictions) and make certain that on-site personnel are aware of any such problems;
6. Think Safety First prior to and while conducting field work; and,
7. Do not eat, drink or smoke in work areas.

Each crew member has the authority to halt work should he deem conditions to be unsafe. Visitors will be required to report to the construction manager or designee and follow the requirements of this plan and the Contractor's HASP.

2.0 SITE DESCRIPTION AND HAZARDS/SAFETY CONCERNS

2.1 Site Background And Description

The property is located at 600 River Road, North Tonawanda, Niagara County, New York, and is also identified by Niagara County Tax ID No. #181.16-1-21.13. The Site at present has one storage shed structure (refer to Figure 1 - USGS Topographic Map, Tonawanda West Quadrangle).

The approximate 6.02-acre Site was historically part of the larger Niagara Iron Works/Tonawanda Iron Works Site, located along the Niagara River north and south of the Site. The property is mostly vacant land along the Niagara River just east of Tonawanda Island and contains one metal clad storage building which is supplied with natural-gas, electric, municipal sanitary sewer and public water. The building is contained within a perimeter fence around the western portion of the Site. The Site is generally flat and grass/weed covered with some trees. Much of the property contains slag material which is also across some of the surface area. A few piles of soil/fill and miscellaneous piles of debris are located throughout the Site. The Site is bordered by a health care facility to the north, a commercial boating sales and service facility and marina to the south, commercial-retail properties, including a gas station to the east across River Road, and the Niagara River to the west.

The Site is identified in the spills and LUST databases; two releases are classified as "closed" for the Site. An adjacent/nearby site is listed on the NYSDEC State Superfund List. The Durez Div. – Occidental Chemical Corp. – Inlet Cove Superfund Site was remediated in 2010, and is currently in active Site Management, including groundwater monitoring, product (NAPL) removal, and ChemOx injection.

2.2 Hazard Evaluation

Specific health and safety concerns particular to the project include working around low levels of petroleum related contamination in soils and groundwater. Physical hazards include those associated with working near open excavations, as well as working adjacent manual/mechanical operation of field equipment. Contractors will have separate detailed health and safety procedures/requirements for soil excavations and/or the removal and disposal of impacted soil which will meet or exceed requirements in this plan. Their plans will be attached to this plan.

3.2.1 Chemical and Radioactive Hazards

Note: A separate HASP will be prepared by the contractor who may be required to handle/remove radioactive related material discussed in the RA Work Plan and/or SMP.

Chemical hazards at the site may include petroleum related chemical compounds and elevated PAHS/Metals..

Petroleum related compounds. Some chemicals that may be found in petroleum products include hexane, jet fuels, mineral oils, benzene, toluene, xylenes, naphthalene, and fluorine, as well as other petroleum compounds and gasoline components.

How might someone be exposed to petroleum hydrocarbons?

- Everyone is exposed to petroleum hydrocarbons from many sources.
- Breathing air at gasoline stations, using chemicals at home or work, or using certain pesticides.
- Drinking water contaminated with petroleum hydrocarbons.
- Working in occupations that use petroleum products.
- Living in an area near a spill or leak of petroleum products.
- Touching soil contaminated with petroleum hydrocarbons.

Potential routes of exposure include:

- Skin contact;
- Inhalation of vapors or particles;
- Ingestion; and,
- Entry of contaminants through cuts, abrasions or punctures.

The anticipated levels of personnel protection will include Level D personal protective equipment:

1. Long sleeve shirt and long pants (recommended),
2. Work boots,
3. Hard hats, if work is conducted around heavy equipment or overhead hazards,
4. Safety Glasses
5. Gloves to include work gloves and chemical resistant gloves when sampling potentially contaminated materials.

Modifications may include chemically resistant gloves, boots/booties, and overalls. If monitoring levels indicate levels requiring respiratory protection (sustained PID readings at or above 5 ppm above a daily established background), work will be halted pending discussions with field and office management. If any readings are recorded above background, work will proceed with caution and breathing zone monitoring will be conducted.

2.2.2 Other Physical Hazards

Depending on the time of year, weather conditions or work activity, some of the following potential physical hazards could result from project activities:

- 1 . Noise
- 2 . Heat Stress
- 3 . Cold Stress
- 4 . Slips, trips, and falls
- 5 . Exposure to moving machinery or stored energy, particularly during Lime removal and drilling
- 6 . Physical eye hazards
- 7 . Lacerations and skin punctures
- 8 . Back strain from lifting equipment
- 9 . Electrical storms and high winds
- 10 . Contact with overhead or underground utilities

Slips, Trips, and Falls. Field personnel shall become familiar with the general terrain and potential physical hazards which would be associated with accidental risk of slips, trips, and/or falls. Special care shall be taken when working near demolition operations or demolition material stockpiles. Workers will observe all pedestrian and vehicle rules and regulations. Extra caution will be observed while working near roadways and while driving in reverse to ensure safety.

Noise. All personnel shall wear hearing protection devices, such as ear muffs or ear plugs, if work conditions warrant. These conditions would include difficulty hearing while speaking to one another at a normal tone within three feet. If normal speech is interfered with due to work noise, the field safety officer will initiate the mandatory use of hearing protection around the backhoe, or other noise-producing equipment or events.

Heat/Cold Stress. Heat stress work modification may be necessary during ambient temperatures of greater than 29° C (85° F) while wearing normal clothing or exceeding 21° C (70° F) while wearing personnel protective clothing. Because heat stress is one of the most common and potentially serious illnesses at work sites, regular monitoring and preventive measures will be utilized should conditions warrant. This may include additional rest periods, supplemental fluids, restricted consumption of drinks containing caffeine or alcohol, use of cooling vests, or modification of work practices.

Most of the work to be conducted during the oversight and monitoring operations is expected to consist of light manual labor and visual observation. Given the nature of the work and probable temperatures, heat stress hazards are not anticipated.

If work is to be conducted during winter conditions, cold stress may be a concern to the health and safety of personnel. Wet clothes combined with cold temperatures can lead to hypothermia. If air temperature is less than 40° F (4° C) and an employee perspires, the employee must change to dry clothes. The following summary of the signs and symptoms of cold stress are provided as a guide for field and safety personnel.

Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.

Chilblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms, accompanied by pain.

Second-degree frostbite is manifested by skin with a white, waxy appearance and the skin is firm to the touch. Individuals with this condition are generally not aware of its seriousness because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.

Third-degree frostbite will appear as blue blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.

Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:

1. Involuntary shivering
2. Irrational behavior
3. Slurred speech
4. Sluggishness

Fire and Explosion. These hazards will be minimal for activities associated with this project. All heavy equipment will be equipped with a fire extinguisher.

Trenching and Excavations. There are a variety of potential health and safety hazards associated with excavations. These include:

- Surface encumbrances, such as structures, fencing, stored materials, etc., may interfere with safe excavations;
- Below- and above-ground utilities, such as water and sewer lines, gas lines, power lines, telephones, and optical cable lines, etc.;
- Overhead power lines and other utilities which may be contacted by the excavation equipment;
- Vehicle and heavy equipment traffic around the excavations;
- Falling loads from lifting or digging equipment;
- Water accumulation within excavations;
- Hazardous atmospheres, such as oxygen deficiency, flammable gases or vapors, and toxic

- gases which may occur in excavations,
- Falling into or driving equipment or vehicles into unprotected or unmarked excavations; and,
- Cave-in of loose rocks and soil/lime at the excavation face.

OSHA requirements for trenching and excavations are contained in 29 CFR, subpart P, 1926.650 thru 1926.652.

Basic minimum excavation requirements should include:

- Personnel entry into excavations should be minimized, whenever possible and no entry will occur in pits below 4 feet in depth.
- Sloping, shoring or some other equivalent means should be utilized, as required. Surface encumbrances such as structures, fencing, piping, stored material etc. which may interfere with safe excavations should be avoided, removed or adequately supported prior to the start of excavations. Support systems should be inspected daily.
- Underground utility locations should be checked and determined and permits as necessary should be in place prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location should be determined by careful probing or hand digging and when it is uncovered, proper supports should be provided.
- A minimum safe distance of 15 feet should be maintained when working around overhead high-voltage lines or the line should be de-energized following appropriate lock-out and tag-out procedures by qualified utility personnel.
- Excavations five feet or more deep if entered will require an adequate means of exit, such as a ladder, ramp, or steps and located so as to require no more than 25 feet of lateral travel. Under no circumstances should personnel be raised using heavy equipment.
- Personnel working around heavy equipment, or who may be exposed to public vehicular traffic should wear a traffic warning vest. At night, fluorescent or other reflective material is recommended to be worn.
- Heavy equipment or other vehicles operating next to or approaching the edge of an excavation will require that the operator have a clear view of the edge of the excavation, or that warning systems such as barricades, hand or mechanical signals, or stop logs be used. If possible the surface grade should slope away from the excavation.
- Personnel should be safely located in and around the trench/excavation face and should not work underneath loads handled by lifting or digging equipment.
- Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases or vapors (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases or vapors (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations. Monitoring should be conducted for hazardous atmospheres prior to entry and at regular intervals. Ventilation or respiratory protection may be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records should be maintained.
- Personnel should not work in excavations that have accumulated water or where water is

accumulating unless adequate precautions have been taken. These precautions can include special support or shield systems, water removal systems such as pumps, or safety harnesses and lifelines. Groundwater entering the excavation should be properly directed away and down gradient from the excavation.

- Safety harnesses and lifelines should be worn by personnel entering excavations that qualify as confined spaces.
- Excavations near structures should include support systems such as shoring, bracing, or underpinning to maintain the stability of adjoining buildings, walls, sidewalks, or other structures endangered by the excavation operations.
- Loose rock, excavated or other material, and spoils should be effectively stored and retained at least two and preferably 5 feet or more from the edge of the excavation. Barriers or other effective retaining devices may be used in order to prevent spoils or other materials from falling into the excavation.
- Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.
- Adequate barrier physical protection should be provided and excavations should be barricaded or covered when not in use or left unattended. Excavations should be backfilled as soon as possible when completed.
- Safety personnel should conduct inspections prior to the start of work and as needed throughout the work shift and after occurrence that increases the hazard of collapse (i.e., heavy rain, vibration from heavy equipment, freezing and thawing, etc.).
- Personnel working in excavations should be protected from cave-ins by sloping and/or benching of excavation walls, a shoring system or some other equivalent means in accordance with OSHA regulations. Soil type is important in the determination of the angle of repose for sloping and benching, and the design of shoring systems.

2.2.3 Biological Hazards

Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks are a vector for a number of serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. These hazards will be reduced to non-existent if work is conducted during late fall and winter months. The following are highlighted because they represent more likely concerns for the site-specific tasks and location:

Bees, Ants, Wasps and Hornets. Sensitization by the victim to the venom from repeated stings can result in anaphylactic reactions. If a stinger remains in the skin, it should be removed by teasing or scraping, rather than pulling. An ice cube placed over the sting will reduce pain. An analgesic corticosteroid lotion is often useful. People with known hypersensitivity to such stings should consult with their doctor about carrying a kit containing an antihistamine and aqueous epinephrine in a pre-filled syringe when in endemic areas. Nests and hives for bees, wasps, hornets and yellow jackets often occur in the ground, trees and brush. Before any nests or hives are disturbed, an

alternate sampling location should be selected. If the sample location cannot be relocated, site personnel who may have allergic reactions shall not work in these areas.

Storm Conditions. When lightening is within 10 miles of the work site, all personnel should evacuate to a safe area.

Sun. When working in the sun, personnel should apply appropriate sun screening lotions (30 sun screen or above), and/or wear long sieve clothing and hats.

Field personnel should refrain from handling any foreign objects such as hypodermic needles, glass, etc.

2.2.4 Activity Hazard Analysis

Table 1 presents a completed activity hazard analysis for the performance of IRM and RI

Table 1. Activity Hazard Analysis

PRINCIPAL STEPS	POTENTIAL SAFETY/ HEALTH HAZARDS	RECOMMENDED CONTROLS
1. RI soil/groundwater investigation	1. Potential exposure to low levels of petroleum products, heavy metals and PAH compounds	Covers all hazards 1. Use of administrative controls (site control and general safety rules), work cloths, dust suppression 2. Use of real-time monitoring and action levels 3. Use Physical Hazards SOPs
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Excavation and other heavy equipment, Backhoe and/or Geoprobe	1. Daily inspection of equipment 2. Continuous safety oversight	1. Safety plan review 2. Routine safety briefings

3.0 MONITORING

The purpose of air monitoring is to monitor for potential airborne contaminants and to verify that protection levels are suitable. Monitoring will be performed for dust/particulates and volatile organic compounds during excavation activities. Daily background and calibration readings will be recorded prior to the start of field activities. All monitoring equipment used during this investigation will be maintained and calibrated and records of calibration and maintenance will be kept in accordance with 29 CFR 1910.120(b)(4)(11)E. The Community Air Monitoring Program (CAMP) is discussed in Section 9.0.

3.1 Particulate Monitoring

PEI will obtain real-time air monitoring readings from upwind and downwind locations in accordance with DER-10 for community air-monitoring (refer to Section 9.0).

PEI will complete daily field reports that document activities performed equipment and manpower onsite, screening and/or monitoring results, general conditions and weather conditions.

Air Monitoring for Worker Protection

Real time air monitoring will be conducted during any building demolition, UST removal and when site soils are disturbed including during, excavation and grading and other activities. A real time personal aerosol monitor (i.e., TSI SidePak AM5 10 Personal Aerosol monitor or equivalent) will be used. This monitor is a laser photometer which measures data as both real-time aerosol mass-concentration and 8-hour time weighted average (TWA). For this project the monitor will be used to measure real-time concentrations in milligrams per meter cubed (mg/m^3). Action levels are based on potential exposure to calcium carbonate and will be as follows:

- 15 mg/m^3 total dust
- 5 mg/m^3 respirable fraction for nuisance dusts

Dust suppression techniques should be employed prior to exceeding the action levels. However, if these if these levels are exceeded work will be halted and additional dust suppression techniques employed until safe levels are reached.

3.2 Total Volatile Organics Monitoring

Monitoring of volatile organic compounds will be conducted, if required, using a photo-ionization detector (PID). If a sustained reading of 5 ppm above background occurs, work will be halted and personnel will evacuate the work area. Levels will be allowed to stabilize and another reading will be taken in the breathing zone. If background levels continue to be exceeded, work will not continue at that location and the project manager will be notified of the situation. Action levels will remain the same.

4.0 SAFE WORKING PRACTICES

4.1 General Practices

The following general safe work practices apply:

- Eating, drinking, chewing gum or tobacco and smoking are prohibited within the work area as part of safe work practices.
- Contact with potentially contaminated substances should be avoided. Puddles, pools, mud, etc. should not be walked through if possible. Kneeling, leaning, or sitting on equipment or on the ground should be avoided whenever possible.

- Upon leaving the work area, hands, face and other exposed skin surfaces should be thoroughly washed.
- Unusual site conditions shall be promptly conveyed to the site manager and safety personnel as well as the project management for resolution.
- A first-aid kit shall be available at the site.
- Field personnel should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).
- Personal hygiene practices such as no eating, drinking or smoking will be followed.
- If severe dusty conditions hazardous to the crew are present, soils will be dampened to mitigate dust. All equipment will be cleaned before leaving the work area.
- Field personnel must attend safety briefings and should be familiar with the physical characteristics of the investigation, including:
 - Accessibility to associates, equipment, and vehicles.
 - Areas of known or suspected contamination.
 - Site access.
 - Routes and procedures to be used during emergencies.
- Personnel will perform all investigation activities with a buddy who is able to:
 - Provide his or her partner with assistance.
 - Notify management / emergency personnel if emergency help is needed.
- Excavation activities shall be terminated immediately in event of thunder and/or electrical storm.
- The use of alcohol or drugs at the site is strictly prohibited.

5.0 PERSONAL SAFETY EQUIPMENT AND SITE CONTROL

5.1 Personal Safety Equipment

As required by OSHA in 29 CFR 1920.132, this plan constitutes a workplace hazard assessment to select personal protective equipment (PPE) to perform the site investigation.

The PPE to be donned by on-site personnel during this investigation are those associated with the industry standard of level D. Protective clothing and equipment to initiate the project will include:

- Work clothes
- Work boots
- Work gloves as necessary
- Hard hat if work is conducted in areas with overhead danger
- Hearing protection as necessary

Modifications may include chemically resistant gloves, boots/booties, and overalls. If monitoring levels indicate levels requiring respiratory protection (sustained readings at or above action levels above a daily established background), work will be halted pending discussions with field and office management.

5.2 Site Control

Site control will be established near each work zone by the Contractor. The purpose is to control access to the immediate work areas from individuals not associated with the project. Site control limits will be established by the Contractor in his HASP. All work zones will be fenced off with controlled access and appropriately designated as an exclusion area.

5.2.1 Work Zones (For excavations/drilling using heavy equipment or deeper than 3 feet)

Each excavation will be set up in work zones to include an exclusion area and support zone. Exact configuration of each zone is dependent upon location, weather conditions, wind direction and topography. The Contractor's safety manager will establish the control areas daily at each excavation.

An area of 10 feet (as practical) around each excavation will be designated as the exclusion area. This is the area where potential physical hazards are most likely to be encountered by field personnel. The size of the exclusion area may be altered to accommodate site conditions and the drilling/excavation location. If levels of protection higher than level D are used, this plan will be modified to include decontamination procedure. The Site excavation contractor will be required to have eye/face wash equipment/means available on-site.

A support area will be defined for each field activity. Support equipment will be located in this clean area. Normal work clothes are appropriate within this area. The location of this area depends on factors such as accessibility, wind direction (upwind of the operation.), and resources (i.e., roads, shelter, utilities). The location of this zone will be established daily.

Excavation areas will be filled and or secured (fencing) to prevent access from the general public.

6.0 EMERGENCY INFORMATION

In the event of an emergency, the field team members or the site safety manager will employ emergency procedures. A copy of emergency information will be kept in the field vehicle and will be reviewed during the initial site briefing. Copies of emergency telephone numbers and directions to the nearest hospital will be prominently posted in the field vehicle.

6.1 Emergency Medical Treatment and First Aid

A first aid kit large enough to accommodate anticipated emergencies will be kept in the PEI field vehicle. If any injury should require advanced medical assistance, emergency personnel will be notified and the victim will be transported to the hospital. The Contractor will establish his own first aid station and details will be provided in his HASP.

In the event of an injury or illness, work will cease until the field safety and oversight inspector has examined the cause of the incident and taken appropriate corrective action. Any injury or illness, regardless of extent, is to be reported to the project manager.

6.2 Emergency Telephone Numbers and Hospital

Emergency telephone numbers for medical and chemical emergencies will be posted in the field vehicle are listed below:

Ambulance	911
Fire	911
Police - NYS Troopers	911
Poison Control Center	1-800-888-7655
NYSDEC Spills Hotline	1-800-457-7362

PEI Project Manager, Mr. Peter J. Gorton: Work 716 - 821-1650 & Cellular 716-308-8220
PEI H & S & Oversight Inspector – to be determined
NYSDEC Project Manager, Mr. Timothy Dieffenbach (716) 851-7220
NYSDOH (716) 847-4357
Rock One Development, LLC – Mr. Lou Visone

DeGraft Hospital–445 Tremont St
North Tonawanda, NY 14120

See Attachment 3 map for route to the Hospital Facility.

Verbal communications between workers or use of a site vehicle horn repeated at intervals of three short beeps shall be used to signal all on-site personnel to immediately evacuate the area and report to the vehicle parking area.

6.3 Emergency Standard Operating Procedures

The following standard operating procedures are to be implemented by on-site personnel in the event of an emergency. The Contractor’s field safety manager along with PEI oversight Inspector shall manage response actions.

Upon notification of injury to personnel, the designated emergency signal shall be sounded, if necessary. All personnel are to terminate their work activities and assemble in a safe location. The emergency medical service and hospital emergency room shall be notified of the situation. If the injury is minor, but requires medical attention, the field safety manager shall accompany the victim to the hospital and provide assistance in describing the circumstances of the accident to the attending physician.

Upon notification of an equipment failure or accident, the field safety manager shall determine the effect of the failure or accident on site operations. If the failure or accident affects the safety of personnel or prevents completion of the scheduled operations, all personnel are to leave the area until the situation is evaluated and appropriate actions taken.

Upon notification of a natural disaster, such as tornado, high winds, flood, thunderstorm or earthquake, on-site work activities are to be terminated and all personnel are to evacuate the area.

6.4 Emergency Response Follow-Up Actions

Following activation an Emergency Response, PEI Oversight inspector shall notify the PEI project

manager regarding any emergency involving PEI personnel. The Contractor's field safety manager shall submit a written report documenting the incident to PEI and Norstar site representatives

6.5 Medical Treatment for Site Accidents/Incidents

The Contractor's field safety manager shall be informed of any site-related injury, exposure or medical condition resulting from work activities. All personnel are entitled to medical evaluation and treatment in the event of a site accident or incident.

6.6 Site Medical Supplies and Services

The Contractor's field safety manager or a trained first aid crew member shall evaluate all injuries at the site and render emergency first-aid treatment as appropriate. If an injury is minor but requires professional medical evaluation, the field safety manager shall escort the employee to the appropriate emergency room. For major injuries occurring at the site, emergency services shall be requested.

A first-aid kit shall be available, readily accessible and fully stocked. The first-aid kit shall be located within specified vehicles used for on-site operations.

6.7 Universal Precautions

Universal precautions shall be followed on-site at all times. This consists of treating all human blood and certain body fluids as being infected with Human Immune Deficiency Virus (HIV), Hepatitis B virus (HBV), and other blood borne pathogens. Clothing and first-aid materials visibly contaminated with blood or other body fluids will be collected and placed into a biohazard bag. Individuals providing first aid or cleanup of blood- or body-fluid contaminated items should wear latex gloves. If providing CPR, a one-way valve CPR device should be used. Biohazard bags, latex gloves, and CPR devices will be included in the site first-aid kits.

Work areas visibly contaminated with blood or body fluids shall be cleaned using a 1:10 dilution of household bleach. If equipment becomes contaminated with blood or body fluids, and can not be sufficiently cleaned, the equipment shall be placed in a plastic bag and sealed.

Any personnel servicing the equipment shall be made aware of the contamination, so that proper precautions can be taken.

7.0 RECORD KEEPING

The Contractor's field manager and safety manager are responsible for site record keeping. Prior to the start of work, they will review this Plan along with the Contractor's HASP.

A Site Safety Briefing will be completed prior to the initiation of investigation activities. This shall be recorded in the field log book. An Accident Report should be completed by the Field Manager in the event that an accident occurs and forwarded to the office administrative manager.

8.0 PERSONNEL TRAINING REQUIREMENTS

8.1 Initial Site Entry Briefing

Prior to initial site entry, the Contractor's field safety manager shall provide all personnel (including site visitors) with site-specific health and safety training. A record of this training shall be maintained. This training shall consist of the following:

- Discussion of the elements contained within this plan
- Discussion of responsibilities and duties of key site personnel
- Discussion of physical, biological and chemical hazards present at the site
- Discussion of work assignments and responsibilities
- Discussion of the correct use and limitations of the required PPE
- Discussion of the emergency procedures to be followed at the site
- Safe work practices to minimize risk
- Communication procedures and equipment
- Emergency notification procedures

8.2 Daily Safety Briefings

The Contractor's field safety manager will determine if a daily safety briefing with all site personnel is needed. The briefing shall discuss the specific tasks scheduled for that day and the following topics:

- Specific work plans
- Physical, chemical or biological hazards anticipated
- Fire or explosion hazards
- PPE required
- Emergency procedures, including emergency escape routes, emergency medical treatment, and medical evacuation from the site
- Weather forecast for the day
- Buddy system
- Communication requirements
- Site control requirements
- Material handling requirements

9.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs), if detected during the RI) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities.

The generic CAMP presented in Attachment 4 from *NYSDEC DER-10* titled *Appendix 1A-New York State Department of Health Generic Community Air Monitoring Plan* will be followed and adhered to for the building demolition, IRMs and similar applicable areas.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance *NYSDEC DER-10* titled *Appendix 1B Fugitive Dust and Particulate Monitoring* which is also provided in Attachment 4. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, IRM site remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust suppression and particulate monitoring program will be carried out by PEI the Owner's consultant. Monitoring results of the CAMP will be reported to the New York State Department of Health on a daily basis for review.

10.0 POTENTIAL HAZARDS AND OSHA STANDARDS

A table of Potential Hazards and OSHA Standards for Consideration during the building demolition and IRMs is provided in Attachment 5.

ATTACHMENT 1

Heat Stress management Program &
procedures

PANAMERICAN

PANAMERICAN HEAT STRESS MANAGEMENT PROGRAM

INTRODUCTION

Panamerican employees engage in a variety of activities with potential exposure to excessive ambient temperatures and humidity, with the overall result being Aheat stress@. This procedure establishes the Panamerican Heat Stress Management Program. It establishes responsibilities and basic requirements for personnel who may be required to work in situations where the ambient temperature exceeds 21° C (70° F) while wearing protective equipment (e.g., hazardous waste site investigations) or when the ambient temperature exceeds 29° (85° F) while wearing normal clothing. Because heart stress is one of the most common and potentially serious illnesses at job sites and particularly hazardous waste sites, regular monitoring and other preventive measures are warranted.

There are no regulations addressing heat stress. However, it should be noted that OSHA does recognize heat stress as a potentially serious health hazard and can site employers under the Ageneral duty clause@ of the Occupational Safety Health Act if heat-related illness is occurring or likely to occur.

PROGRAM ADMINISTRATION AND RESPONSIBILITIES

The Heat Stress Management Program is administered by Panamerican Managers and Health and Safety personnel.

These Individuals:

- Oversee the implementation of the Heat Stress Management Program;
- Periodically audit and evaluate program implementation;
- Evaluate this procedure on an ongoing basis to see that it reflects current practice and regulations;
- Assist field crews in their implementation of this procedure.

Project Managers (PM) and Safety Personnel are responsible for:

- Implementing this Procedure in all field operations;
- Providing guidance to staff regarding heat stress management as described in the Procedure; and
- Providing feedback to management regarding program effectiveness.

Staff Members are responsible for:

- Complying with this Procedure as it applies to their activities; and
- Providing feed back to their supervisor regarding program effectiveness.

HEAT STRESS HAZARDS AND RISK FACTORS

Heat Stress is defined as the total net load on the body with contributions from both exposure to external sources, such as sunshine and hot surfaces, and from internal metabolic heat production. A person=s

exposure to the increased ambient temperatures and humidity produces physiological responses referred to as heat stress which are characterized by an increase in the: a) Acore@ or Adeep body temperature@. b) heart rate, c) blood flow to the skin, and d) water and salt loss due to sweating. Conditions of excessive heat stress may occur either when the physical work is too heavy or the environment is too hot in relation to the work being performed. If work is performed under hot environmental conditions, the work load effort must be reviewed and the heat exposure limit maintained at or below the levels to protect the worker from the risk of acute heat illness.

In general, there are four types of physiological disorders associated with heat stress. They include:

- Heat Rash - a skin reaction occurring as a result of obstructed sweat glands, often associated with impermeable clothing.
- Heat Cramps - painful muscle spasms of extremities and abdomen, resulting from inadequate balance of electrolytes which are lost from sweating.
- Heat Exhaustion - a mild form of heat stroke due to depletion of body fluids and electrolytes. Blood vessels dilate despite decreased volume of blood. Symptoms include weakness, dizziness, nausea, rapid pulse, and a small increase in body temperature.
- Heatstroke - a potentially fatal disorder resulting from failure of the body=s thermoregulatory system. The classical description of heatstroke includes (1) a major disruption of central nervous function (unconsciousness or convulsions), (2) a lack of sweating (3) hot, dry, red or mottled skin, and (4) a core temperature in excess of 41°C (105.8°F). Heatstroke is a serious medical condition which calls for emergency medical action.

Seven factors play significant roles in the development of or predisposition to, heat stress disorders. These factors include:

- Acclimatization - Heat acclimatization leads to increased and quicker sweating, cooler skin due to an increase in evaporative cooling and a lower, more stable core body temperature. Maximal sweating rates in unacclimatized persons are lower, but salt concentrations in their perspiration are higher, requiring a higher rate of salt replacement.
- Age - Older individuals are generally more susceptible to heat stress than younger individuals. However, older healthy workers are able to perform well in hot jobs if permitted to proceed at a self-regulated pace.
- Gender - The average woman has a lower aerobic capacity than a similar-sized man. Nevertheless, when working at similar proportions of their maximum aerobic capacity, women perform similarly or only slightly less well than men.
- Body Fat - The lower level of physical fitness, decreased maximum work capacity and decreased cardiovascular capacity frequently associated with obesity predispose individuals to heat disorders.
- Water and Electrolyte Balance - Sustained, effective work performance in heat requires a

replacement of body water and electrolytes lost through sweating. If this water is not replaced by drinking, continued sweating will draw on water reserves from both tissues and body cells leading to dehydration.

- Use of Alcohol and Medication - Notwithstanding the potential hazards from impaired coordination and judgment, the ingestion of alcohol before or during work in the heat should not be permitted because it reduces heat tolerance and increases the risk of heat illness. Many drugs, including diuretics and antihypertensives, can interfere with the body's thermoregulation.
- Physical Fitness - Physical conditioning enhances heat tolerance by increasing the functional capacity of the cardiovascular system, and reduces the time required to develop heat acclimatization by about 50% over those not physically fit.

The factors listed above are to be taken into account by all project personnel when planning or executing a project subject to heat stress conditions. The factors should be taken into consideration for:

- the development of the project schedule;
- the ordering of supplies/equipment;
- the support facilities to be made available at the site;
- the execution of work tasks; and
- the after work hours activities.

The following is a summary of signs and symptoms of heat stress:

Heat Rash may result from continuous exposure to heat or humid air .

Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

- Muscle Spasms
- Pain in the hands, feet and abdomen.

Heat Exhaustion occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

- Pale, cool and moist skin
- Heavy sweating
- Dizziness, fainting and nausea

Heat stroke is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

- Red, hot and unusually dry skin
- Lack of or reduced perspiration
- Dizziness and confusion

- Strong, rapid pulse and coma.

HEAT AND STRESS PREVENTION

Preventive measures should be taken to prevent personnel from experiencing heat stress illness. Prevention of heat stress is also important because if an individual has experienced a heat illness incident, he has an increased likelihood of future occurrences. Preventive measures include: favorable work scheduling, acclimatization of workers to hot environments, drinking sufficient quantities of fluids, providing cool, sheltered work and rest areas, and utilizing cooling devices as appropriate of feasible. Heat stress monitoring/work rest regimens are discussed below.

Work Schedules and Activity

If possible, work should be scheduled during the coolest part of the day. Early morning and evening work can be considerably more effective than working midday when the additional time for breaks and heat stress monitoring are taken into account.

Employees should also be encouraged to maintain a certain level of activity during the work shift. Prolonged standing in hot environments can lead to heat illness because the blood pools in the lower extremities. Workers should periodically walk about to encourage blood circulation from the feet and legs.

Acclimatization of Workers

A properly designed and applied heat acclimatization program will dramatically increase the ability of workers to work at a hot job and will decrease the risk of heat-related illnesses and unsafe acts. Heat acclimatization can usually be induced in 5 to 7 days of exposure to the hot job. For workers who have had previous experience with the job, the acclimatization regimen should be exposure for 50% on day 1, 60% on day 2, 80% on day 3 and 100% on day 4. For workers new to job the schedule should be 20% on day 1 with a 20% increase in each additional day.

Acclimatization can be induced by sustained elevations of the skin and core body temperatures above levels for the same work in cool environments for an hour or more per day. Acclimatization needs periodic reinforcement such as occurs daily during the work week. Persons may show some loss of acclimatization on the first day of the new shift after being idle for two days or over a weekend. After vacations of two weeks or longer the loss of acclimatization is substantial, several days at work will be needed before heat tolerance is fully restored.

Drinking Sufficient Quantities of Fluids

Under hot conditions where sweat production may reach 6 to 8 liters per day, voluntary replacement of the water lost is usually incomplete. The normal thirst mechanism is not sensitive enough to urge us to drink enough water to prevent dehydration. Individuals are seldom aware of the exact amount of sweat they produce or how much water is needed to replace that lost in sweat; 1 liter/hour is not an uncommon rate of water loss. Every effort should be made to encourage individuals to drink water, low-sodium noncarbonated beverages or electrolyte replacement fluids (e.g., Gatorade). Lightly salted water (1 gram/liter of water (0.1%) or one level teaspoon per 15 quarts of water), should be provided to unacclimated workers. The salt should be dissolved completely and the water kept cool. Salt tablets as dietary supplements are not generally recommended.

Workers should drink at least 500 ml (one pint) of water before beginning work. The fluid should be maintained at temperatures of 10° to 15° (50 to 59° F). If possible, small quantities of fluids should be consumed at frequent intervals (e.g., 150 to 250 milliliters (ml), or at least a quarter pint, every 20 minutes) rather than the intake of 750 ml (3 cups) or more once per hour. Individuals vary, but water intake should total 4 to 8 liters (quarts) per day. When heat stress is considered a potential problem, a minimum of 1 liter/hour/person of water are to be maintained onsite. Individual paper or plastic cups will be provided in order to prevent the spread of communicable disease.

Alcohol and diuretics such as caffeine (contained in coffee, tea and soft drinks) can increase dehydration. Therefore employees with potential exposure to heat stress should be discouraged from the consumption of these types of fluids during and after working hours.

Cool, sheltered Work and Rest Areas

Exposure to direct sunlight significantly increases the overall thermal loading of the body, thereby increasing an individuals susceptibility to heat stress illnesses. Whenever possible work should be conducted under suspended tarps, in shady areas or in other sheltered areas in order to reduce thermal loading caused by the sun. Cool sheltered areas should be provided also for rest breaks. A rest area should be situated so that part of it is in the contamination reduction area so that workers can take breaks without being required to undertake a full decontamination procedure. Canopies or tarps and open air tents, are types of cool shelters which can provide shaded rest areas.

Cooling Devices

Auxiliary cooling devices can be successfully used to provide body cooling, especially to workers wearing protective garments at hazardous waste sites. Vortex coolers utilize high velocity air which is directed inside the protective clothing. Vortex coolers have been used successfully in some operations. Cooling vests utilizing Ablue ice@ type packs can provide some cooling to the torso, but add weight for the wearer and can inhibit body movements.

Newer, more sophisticated tube and refrigerant systems woven into undergarments are also available. However, some of these systems „may not be effective in situations where the work involves considerable motion, since bending and lifting can crimp the tubes, impeding the flow of refrigerant.

Heat Stress Monitoring

Several heat stress monitoring systems have been devised to help manage heat stress in hot work environments. Panamerican performs heat stress monitoring when: 1) employees are wearing normal work clothing in ambient temperatures exceeding 29° C, (85° F) and 2) employees wearing chemical protective clothing (including paper coveralls) working in ambient temperatures exceeding 21° C (70° F). The temperature differential is related to the reduced ability of a person to maintain a core temperature of $\pm 37^{\circ}$ C (98.6° F) when wearing chemical protective clothing.

It should be noted by personnel that there are no Afast and true@ methods of heat stress monitoring; likewise there are no regulations concerning heat stress monitoring. Individual susceptibility to heat stress is highly variable. Some individuals are highly susceptible to any increase in their internal body temperature while other individuals can work very well with internal body temperatures of 39°C (102.2° F) or higher.

The heat stress monitoring systems should be used by Site Safety Officers as guidelines and not necessarily as hard, fast rules. Individuals working in elevated temperatures should be queried on a regular basis regarding their perceived state of heat stress. If the calculated heat stress index value indicates that work can continue but a person states that they believe they are experiencing heat stress, the work effect should be discontinued and a rest break taken.

Likewise, if the calculated heat stress index value indicates that a rest break should be taken but the workers believe they can work longer, they should be permitted to work longer providing that their heart rates do not exceed 110 beats per minute. If the individual's heart rate rates exceed 110 beats per minute a rest break will be taken. In all cases, individual workers should not be permitted or expected to perform excessive work which could result in heat stress. If a SSO has any concerns that an individual may be pushing himself/herself past the Abreaking point@ the calculated work/rest regimen will be followed.

For strenuous field activities that are part of ongoing site work activities in hot weather, the following procedures shall be used to monitor the body's physiological response to heat, and to monitor the work cycle of each site worker. There are two phases to this monitoring: the initial work/rest cycle is used to estimate how long the first work shifts of the day should be. Heart rate monitoring of each worker will establish the length of the successive work periods. Both phases are to be used are to be used for heat stress monitoring. Failure to use either one could place workers at risk of heat-related disorders.

Phase 1 - Determination of the Initial Work - Rest Regimen

The determination of the initial work - rest regimen can be performed using either of two methods:

- The Modified Dry Bulb Index; or
- The Wet Bulb Globe Thermometer (WBGT) Index

After the initial work - rest regimen has been determined, environmental conditions must be monitored for changes which would require a modification to the work - rest regimen. This, coupled with the heart rate monitoring, determines the work cycles to be followed on a site.

The Modified Dry Bulb Index accounts for the effects caused by solar, load, air temperature, and chemical protective clothing, under a light work load (walking at approximately 3 mph). A mercury thermometer, shielded from direct sunlight, is used to measure ambient temperature. The percentages of (of time) of sunlight and cloud cover are then estimated to determine a sunshine quality factor (e.g., 100% sunshine - no cloud cover = 1.0; 50% sunshine - 50% cloud cover = 0.5; 0% sunshine - 100% cloud cover = 0.0). When these two sets of values have been obtained, they are inserted into the following equation to calculate the adjusted temperature:

$$T (^{\circ}\text{C}, \text{adjusted}) = T (^{\circ}\text{C}, \text{actual}) + (7.2 \times \text{sunshine quality factor})$$

-OR-

$$T (^{\circ}\text{F}, \text{adjusted}) = T (^{\circ}\text{F}, \text{actual}) + (13 \times \text{sunshine quality factor})$$

After the adjusted temperature has been calculated, the length of the first work shift can be determined using the following table:

Initial Break and Physiological Monitoring Cycles

ADJUSTED TEMPERATURE	NORMAL WORK CLOTHES	PROTECTIVE CLOTHING
90°F (32.2° C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90° F (30.8°-32.2° C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5° F (28.1°-30.8° C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5° F (25.3°-28.1° C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5° F (22.5°-25.3° C)	After each 150 minutes of work	After each 120 minutes of work

NOTE: The standard rest period is 15 minutes

WET BULB GLOBE THERMOMETER INDEX

The Wet Bulb Globe Thermometer (WBGT) Index was developed by the U.S. Army in the 1950s to prevent heat stress in army recruits. The WBGT Index accounts for the effects caused by humidity, air movement, evaporation, air temperature and work rate. It does not, however, account for the effects of chemical protective clothing, non-acclimatized workers, age, or other factors which may affect the likelihood of heat stress. Because of this, it is necessary to make adjustments to the index and conduct Heart Rate Monitoring.

WBGT measurements are usually obtained through the use of are-contained electronic devices. Such devices are easy to set up and can provide the user with the capabilities to store data and download to print out a hard copy.

Heat produced by the body and the environmental heat together determine the total heat load. Therefore, after the WBGT Index has been obtained, the anticipated work load category of each job shall be determined and the initial-rest regimen established using the table below.

The work load category may be determined by ranking each job into light, medium and heavy categories on the basis of type of operation. Examples of each category are:

Light work: sitting or standing to control machines, performing light hand work
Moderate work: walking about with moderate lifting and pushing; and
Heavy work: pick and shovel work.

PERMISSIBLE HEAT EXPOSURE			
WORK-REST REGIMEN	WORK LOAD		
	LIGHT	MODERATE	HEAVY
	30.0° C/86° F	26.7° C/80.1° F	25° C/77° F
75% Work-25% Rest Each Hour	30.6° C/87.1° F	28° C/82.4° F	25.9° C/78.6° F
50% Work-50% Rest Each Hour	31.4° C/88.5° F	29.4° C/85.0° F	27.9° C/82.2° F
25% Work-75 % Rest Each Hour	32.2° C/90.0° F	31.1° C/88.0° F	30.0° C/86.0° F

The table reads as follows:

Light, continuous work is possible at any WBGT reading up to 30° C (86° F) but above that limit work breaks

are needed to recover from the heat; light work at temperatures of between 30.0 and 30.6°C (86 to 87°F) can be conducted, but 15 minute breaks must be taken every hour, etc. It is important to note that this table is applicable primarily to healthy, acclimatized personnel; wearing standard work clothing.

NOTE: An additional 6 to 11°C (42.8 to 51.8°F) must be added to the calculated WBGT temperature for personnel wearing chemical protective clothing prior to determining the initial work - rest regimen from this table. Because the WBGT Index does not take into account unacclimatized workers, or individual susceptibilities, the addition to the WBGT value does not eliminate the requirement for Heart Rate Monitoring after work has begun.

Phase 2 - Heart Rate Monitoring

An increase in the heart rate is a significant indication of stress, whether induced by exposure to heat or through physical labor. Although baseline heart rates can vary significantly between individuals and during the day for an individual, a heart rate of 110 beats per minute or greater is an indication of physiological stress. To prevent heat stress illnesses, the heart rate (HR) should be measured by radial (wrist) or carotid (neck) pulse for 30 seconds as early as possible in the rest period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 33 percent while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats/minute at the beginning of the next rest period, the following work period should be further shortened by 33 percent while the length of the rest period stays the same.

ATTACHMENT 2

Trenching & Excavating H & S Requirements

PANAMERICAN

PANAMERICAN TRENCHING AND EXCAVATION HEALTH AND SAFETY REQUIREMENTS

The following will apply to all activities associated with excavations:

REGULATORY AUTHORITY

Excavations will be performed in accordance with OSHA 29 CFR, subpart P, 1926.650-1926.652 and USACOE EM 385-1-1 section 25 requirements as they apply to project activities.

GENERAL

- At all times the need for personnel to enter excavations will be minimized. Inspections or sample removal will be done from above the excavation, whenever possible.
- Personnel will only enter excavations after the requirements of this plan have been met.
- Personnel protective equipment including hard hat, safety glasses and steel-toe work boots may be required.

SURFACE ENCUMBRANCES

Surface encumbrances such as structures, fencing, piping, stored material etc. which may interfere with safe excavations will be avoided, removed or adequately supported prior to the start of excavations. Support systems will be inspected daily.

UNDERGROUND UTILITIES

Underground utility locations will be checked and determined and permits as necessary will be in place prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location will be determined by careful probing or hand digging and when it is uncovered, proper supports will be provided.

OVERHEAD OBSTACLES

A minimum safe distance of 20 feet will be maintained when working around overhead high-voltage lines or the line will be de-energized following appropriate lock-out and tag-out procedures by qualified utility personnel.

ENTRY/EXIT ROUTES

Excavations five feet or more deep will require an adequate means of exit, such as a ladder, ramp, or steps and located so as to require no more than 25 feet of lateral travel. Under no circumstances will

personnel be raised.

VEHICLE CONTROL/SAFETY

Personnel working around heavy equipment, or who may be exposed to public vehicular traffic will wear a traffic warning vest consisting of at least 400 square inches of red or orange material. At night, at least 400 square inches of florescent or other reflective material will be worn.

For excavation work on or adjacent to highways or streets, signs, signals, and barricades tat conform to the requirements of the current American National Standards Institute (ANSI) D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways will be used to protect work areas. Signs, signals, and barricades will be adequately lighted at night. Flagmen will be provided when signs, signals and barricades do not provide adequate protection. Flagmen will use signals and procedures contained in the current issue of ANSI D6.1. At night, flagmen will be clearly illuminated so as to be easily seen by approaching traffic.

For mobile equipment operating next to or approaching the edge of an excavation, the operator will have a clear view of the edge of the excavation, or a warning system such as barricades, hand or mechanical signals, or stop logs will be used. If possible the surface grade will slope away from the excavation.

Personnel will be safely located in and around the trench and will not be permitted to work underneath loads handled by lifting or digging equipment. Personnel are required to stand away from vehicles being loaded and unloaded. Operators can remain in the cabs of vehicles being loaded or unloaded provided the vehicles are equipped to provide adequate protection to the operator.

HAZARDOUS ATMOSPHERES

Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases or vapors (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases or vapors (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations, especially around landfills and hazardous waste sites.

In locations where oxygen deficiency or hazardous gaseous conditions are possible, the air in the excavation will be tested before personnel are permitted to enter an excavation deeper than 4 feet. When flammable gases are present, adequate ventilation will be provided and sources of ignition will be eliminated. Ventilation or respiratory protection will be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records will be maintained of all test results.

WATER ACCUMULATION HAZARDS

Personnel will not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include special support or shield systems, water removal systems such as pumps, or safety harnesses and lifelines. Water removal systems will be operated and monitored by experienced personnel. Diversion ditches or dikes will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area around the excavation. Adequate precautions, as described above, will be taken for excavating

subject to heavy rains.

STABILITY OF ADJACENT STRUCTURES

Support systems such as shoring, bracing, or underpinning will be provided to maintain the stability of adjoining buildings, walls, or other structures endangered by the excavation operations. Excavations below a foundation or retaining wall that could be reasonably expected to pose a hazard to personnel will not be permitted unless:

- a support system is provided
- The excavation is in stable rock; or
- A Registered Professional Engineer has determined that the structure will not be effected by the excavation activity or that the excavation work will pose a hazard to employees. The Professional Engineer is required to demonstrate how the above determination was made on the basis of appropriate calculations.

Sidewalks will not be undermined unless shored to protect from possible collapse.

PROTECTION FROM LOOSE ROCK, MATERIALS OR SPOILS

In excavations and trenches that personnel may be required to enter, loose rock, excavated or other material, and spoils will be effectively stored and retained at least two feet or more from the edge of the excavation.

As an alternative to the clearance prescribed above, barriers or other effective retaining devices may be used in order to prevent spoils or other materials from falling into the excavation.

Walkways, runways, and sidewalks will be kept clear of excavated material from other obstructions.

Scaling operations may be used to remove loose material and will be performed only by experienced crews under the direct supervision of a competent supervisor. The scalers will be provided with scaler=s lifelines, safety belts, boatswain chair, and other safety equipment necessary for their protection.

FALL PROTECTION

Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.

Adequate barrier physical protection will be provided at all remotely located excavations. All excavations will be barricaded or covered.

EMERGENCY RESCUE

In the event of a cave-in, the Emergency Rescue Squad will be immediately notified. The caller should provide his name, location, nature of the accident (an excavation collapse), the dimensions of the excavation, and number of people trapped in the excavation. Personnel are not to enter a collapsed trench to attempt rescue. This may cause a further collapse of the trench. Under no circumstance is heavy equipment to be used to attempt rescue of personnel in a collapsed excavation; injury or decapitation could be the result. All heavy equipment and traffic in the area is to be shut down and

stopped to reduce vibration. Pumps should be started if water ensues.

INSPECTION PROGRAM

Safety personnel will conduct daily inspections of the excavation, the adjacent areas, and protective systems. Inspections will be conducted prior to the start of work and as needed throughout the work shift. Inspections will also be made after every rainstorm or other occurrence that increases the hazard of collapse (i.e., vibration from heavy equipment, freezing and thawing, etc.).

The excavation inspection will include a check for the following:

- Evidence if situations that could result in possible cave-in (i.e. soil crumbling or sloughing, water saturated soils, freezing and thawing, unusual vibrations such as from heavy equipment, heavy rains, surface run off entering trench, etc.);
- Indications of failure of protective systems;
- Hazardous atmosphere (oxygen deficiency, flammable and toxic gases and vapors);
- Condition and support of exposed underground installations;
- Adequate means of egress;
- Signs, signals, and barricades for work area protection;
- Precautionary measures to control water accumulation;
- Stability and support of adjacent structures; and
- Adequate protection from loose rock and soil.

PROTECTIVE SYSTEMS

Personnel working in excavations will be protected from cave-ins by sloping and/or benching of excavation walls, a shoring system or some other equivalent means except when:

- The excavation is made entirely in stable rock; or
- Excavations are less than five feet deep and safety personnel have determined that there is no indication of potential cave-in. Depending on site and soil conditions protective measures may be taken for the excavations less than five feet in depth.

The most important factor influencing the choice of protective systems is the soil type classification. Once the soil type has been classified, selection of the protective system, the determination of the angle of repose for sloping and benching, and the design of shoring systems will be made. Decisions will be based on careful evaluation of pertinent factors such as depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed structures equipment, overlying material, or stored material; and vibration from equipment, blasting traffic or other sources.

Soil Classification

Appendix A of the OSHA Excavation Standard describes a method to classify soils into four types:

1. Stable Rock - Solid mineral matter that can be excavated with vertical sides.

2. Type A - cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) or greater. Examples include: clay; silty clay; sandy clay; clayey loam; and cemented soils such as caliche and hardpan. No soil is considered to be Type A if it is fissured, subject to vibration, previously disturbed, or part of a sloped, layered system.

3. Type B - cohesive soils with an unconfined compressive strength of greater than 0.5 tsf but less than 1.5 tsf. Examples include: angular gravel similar to crushed rock; silt; silty loam; and sandy loam; Type B soils also include : previously disturbed soils that are not type C; Type A soils that are fissured or subject to vibration; and dry rock that is not stable.

4. Type C - cohesive soils with an unconfined compressive strength of 0.5 tsf or less. Examples include: gravel; sand; loamy sand; submerged soil or soil from which water is seeping; submerged rock that is not stable.

The engineer, geologist, or safety personnel will conduct at least one visual and at least one manual test as described in the OSHA excavation standard in order to classify soils. Visual tests include looking for : particle size and soil cohesiveness (clumping); cracking in the excavation sides which suggests fissured material; underground installations and previously disturbed soils; layered soil systems that slope toward the excavation; evidence of surface water and water seeping from the sides of the excavation; and sources of vibration that may affect the excavation stability. Manual tests include: plasticity; dry strength; tumb penetration; drying test; and strength tests using a pocket penetrometer or hand-operated shear vane.

Sloping and Benching

One of the following options for sloping and benching systems described in section 1926.652(b) of the OSHA Excavation Standard will be used in excavations of .5 foot or deeper or at the discretion of the safety personnel:

- The walls of excavation will be sloped at an angle not steeper than one-and one-half horizontal to one vertical. Sloping configurations will follow the slopes shown for Type C soils in Appendix B of the OSHA Excavation Standard.
- Maximum allowable slopes and sloping and benching configurations will be determined according to soil type as described in Appendices A and B of the OSHA Excavation Standard.
- Use of other written tabulated data and designs, such as tables and charts, to design sloping and benching systems. A copy of the tabulated data must be approved by a registered Professional Engineer. A copy of the tabulated data must be kept at the job site.

Personnel are not allowed to work on the faces of sloped or benched excavations above other workers unless the workers at the lower levels are protected from falling material or equipment. Similar protection will be provided for personnel working in excavations below other workers.

Support Systems, Shield Systems, and Other Protective Devices

One of the following options described in OSHA (1926.652 (c)) will be followed.

- Timber shoring, designed according to the conditions and requirements of Appendix C of the OSHA Excavation Standard or aluminum hydraulic shoring designed according to manufacturers tabulated data or Appendix D of the OSHA Excavation Standard. In order to use the information in Appendices C or D, the soil type must first be determined using the classification system in Appendix A. For each soil type the size and spacing of the cross braces, uprights, and walls that comprise the shoring system are then selected based on the depth and width of the trench.
- Use of the manufacturer=s written tabulated to design support systems, shielded systems, and other protective devices. Any deviation from this tabulated data must be approved by the manufacturer. A copy of the tabulated data as well as any approvals to deviate from the tabulated data must be kept at the job site.
- Use of other written tabulated data to design support systems, shield systems, and other protective devices. The tabulated data must be approved by a Registered Professional Engineer. A copy of the tabulated data must be kept at the job site.
- Use of a written support system, shield system, and other protective device design that has been approved by a Registered Professional Engineer. A copy of the written design must be kept at the job site.

Installation and Removal of Support

Cross braces or trench jacks, uprights, and walls will be secured together to prevent sliding, falling or kickouts.

Additional precautions by way of shoring and bracing will be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above or near any excavation, the side of the excavation will be sheetpiled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

Backfilling and removal of trench supports will progress together from the bottom of the trench. Jacks or braces will be released slowly and , in unstable soil, ropes will be used to pull out the jacks or braces from above after employees have cleared the trench.

Shield Systems

Portable trench boxes or sliding trench shields may be used for protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they will be designed, constructed and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench. Shields will be installed so as to restrict lateral or other hazardous movement. Personnel are not allowed inside shields when shields are being moved.

EXCAVATION SAFETY LIST

To be completed prior to each work shift, or prior to personnel entering a new trench for the first time, by the Site Safety Officer/Competent Person:

Project _____ Location _____

Job Number _____

Competent Person(CP)* _____ Date _____

		<u>Yes</u>	<u>No</u>	<u>N/A</u>
1.	Has the site been cleared for utilities and other underground obstructions?	_____	_____	_____
2.	If on public property, has the regional utility locating service been notified?	_____	_____	_____
3.	Has the excavation equipment been safety checked by the operator?	_____	_____	_____
4.	Are copies of relevant OSHA excavation regulations available on site?	_____	_____	_____
5.	Will the excavation be 5 feet or more in depth?	_____	_____	_____
6.	If 4 is yes, will personnel enter the excavation at any time?	_____	_____	_____
7.	If 4a is yes, have provisions been made for shoring, sloping, or benching the excavation? Describe: _____ _____ _____	_____	_____	_____
8.	Has an inspection of the site and excavation been conducted by the SSO?	_____	_____	_____
9.	Has the Competent Person conducted visual and manual tests to classify the soil?	_____	_____	_____

* According to Federal OSHA, A Competent Person is a person who is capable of identifying existing and predictable hazards in the surroundings; or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has the authority to take prompt corrective measures to eliminate them.

- | | | | | |
|-----|---|--|--------|-------|
| 10. | G | Visual Test _____ | (type) | |
| | G | Manual Test _____ | (type) | |
| | G | Soil Classification _____ | (type) | |
| | | | | |
| 11. | | Are there any conditions that might expose employees to injury from possible moving ground? | | _____ |
| | | | | |
| 12. | | Is excavated material being placed at least 2 feet from the edge of the excavation? | | _____ |
| | | | | |
| 13. | | Is work in the excavation at all times under the immediate supervision of the SSO or other competent person? | | _____ |
| | | | | |
| 14. | | Is there a stairway, ladder, or ramp securely fastened in place to provide ingress and egress from the excavation? | | _____ |
| | | | | |
| 15. | | If the excavation is 4 feet or more in depth, are safe means of access (see 8) provided so as to require no more than 25 feet of lateral travel to reach them? | | _____ |
| | | | | |
| 16. | | If structural ramps are installed that are used for access/egress: were they designed by a qualified engineer? | | _____ |
| | | | | |
| 17. | | Do the structural ramps have appropriate means to prevent slipping and are the ramps uniform in thickness? | | _____ |
| | | | | |
| 18. | | Are walkways or bridges provided across the excavation to safe crossing? | | _____ |
| | | | | |
| 19. | | If excavations are 7 1/2 or more feet in depth, do the walkways have guardrails and toeboards? | | _____ |
| | | | | |
| 20. | | Are undermined structures adequately supported to safely carry all anticipated loads and protect workers? | | _____ |
| | | | | |
| 21. | | Are there adequate means provided to prevent mobile equipment from inadvertently entering the excavation? | | _____ |
| | | | | |
| 22. | | Is the excavation well marked and barricaded to prevent personnel from falling IN? | | _____ |
| | | | | |
| 23. | | Are means available to prevent surface water from entering the excavation and to provide | | _____ |

adequate drainage of the area adjacent to the trench?

- | | | | | |
|-----|---|-------|-------|-------|
| 24. | Where it is reasonable to expect hazardous atmospheres, including oxygen deficiency, to exist in the excavation, is appropriate atmosphere testing equipment available. | _____ | _____ | _____ |
| 25. | Has the testing equipment been calibrated, and the calibrations recorded, today? | _____ | _____ | _____ |
| 26. | Are employees trained in proper use of this equipment? | _____ | _____ | _____ |
| 27. | Has a harness and lifeline been provided whenever an employee is required to enter a confined footing excavation? | _____ | _____ | _____ |
| 28. | Is appropriate personal protective equipment (hardhat, safety boots, eye protection, etc.) available and in use? | _____ | _____ | _____ |

Notes: _____

CPs Name (Print)

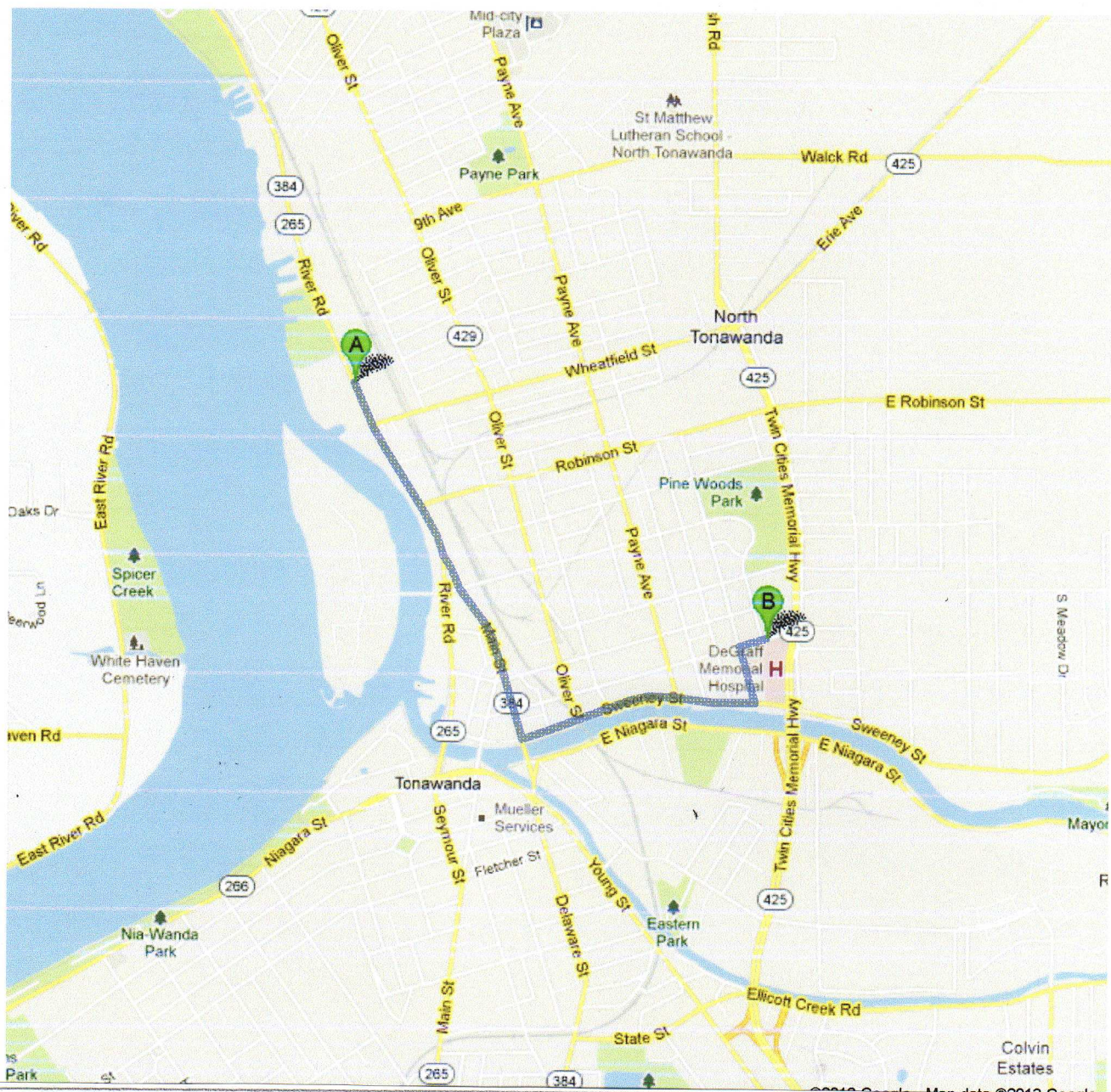
Signature

ATTACHMENT 3

Map to Hospital



Directions to DeGraff Memorial Hospital
445 Tremont St, North Tonawanda, NY 14120
2.0 mi – about 5 mins



600 River Rd, North Tonawanda, NY 14120



1. Head **southeast** on **River Rd** toward **Wheatfield St**
About 51 secs

go 0.5 mi
total 0.5 mi



2. Continue onto **Main St**
About 1 min

go 0.6 mi
total 1.1 mi



3. Turn left onto **Sweeney St**
About 2 mins

go 0.7 mi
total 1.8 mi



4. Turn left onto **Niagara St**
About 49 secs

go 0.2 mi
total 1.9 mi



5. Take the 1st right onto **Tremont St**
Destination will be on the right

go 404 ft
total 2.0 mi



DeGraff Memorial Hospital
445 Tremont St, North Tonawanda, NY 14120

ATTACHMENT 4

NYSDEC DER-10
Appendix 1A & Appendix 1B

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B

Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 µg/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 %g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 µm, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
 - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 µg/m³ (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m³ continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM₁₀ at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m³ action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

ATTACHMENT 5

Table of Potential Hazards & OSHA Standards

Potential Hazards and OSHA Standards for Consideration during IRMs

Site Exposure/Control	Potentially Applicable OSHA Standard*	
	1910 General Industry	1926 Construction
Hazard Assessment & Employee Training	29 CFR 1910.132(d)	29 CFR 1926.21(b)
Chemical Exposure	29 CFR 1910.1000	29 CFR 1926.55
Noise Exposure	29 CFR 1910.95	29 CFR 1926.52
Sanitation	29 CFR 1910.141	29 CFR 1926.51
Wiring Methods (temporary wiring)	29 CFR 1910.305(a)(2) 29 CFR 1910.333	29 CFR 1926.405(a)(2)
Electrical Hazards		29 CFR 1926.416
Emergency Action Planning	29 CFR 1910.38	29 CFR 1926.35
Excavation	covered by 1926	29 CFR 1926 Subpart P
Confined Space Entry	29 CFR 1910.146	29 CFR 1926.21(b)(6) 29 CFR 1926.353(b)
Material Handling	29 CFR Subpart N	29 CFR Subpart N 29 CFR 1926.600-602 29 CFR 1926.604
Building Demolition	covered by 1926	29 CFR 1926 Subpart T
Site Contaminant Abatement	29 CFR 1910.1000-1029 29 CFR 1910.1043-1052	29 CFR 1926.55 29 CFR 1926.622 29 CFR 1926.1101-1152
Elevated Work Surfaces	29 CFR 1910 Subpart D 29 CFR 1910 Subpart F	29 CFR 1926 Subpart L 29 CFR 1926 Subpart M 29 CFR 1926.552
Chemical Storage	29 CFR 1910 Subpart H 29 CFR 1910.1200	29 CFR 1926.59 29 CFR 1926 Subpart F
Personal Protective Equipment	29 CFR 1910 Subpart I	29 CFR 1926 Subpart E
Heavy Equipment Operation	29 CFR 1910.95 29 CFR 1910 Subpart N	29 CFR 1926.52 29 CFR 1926 Subpart O
Tasks-Long Duration	29 CFR 1910.141-142	29 CFR 1926.51

The Federal General Industry and Construction citations are provided above

APPENDIX H

SITE MANAGEMENT FORMS

Panamerican Environmental. Inc
2390 Clinton Street
Buffalo, New York

SITE WIDE INSPECTION FORM

Date:

Site Name:

Location:

General Site Conditions:

Weather Conditions:

Compliance/Evaluation ICs and ECs :

Site management Activities (sampling, H & S Inspection, etc.):

Compliance With Permits and O & M Plan:

Records Compliance:

General Comments:

INSPECTOR'S NAME:

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

APPENDIX I

**NYSDEC SPDES GENERAL PERMIT FOR
STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITY-
PERMIT NO. GP-0-15-002 (CD)**



**Department of
Environmental
Conservation**

**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES**

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-15-002

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2015

Expiration Date: January 28, 2020

John J. Ferguson
Chief Permit Administrator

A handwritten signature in black ink, appearing to be "John J. Ferguson", written over a horizontal line.

Authorized Signature

1 / 12 / 15

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL")*.

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G). They are also available on the Department's website at:

<http://www.dec.ny.gov/>

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a point source and therefore, pursuant to Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They cannot wait until there is an actual *discharge* from the construction site to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES
FROM CONSTRUCTION ACTIVITIES**

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(Part I)

Part I. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. **Erosion and Sediment Control Requirements** - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize the discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the Stormwater Pollution Prevention Plan ("SWPPP") the reason(s) for the deviation or alternative design and provide information

(Part I.B.1)

which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
- (ii) Control stormwater *discharges* to *minimize* channel and streambank erosion and scour in the immediate vicinity of the *discharge* points;
- (iii) *Minimize* the amount of soil exposed during *construction activity*;
- (iv) *Minimize* the disturbance of *steep slopes*;
- (v) *Minimize* sediment *discharges* from the site;
- (vi) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
- (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted; and
- (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover.

b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering.** *Discharges* from dewatering activities, including *discharges*

(Part I.B.1.c)

from dewatering of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

- (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;
- (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and
- (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited Discharges.** The following *discharges* are prohibited:

- (i) Wastewater from washout of concrete;
- (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
- (iv) Soaps or solvents used in vehicle and equipment washing; and
- (v) Toxic or hazardous substances from a spill or other release.

f. **Surface Outlets.** When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion

(Part I.B.1.f)

at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv

(Part I.C.2.a.ii)

that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.
- (v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or

(Part I.C.2.b.ii)

standard SMP with RRV capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRV capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRV as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.

c. Sizing Criteria for Redevelopment Activity

(Part I.C.2.c.i)

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

- (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
- (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
- (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
- (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(Part I.C.2.c.iv)

- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both *New Development* and *Redevelopment Activity* shall provide post-construction stormwater management controls that meet the *sizing criteria* calculated as an aggregate of the *Sizing Criteria* in Part I.C.2.a. or b. of this permit for the *New Development* portion of the project and Part I.C.2.c of this permit for *Redevelopment Activity* portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or

(Part I.D)

if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges* from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater *discharges* may be authorized by this permit: *discharges* from firefighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated *groundwater* or spring water; uncontaminated *discharges* from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who *discharge* as noted in this paragraph, and with the exception of flows from firefighting activities, these *discharges* must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are not authorized by this permit:

(Part I.F)

1. *Discharges after construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities* or *discharges from construction activities* that may adversely affect an endangered or threatened species unless the *owner or operator* has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.C.2 of this permit.
5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb one or more acres of land with no existing *impervious cover*, and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb two or more acres of land with no existing *impervious cover*, and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the USDA Soil Survey for the County where the disturbance will occur.

(Part I.F.8)

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.C.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
 - a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:
 - (i) No Affect
 - (ii) No Adverse Affect

(Part I.F.8.c.iii)

(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the Department in order to be authorized to *discharge* under this permit. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address.

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI.

The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the address in Part II.A.1.

(Part II.A.2)

The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (*Change of Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

B. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary UPA permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,
 - c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above

(Part II.B.3)

will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

- (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
- (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
- (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

- (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "MS4 SWPPP Acceptance" form, or
- (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. The Department may suspend or deny an *owner's or operator's* coverage

(Part II.B.4)

under this permit if the Department determines that the SWPPP does not meet the permit requirements. In accordance with statute, regulation, and the terms and conditions of this permit, the Department may deny coverage under this permit and require submittal of an application for an individual SPDES permit based on a review of the NOI or other information pursuant to Part II.

5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.B. of this permit.

C. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-15-002), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, and all documentation necessary to demonstrate eligibility with this permit at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:
 - a. The *owner or operator* shall

(Part II.C.3.a)

have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

- b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the *regulated, traditional land use control MS4* in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice

(Part II.D)

D. Permit Coverage for Discharges Authorized Under GP-0-10-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-10-001), an *owner or operator* of a *construction activity* with coverage under GP-0-10-001, as of the effective date of GP-0-15-002, shall be authorized to *discharge* in accordance with GP-0-15-002, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-15-002.

E. Change of *Owner or Operator*

2. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.A.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

(Part III)

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;
 - b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the *discharge* of *pollutants*; and
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority.
5. The Department may notify the *owner or operator* at any time that the

(Part III.A.5)

SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.C.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*.

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the

(Part III.A.6)

trained contractor responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project;
 - b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
 - c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
 - d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other

(Part III.B.1.d)

activity at the site that results in soil disturbance;

- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005;
- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
- k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the construction site; and
- l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005. Include the reason for the deviation or alternative design

(Part III.B.1.I)

and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;
- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates

(Part III.B.2.c.iv)

that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

- (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
 - e. Infiltration test results, when required; and
 - f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.
3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

(Part IV)

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.
2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

(Part IV.C)

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
 - a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and

(Part IV.C.2.b)

the *owner or operator* has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

- c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.
- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.A.1 of this permit.
- e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall

(Part IV.C.2.e)

be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of *discharge* from the construction site.
4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:
 - a. Date and time of inspection;
 - b. Name and title of person(s) performing inspection;
 - c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
 - d. A description of the condition of the runoff at all points of *discharge* from the construction site. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
 - e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
 - f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
 - g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
 - h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

(Part IV.C.4.i)

- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
 - j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
 - k. Identification and status of all corrective actions that were required by previous inspection; and
 - l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.C.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

- 1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.A.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

(Part V.A.2)

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;
 - b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.E. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector's* final site inspection certification(s) required in Part V.A.3. of this permit.

(Part V.A.5)

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
 - a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,
 - b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
 - c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
 - d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION OF RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

(Part VII)

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

(Part VII.E)

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the

(Part VII.H.1.a.i)

corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

- (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

- (i) the chief executive officer of the agency, or

- (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named

(Part VII.H.2.b)

individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any *owner or operator* authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any *discharger* authorized by a general permit to apply for an individual SPDES permit, it shall notify the *discharger* in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from *owner or operator* receipt of the notification letter, whereby the authorization to

(Part VII.K.1)

discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a construction site which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

(Part VII.N)

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with *construction activity* covered by this permit, the *owner or operator* of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A

Definitions

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a construction site by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a construction site to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or point source.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied

on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters,

ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

New Development – means any land disturbance that does meet the definition of Redevelopment Activity included in this appendix.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York..

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Stream bank restoration projects (does not include the placement of spoil material),
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that makes the transition between the road shoulder and the ditch or embankment,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area with a Soil Slope Phase that is identified as an E or F, or

the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part

621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B

Required SWPPP Components by Project Type

Table 1
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not directly discharging to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other agricultural building, silo, stock yard or pen.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Bike paths and trails
- Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that *alter hydrology from pre to post development* conditions
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

- All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other agricultural building(e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C

Watersheds Where Enhanced Phosphorus Removal Standards Are Required

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

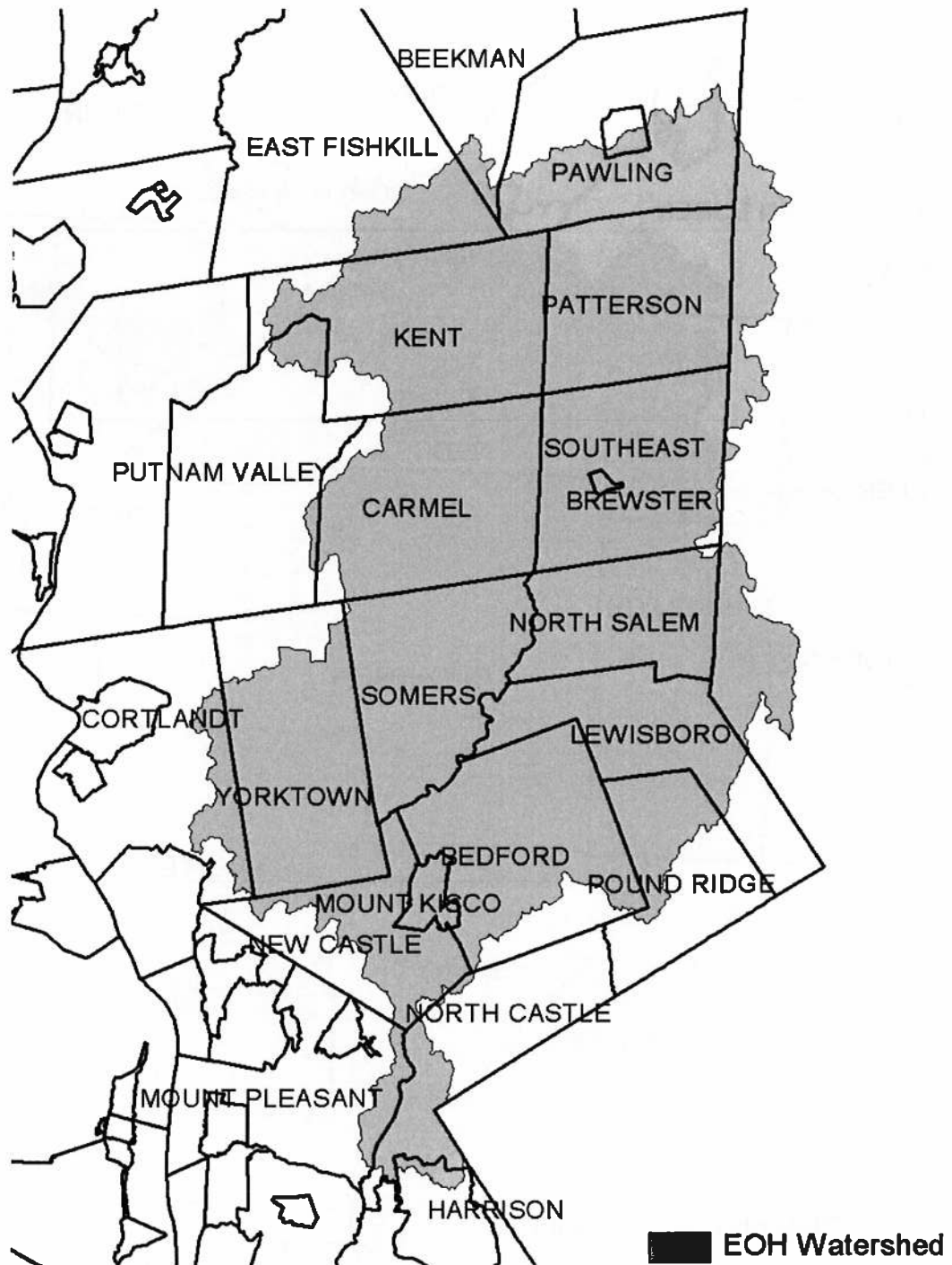


Figure 2 - Onondaga Lake Watershed

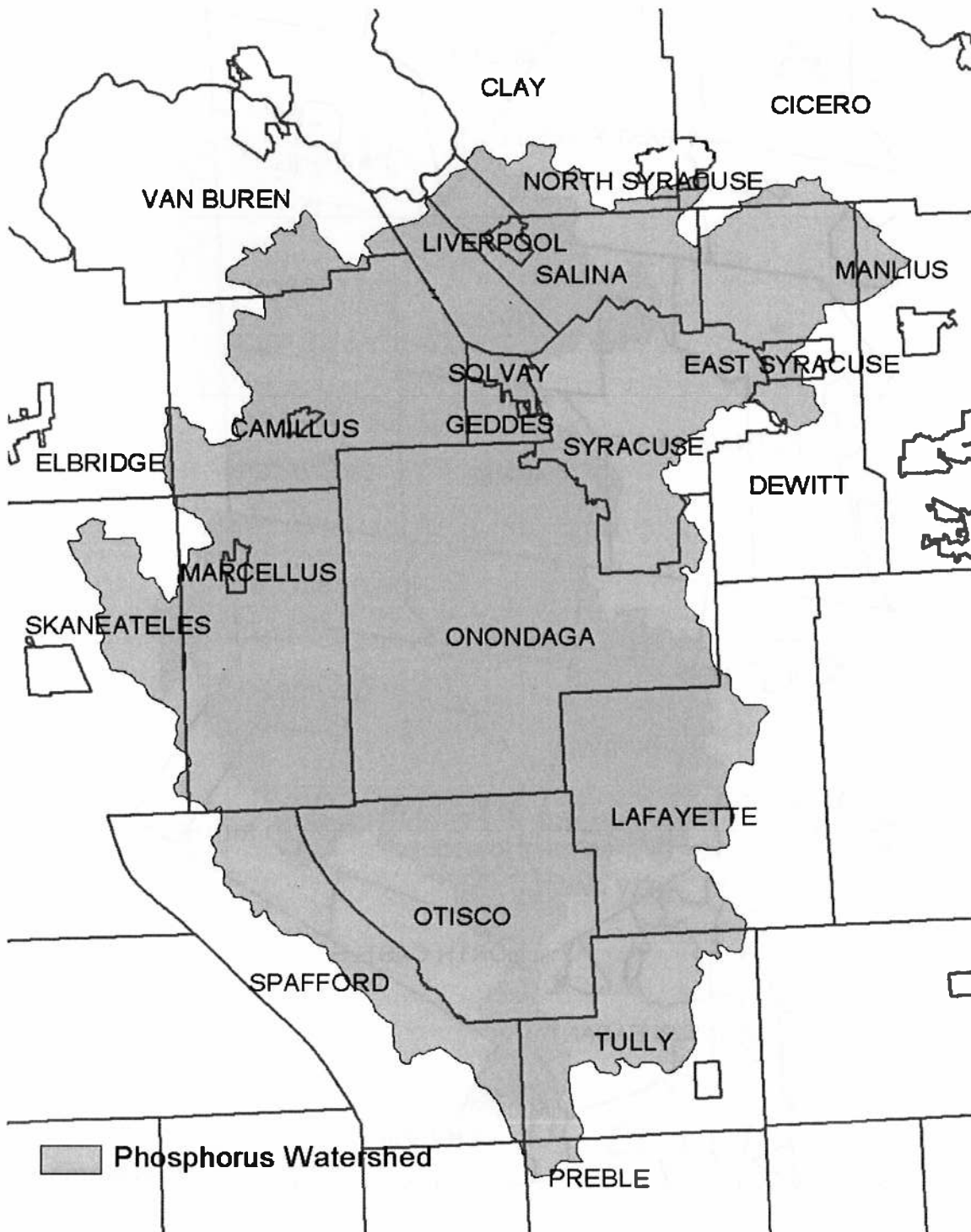


Figure 3 - Greenwood Lake Watershed

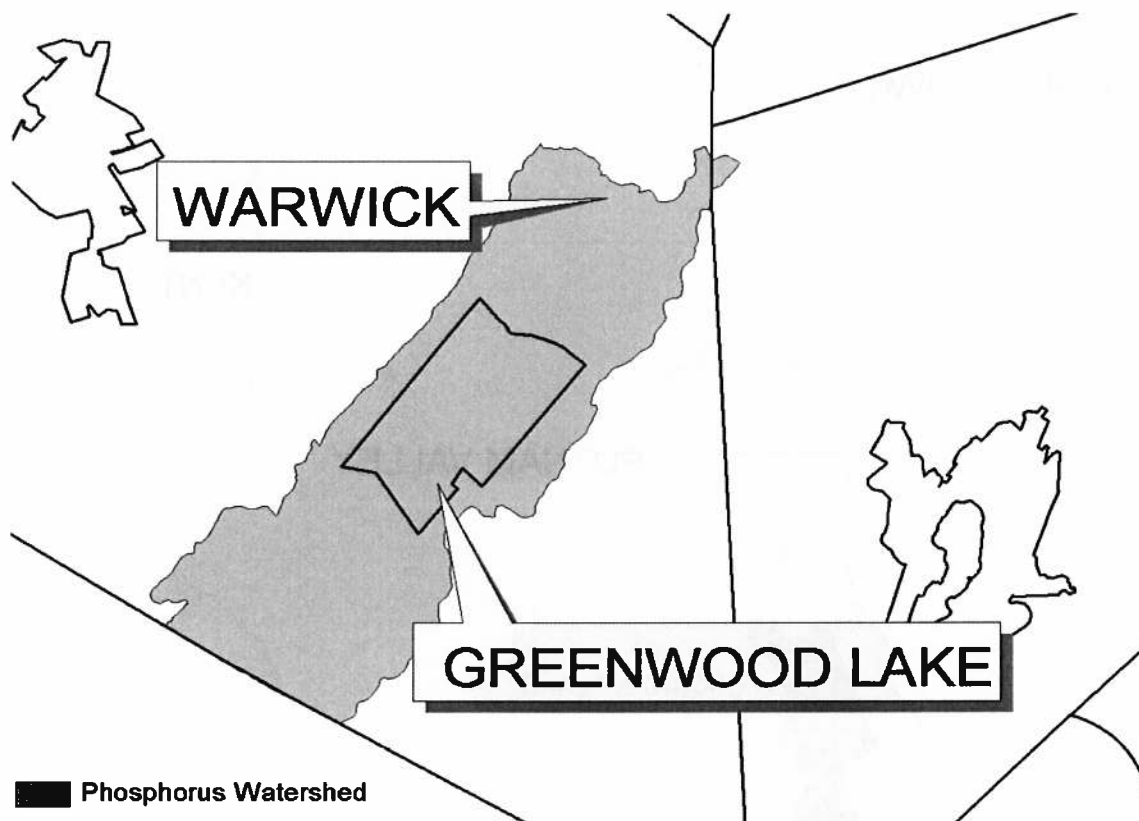


Figure 4 - Oscawana Lake Watershed

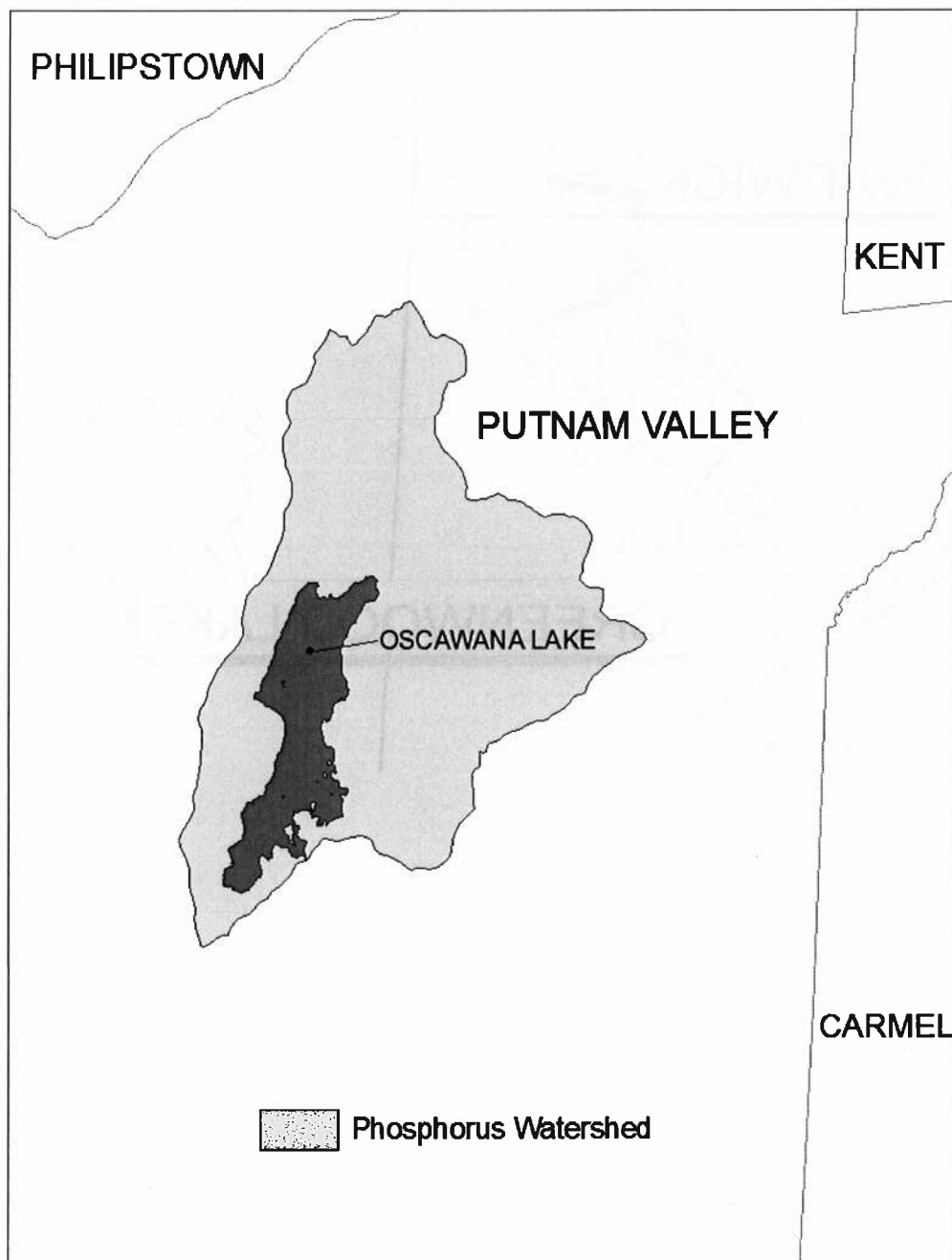
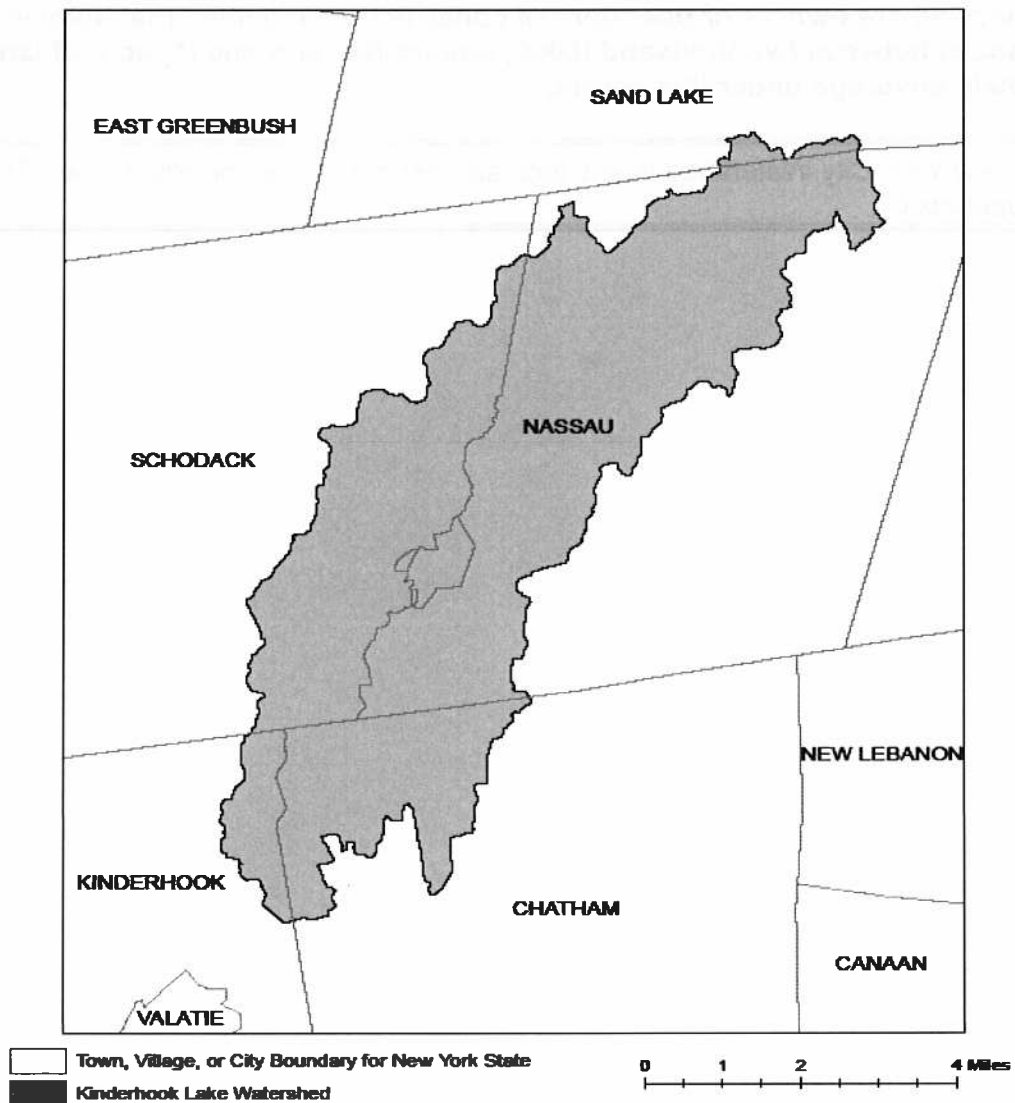


Figure 5: Kinderhook Lake Watershed



APPENDIX D

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	COUNTY	WATERBODY
Albany	Ann Lee (Shakers) Pond, Stump Pond	Greene	Sleepy Hollow Lake
Albany	Basic Creek Reservoir	Herkimer	Steele Creek tribs
Allegheny	Amity Lake, Saunders Pond	Kings	Hendrix Creek
Bronx	Van Cortlandt Lake	Lewis	Mill Creek/South Branch and tribs
Broome	Whitney Point Lake/Reservoir	Livingston	Conesus Lake
Broome	Fly Pond, Deer Lake	Livingston	Jaycox Creek and tribs
Broome	Minor Tribs to Lower Susquehanna (north)	Livingston	Mill Creek and minor tribs
Cattaraugus	Allegheny River/Reservoir	Livingston	Bradner Creek and tribs
Cattaraugus	Case Lake	Livingston	Christie Creek and tribs
Cattaraugus	Linlyco/Club Pond	Monroe	Lake Ontario Shoreline, Western
Cayuga	Duck Lake	Monroe	Mill Creek/Blue Pond Outlet and tribs
Chautauqua	Chautauqua Lake, North	Monroe	Rochester Embayment - East
Chautauqua	Chautauqua Lake, South	Monroe	Rochester Embayment - West
Chautauqua	Bear Lake	Monroe	Unnamed Trib to Honeoye Creek
Chautauqua	Chadakoin River and tribs	Monroe	Genesee River, Lower, Main Stem
Chautauqua	Lower Cassadaga Lake	Monroe	Genesee River, Middle, Main Stem
Chautauqua	Middle Cassadaga Lake	Monroe	Black Creek, Lower, and minor tribs
Chautauqua	Findley Lake	Monroe	Buck Pond
Clinton	Great Chazy River, Lower, Main Stem	Monroe	Long Pond
Columbia	Kinderhook Lake	Monroe	Cranberry Pond
Columbia	Robinson Pond	Monroe	Mill Creek and tribs
Dutchess	Hillside Lake	Monroe	Shipbuilders Creek and tribs
Dutchess	Wappinger Lakes	Monroe	Minor tribs to Irondequoit Bay
Dutchess	Fall Kill and tribs	Monroe	Thomas Creek/White Brook and tribs
Erie	Green Lake	Nassau	Glen Cove Creek, Lower, and tribs
Erie	Scajaquada Creek, Lower, and tribs	Nassau	LI Tribs (fresh) to East Bay
Erie	Scajaquada Creek, Middle, and tribs	Nassau	East Meadow Brook, Upper, and tribs
Erie	Scajaquada Creek, Upper, and tribs	Nassau	Hempstead Bay
Erie	Rush Creek and tribs	Nassau	Hempstead Lake
Erie	Ellicott Creek, Lower, and tribs	Nassau	Grant Park Pond
Erie	Beeman Creek and tribs	Nassau	Beaver Lake
Erie	Murder Creek, Lower, and tribs	Nassau	Camaans Pond
Erie	South Branch Smoke Cr, Lower, and tribs	Nassau	Halls Pond
Erie	Little Sister Creek, Lower, and tribs	Nassau	LI Tidal Tribs to Hempstead Bay
Essex	Lake George (primary county: Warren)	Nassau	Massapequa Creek and tribs
Genesee	Black Creek, Upper, and minor tribs	Nassau	Reynolds Channel, east
Genesee	Tonawanda Creek, Middle, Main Stem	Nassau	Reynolds Channel, west
Genesee	Oak Orchard Creek, Upper, and tribs	Nassau	Silver Lake, Lofts Pond
Genesee	Bowen Brook and tribs	Nassau	Woodmere Channel
Genesee	Bigelow Creek and tribs	Niagara	Hyde Park Lake
Genesee	Black Creek, Middle, and minor tribs	Niagara	Lake Ontario Shoreline, Western
Genesee	LeRoy Reservoir	Niagara	Bergholtz Creek and tribs
Greene	Schoharie Reservoir	Oneida	Ballou, Nail Creeks
		Onondaga	Ley Creek and tribs
		Onondaga	Onondaga Creek, Lower and tribs

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Onondaga	Onondaga Creek, Middle and tribs	Suffolk	Great South Bay, West
Onondaga	Onondaga Creek, Upp, and minor tribs	Suffolk	Mill and Seven Ponds
Onondaga	Harbor Brook, Lower, and tribs	Suffolk	Moriches Bay, East
Onondaga	Ninemile Creek, Lower, and tribs	Suffolk	Moriches Bay, West
Onondaga	Minor tribs to Onondaga Lake	Suffolk	Quantuck Bay
Onondaga	Onondaga Creek, Lower, and tribs	Suffolk	Shinnecock Bay (and Inlet)
Ontario	Honeoye Lake	Sullivan	Bodine, Montgomery Lakes
Ontario	Hemlock Lake Outlet and minor tribs	Sullivan	Davies Lake
Ontario	Great Brook and minor tribs	Sullivan	Pleasure Lake
Orange	Monhagen Brook and tribs	Sullivan	Swan Lake
Orange	Orange Lake	Tompkins	Cayuga Lake, Southern End
Orleans	Lake Ontario Shoreline, Western	Tompkins	Owasco Inlet, Upper, and tribs
Oswego	Pleasant Lake	Ulster	Ashokan Reservoir
Oswego	Lake Neatahwanta	Ulster	Esopus Creek, Upper, and minor tribs
Putnam	Oscawana Lake	Ulster	Esopus Creek, Lower, Main Stem
Putnam	Palmer Lake	Ulster	Esopus Creek, Middle, and minor tribs
Putnam	Lake Carmel	Warren	Lake George
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Warren	Tribs to L.George, Village of L. George
Queens	Bergen Basin	Warren	Huddle/Finkle Brooks and tribs
Queens	Shellbank Basin	Warren	Indian Brook and tribs
Rensselaer	Nassau Lake	Warren	Hague Brook and tribs
Rensselaer	Snyders Lake	Washington	Tribs to L.George, East Shr Lk George
Richmond	Grasmere, Arbutus and Wolfes Lakes	Washington	Cossayuna Lake
Rockland	Congers Lake, Swartout Lake	Washington	Wood Cr/Champlain Canal, minor tribs
Rockland	Rockland Lake	Wayne	Port Bay
Saratoga	Ballston Lake	Wayne	Marbletown Creek and tribs
Saratoga	Round Lake	Westchester	Lake Katonah
Saratoga	Dwaas Kill and tribs	Westchester	Lake Mohegan
Saratoga	Tribs to Lake Lonely	Westchester	Lake Shenorock
Saratoga	Lake Lonely	Westchester	Reservoir No.1 (Lake Isle)
Schenectady	Collins Lake	Westchester	Saw Mill River, Middle, and tribs
Schenectady	Duane Lake	Westchester	Silver Lake
Schenectady	Mariaville Lake	Westchester	Teatown Lake
Schoharie	Engleville Pond	Westchester	Truesdale Lake
Schoharie	Summit Lake	Westchester	Wallace Pond
Schuyler	Cayuta Lake	Westchester	Peach Lake
St. Lawrence	Fish Creek and minor tribs	Westchester	Mamaroneck River, Lower
St. Lawrence	Black Lake Outlet/Black Lake	Westchester	Mamaroneck River, Upp, and tribs
Steuben	Lake Salubria	Westchester	Sheldrake River and tribs
Steuben	Smith Pond	Westchester	Blind Brook, Lower
Suffolk	Millers Pond	Westchester	Blind Brook, Upper, and tribs
Suffolk	Mattituck (Marratooka) Pond	Westchester	Lake Lincolndale
Suffolk	Tidal tribs to West Moriches Bay	Westchester	Lake Meahaugh
Suffolk	Canaan Lake	Wyoming	Java Lake
Suffolk	Lake Ronkonkoma	Wyoming	Silver Lake
Suffolk	Beaverdam Creek and tribs		
Suffolk	Big/Little Fresh Ponds		
Suffolk	Fresh Pond		
Suffolk	Great South Bay, East		
Suffolk	Great South Bay, Middle		

Note: The list above identifies those waters from the final New York State "2014 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated January 2015, that are impaired by silt, sediment or nutrients.

APPENDIX F

LIST OF NYS DEC REGIONAL OFFICES

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROAD AVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

