SITE MANAGEMENT PLAN
TOWNLEY HILL ROAD DUMP SITE
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE REGISTRY NO. 8-08-006
CATLIN, CHEMUNG COUNTY, NEW YORK

PREPARED FOR:
CBS CORPORATION
20 STANWIX STREET, 10TH FLOOR
PITTSBURGH, PA 15222

PREPARED BY:
CUMMINGS/RITER CONSULTANTS, INC.
A WOODARD & CURRAN COMPANY
300 PENN CENTER BLVD., SUITE 800
PITTSBURGH, PA 15235

PROJECT NO. 01304.30/05
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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date
1	04/18/2022	Monitoring & PRR Schedules update, Climate Change Vulnerability Assessment addition	

TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS
(CONTINUED)

PAGE

TABLES

FIGURES

APPENDICES

CERTIFICATION

I, Anne E. Proctor, PE, certify that I am currently a registered professional engineer licensed by the State of New York 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

NYS Professional Engineer #	Date	Signature
070786	2/23/2015	Anne E. Proctor

REVISION #1
CERTIFICATION STATEMENT

I James B. Gensel, P.E. certify that I am currently a NYS registered professional engineer and that this Site Management Plan Revision 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).

_____ [P.E.]
September 15, 2021 DATE

LIST OF ACRONYMS

µg/kg	micrograms per kilogram
bgs	below ground surface
CAMP	Community Air Monitoring Plan
CFS	calcium fluoride sludge
COC	constituent of concern
cy	cubic yards
ECL	Environmental Conservation Law
EC	engineering control
EP	Extraction Procedure
EWP	Excavation Work Plan
FDDA	Former Drum Disposal Area
GQS	Groundwater Quality Standards
IC	institutional control
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
MSW	Municipal Solid Waste
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O&M	operation and maintenance
PAH	polycyclic aromatic hydrocarbon
PCB	Polychlorinated Biphenyl
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCO	Soil Cleanup Objectives
SMP	Site Management Plan
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
VOCs	volatile organic compounds
USEPA	United States Environmental Protection Agency
WMA	Waste Management Area

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This Site Management Plan (SMP) is an element of the remedial program for the Townley Hill Road Dump Site, located in Catlin, Chemung County, New York (Site Registry No. 8-08-006) under the New York State Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (NYSDEC). The Site has been remediated in accordance with the Order on Consent and Administrative Settlement (Order), Index #B8-0650-30-12, entered between CBS Corporation (CBS) and the NYSDEC on October 10, 2010 and the NYSDEC March 2012 Record of Decision (ROD) for the Site.

1.1.1 GENERAL

CBS entered into an Order with the NYSDEC to investigate and remediate contaminated media in an approximate 10-acre portion of a 28-acre property located in Catlin, Chemung County, New York. The 10-acre area comprises the "Site". The Site location and boundaries are shown in Figure 1. The boundaries of the Site are more fully described in the metes-and-bounds property description (Appendix A) that is part of the Environmental Easement (Appendix B).

After completing the remedial work described in the ROD, residual contamination was left in the subsurface at this Site. This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement (Appendix B) is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. Reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Cummings/Riter Consultants, Inc. (Cummings/Riter), a Woodard & Curran company, on behalf of CBS in accordance with the requirements in NYSDEC Division of Environmental Remediation *Technical Guidance for Site Investigation and Remediation* ("DER-10") dated May 2010 and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the engineering

controls (ECs) and institutional controls (ICs) that are required by the Environmental Easement for the Site (Appendix B) and is based on information provided in the Remedial Investigation Report (RI Report, Cummings/Riter, December 21, 2011); the Feasibility Study Report (Cummings/Riter, February 3, 2012); the Remedial Design Work Plan (Cummings/Riter, July 2012); the Final Engineering Report (Cummings/Riter, November 2014) and the ROD.

1.1.2 PURPOSE

The Site contains residual contamination after completion of the remedial action. ECs have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement (Appendix B) granted to the NYSDEC, and recorded with the Chemung County Clerk, requires compliance with this SMP and ECs and ICs placed on the Site. The ICs place restrictions on Site use and mandate operation, maintenance, monitoring, and reporting measures for ECs and ICs. This SMP specifies the methods necessary to ensure compliance with ECs and ICs required by the Environmental Easement for contamination that remains at the Site. This SMP has been approved by the NYSDEC, and compliance with this SMP 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.

This SMP provides a detailed description of procedures required to manage remaining contamination at the Site after completion of the remedial action, including the following:

(1) Implementation and management of ECs and ICs;
(2) Media monitoring;
(3) Maintenance of cap containment;
(4) Performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and
(5) Defining criteria for termination of media monitoring.

To address these needs, this SMP includes three plans:

(1) An Engineering and Institutional Control Plan for implementation and management of ECs and ICs;
(2) A Monitoring Plan for implementation of Site monitoring; and

(3) An Excavation Work Plan (EWP, Appendix C) for on-Site work outside of the former Municipal Solid Waste (MSW) disposal area.

This plan also includes a description of Periodic Review Reports for the submittal of data, information, recommendations, and certifications to the NYSDEC.

It is important to note the following:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement (Appendix B). Failure to properly implement this SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion.
- Failure to comply with this SMP is also a violation of ECL, Title 6 of the New York Code, Rules and Regulations (NYCRR) Part 375 and Order for the Site, and thereby subject to applicable penalties.

1.1.3 REVISIONS

Any revisions to this SMP will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site (Appendix B), 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.

1.2 SITE BACKGROUND

The Site historically operated as a landfill. The ground surface of the Site is relatively flat with steeply sloping sides. The surrounding hillsides are wooded. Surface runoff appears to generally flow into the unnamed tributary to Post Creek located to the southeast of the Site area, or directly toward Post Creek to the west. (Refer to Figures 1 and 2.)

There are two man-made ponds at the Site, both of which are believed to be hydraulically isolated from navigable waters. The ponds are not included in the NYSDEC Environmental Resource Mapping; however, the larger of the two ponds is listed on the United States Fish and Wildlife National Wetlands Inventory.

The area surrounding the Site is rural with small population centers along the Post Creek Valley to the northwest. A private residence is situated approximately 700 feet to the east.

1.2.1 SITE LOCATION AND DESCRIPTION

The Site is located near the town of Catlin in a rural portion of Chemung County, New York on Townley Hill Road, approximately 7 miles north of New York State Route 17. The Site occupies an approximate 10-acre portion of a larger 28-acre property identified as Section 26.00, Block 1, Lot 45.1 on the Chemung Tax Map zoned as agricultural/residential as of this writing. The Site is located within the Susquehanna River basin. An unnamed tributary to Post Creek passes within 500 feet southeast of the Site. Post Creek, a Class C stream, is located approximately 1,700 feet northwest of the Site. The 10-acre Site is situated within an approximately 28 $\pm$ acre tract bounded by Post Creek Road to the north, Townley Hill Road to the south, Hibbard Road to the east, and Post Creek to the west (see Figure 1). The boundaries of the Site are fully described in Appendix A: Survey Map, Metes and Bounds.

1.2.2 SITE HISTORY

Mr. Joseph E. Lobell owned and operated the Site as a landfill beginning in the late 1950s or early 1960s. Beginning in 1964, the Site was owned by Mr. John A. Mandzak, who operated Superior Salvage Company (aka Superior Hauling and Superior Disposal). Throughout this period, the Site was reportedly used for disposal of MSW under a permit issued by the Chemung County Department of Health. The Site also reportedly received miscellaneous debris, including tires, junk automobiles, and 55-gallon drums. Superior Salvage Company customers reportedly included local municipalities and the City of Corning School District, where Mr. Mandzak was reported to be the maintenance superintendent. Based on available records, approximately 300 drums containing an incinerator ash-like waste material were disposed at the Site.

According to available historical records from Westinghouse Electric Corporation (Westinghouse), an unknown quantity of calcium fluoride sludge (CFS) from the Westinghouse Industrial and Government Tube Division manufacturing facility located

in Horseheads, New York plant was disposed of in bulk at the "Madzac property" (presumably the Site) between 1964 and 1967. This sludge reportedly consisted of "waste treatment plant sludge intermittently containing traces of lead phosphate and cadmium" from the Westinghouse Horseheads facility.

On October 16, 1967, the Site was closed by the Chemung County Health Department due to complaints of odors and open burning. Beginning in 1969, most of the junked automobiles and other debris were removed by the new owner, Mr. James C. Case. With the assistance of the local offices of the United States Department of Agriculture Soil Conservation Service, Mr. Case enlarged the on-Site pond and placed a soil cover over and revegetated most of the Site.

Chemung County foreclosed on the property in 1998 and subsequently sold the Site in 1999 to Northwoods Hunting Inc., of Ridgeway, Ontario (Northwoods).

In April 1980, the Site was identified by the NYSDEC as an inactive hazardous waste disposal site and placed on the Registry of Inactive Hazardous Waste Disposal Sites in New York. In 1983 and 1984, the NYSDEC sampled drum contents, and analyzed those drum samples for metals by the extraction procedure (EP). Results from the 1984 sampling event indicated an exceedance of the threshold EP toxicity concentrations for cadmium and lead. The Site was subsequently classified as a "Class 2" Site in December 1986. In July 1988, the NYSDEC conducted an interim remedial measure (IRM) in which it removed the drums and approximately 100 cubic yards (cy) of soil impacted by cadmium from the Former Drum Disposal Area (FDDA). Additional soil was removed from the FDDA by the NYSDEC in November 1994.

In December 1996, an "Immediate Investigation Work Assignment Work Plan" was finalized to investigate Site soils, particularly residual cadmium concentrations in the FDDA. In 1997, the NYSDEC conducted a focused Remedial Investigation (RI) and issued a report in September 1998 that recommended a comprehensive Remedial Investigation/Feasibility Study (RI/FS) be conducted at the Site to investigate potential impacts to soil, sediment, and groundwater.

In 1989, 1995, and 1998, the New York State Department of Health (NYSDOH) sampled private wells servicing two homes within one-quarter mile of the Site and found no Site-related contaminants. As part of the RI, private well samples were collected in 2011 from the two residential supply wells historically sampled to confirm previous findings. Site-related constituents were not detected in the 2011 private well samples.

1.2.3 Geologic Conditions

Soil encountered at the Site during drilling and subsurface investigations consisted of brown and gray, silty sand and silty clay, with varying amounts of rock fragments. Soil thickness varied at the Site from 14.0 feet at Monitoring Well MW-1 to 47.5 feet at Monitoring Well MW 4. Soil thicknesses in southern monitoring wells (MW-3 and MW-4) were greater than those in the northern monitoring wells (MW-1 and MW-2) and are believed to be the result of glacial processes. A glacial terrace likely exists in the southern portion of the Site as evidenced by both the thickness and type of soil (glacial till) observed during drilling activities.

Bedrock in the Site region is of Upper Devonian age and consists of shale and siltstone from the Nunda and West Hill Formations of the West Falls Group. These beds reportedly dip gently to the south and show limited structural deformation. Bedrock was described in the boring logs as moderately hard to hard, gray and brown siltstone, and shale. Varying amounts of clay-filled and iron-stained fractures were observed in bedrock, and fossiliferous shale beds were encountered.

Groundwater at the Site flows to the west and southwest toward the Post Creek Valley. Based on the Site geologic and hydrogeologic data, groundwater flow is believed to be primarily influenced by surface topography and the connectivity of bedrock fractures.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

Following completion of the July 1988 IRM, the NYSDEC retained Engineering-Science, Inc. to conduct a Phase I Preliminary Site Assessment, which resulted in a recommendation to conduct a Phase II investigation. Phase II investigative activities included sampling and analysis of soil, sediment, surface water, and groundwater.

Soil samples were collected between September 1991 and June 1993 to evaluate the effectiveness of the drum removal IRM; 17 surface (0 to 6 inches in depth) and 21 subsurface (12 to 24 inches in depth) soil samples were collected and analyzed for cadmium. The results of the sampling showed total cadmium concentrations up to 2,100 milligrams per kilogram (mg/kg), leading the NYSDEC to remove additional soil. In November 1994, the NYSDEC excavated soil from the FDDA to a depth of 24 inches below ground surface (bgs) and transported 236 cy of soil off-site for disposal. Confirmatory (post-excavation) soil sampling indicated the presence of cadmium in the remaining soils at the FDDA.

In 1997, the NYSDEC conducted a focused RI to determine the extent of remaining cadmium-impacted soil in the FDDA, assess the presence and extent of CFS in the former MSW disposal area, and determine the presence or absence of hazardous waste in the former MSW disposal area. As part of this study, 80 surface soil samples (0 to 2 inches bgs) were collected to define the extent of cadmium-impacted soils. The NYSDEC issued a *Focused Remedial Investigation Report* (NYSDEC, 1998) that presented the findings of the study and recommended a comprehensive RI/FS be conducted to investigate potential impacts to soil, sediment, and groundwater.

An RI was performed to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the RI Report (Cummings/Riter, December 2011). Below is a summary of Site conditions when the RI was performed in 2011. Figures 2 through 7 depict a general layout of proposed (pre-remediation) and final (post-remediation) limits for Site conditions and remediation.

1.3.1 SURFACE SOILS IN FORMER DRUM DISPOSAL AREA

In the RI, 23 shallow soil borings were advanced to assess the horizontal and vertical extent of cadmium and lead concentrations in soils near the FDDA. Selected samples were also analyzed for an expanded list of parameters to determine if other constituents of concern (COCs) were present at elevated concentrations. The expanded list of parameters included Target Analyte List (TAL) metals and Target Compound List (TCL)

volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs).

Soil analytical results were compared to NYSDEC Remedial Program Soil Cleanup Objectives (SCOs) as given in Title 6 of the NYCRR Part 375 Subpart 375-6. Soil analytical results and comparisons to SCOs are summarized in Table 1.

The results of the surface soil investigation, in combination with those from the 1997 NYSDEC sampling, provided full horizontal and vertical delineation of impacted Site soils associated with the FDDA. Cadmium was the only constituent detected in these soils at a concentration above its corresponding Commercial SCO (9.3 mg/kg) with a maximum observed concentration of 3,500 mg/kg. Prior NYSDEC sampling had indicated cadmium concentrations as high as 9,870 mg/kg in residual surface soils in the FDDA. Figure 6 shows the extent of soils in the FDDA exhibiting cadmium concentrations above the Commercial SCO.

1.3.2 FORMER MUNICIPAL SOLID WASTE DISPOSAL AREA SOILS AND WASTE

Geophysical surveys and perimeter and interior test pit excavations were used to delineate both the horizontal and vertical limits of impacted soils and waste in the former MSW disposal area of the Site. Consistent with the past use of the Site as a landfill, MSW and debris (e.g., automobile tires, scrap metal) were identified throughout an approximate 1.8-acre area of the Site. Observations made during test pitting showed that this solid waste was generally about 9 to 12.5 feet thick in the center of the disposal area and gradually thinned toward the edges of the indicated disposal area. The total volume of MSW and debris was estimated to be on the order of 20,000 cy.

In soil samples collected from the perimeter and interior test pit excavations during the RI, cadmium was the only Site COC to exceed corresponding Commercial SCOs in this area. Soil analytical results and comparisons to SCOs are summarized in Table 1.

Cadmium concentrations above the Commercial SCO (9.3 mg/kg) were sporadic (5 of 33 soil samples collected from the test pits) and relatively low-level (maximum concentration of 23.2 mg/kg). The RI findings for cadmium were generally consistent

with the test pit sample results from the 1997 NYSDEC focused RI in which cadmium exceeded the Commercial SCO in 4 of 14 test pit soil samples, although a much higher cadmium concentration (2,580 mg/kg) was detected in one of the 1997 samples. Also in the 1997 NYSDEC focused RI, several polycyclic aromatic hydrocarbons (PAHs) were identified as COCs with concentrations exceeding NYSDEC generic SCOs, but PAHs were not detected at concentrations exceeding Commercial SCOs during the RI.

Figure 3 shows the locations of soil samples in the former MSW disposal area where cadmium concentrations exceeded the Commercial SCO. Soils containing cadmium at concentrations that exceeded the Commercial SCO were localized and discontinuous.

The 1997 NYSDEC focused RI identified a 0.2-acre "suspected calcium fluoride sludge disposal area" within the MSW disposal area at the Site, although details regarding the basis of this delineation were not provided and its location was not consistent with the descriptions provided in earlier Site evaluations (Engineering-Science, Inc., 1988). In the RI, CFS was not observed in test pits excavated in the "suspected calcium fluoride sludge disposal area." In addition, none of the RI soil samples collected at these test pits exhibited cadmium concentrations above the Commercial SCO. In the RI, a buried lens of CFS, approximately four feet thick, was visibly identified in a test pit (TP-19) excavated within the MSW disposal area at a location approximately 100 feet north of the NYSDEC "suspected calcium fluoride sludge disposal area." Testing of this visibly distinctive material showed it to exhibit the characteristic of a Resource Conservation and Recovery Act (RCRA) hazardous waste due to the cadmium concentration by the Toxicity Characteristic Leaching Procedure (i.e., 2.1 milligrams per liter [mg/l]) versus the regulatory threshold of 1.0 mg/l. Total cadmium concentrations were not elevated in soil samples collected above or below the CFS. Sludge was not observed in any of the other 18 test pits excavated in the MSW disposal area during the 2011 RI. The RI data were used to refine the limits of CFS; however, during implementation of remedial actions, CFS was additionally encountered to the west of the Large Pond, and CFS material was found to extend beyond the defined areas. The actual quantity of CFS remediated was approximately 3,750 cy (Figure 5).

1.3.3 SITE GROUNDWATER CHARACTERIZATION

In the RI, four groundwater monitoring wells were installed into the uppermost water-bearing zone at the Site. Well locations are shown on Figure 8. The results from two rounds of sampling of these four wells were compared to NYSDEC Groundwater Quality Standards (GQS) as specified in NYCRR Title 6, Part 703. Analytical results and comparisons to GQS are summarized in Table 2.

Analytical results for TAL metals from groundwater samples collected from Site monitoring wells showed varying concentrations of naturally occurring metals (e.g., iron, manganese, and sodium) in both upgradient and downgradient wells. Antimony was detected in one of two samples from Monitoring Well MW-3, and arsenic was detected in both samples collected at Monitoring Well MW-4. NYSDEC GQS exceedances in groundwater are shown on Figure 8. Cadmium was not detected in groundwater above regulatory standards. Likewise, analyses of TCL VOCs, SVOCs, pesticides, and PCBs did not indicate the presence of any of these constituents above applicable NYSDEC GQS.

1.3.4 SEDIMENT CHARACTERIZATION

Sediment samples were collected during the RI from four locations in on-Site ponds, and sediment analytical results were conservatively compared to the most stringent NYSDEC Sediment Criteria provided in the *Technical Guidance for Screening Impacted Sediments* (NYSDEC, 1999). Sediment data are summarized in Table 3. Arsenic, cadmium, iron, and nickel were detected in sediment samples at concentrations exceeding screening level as follows:

- Arsenic: Detected above the screening level (6 mg/kg) in four samples at concentrations ranging from 7.0 to 15 mg/kg;
- Cadmium: Detected above the screening level (0.6 mg/kg) in one location at concentrations of 7.1 and 9.1 mg/kg in duplicate samples;
- Iron: Detected above the screening level (20,000 mg/kg) in four samples at concentrations ranging from 25,000 to 30,000 mg/kg; and
- Nickel: Detected above the screening level (16 mg/kg) in four samples at concentrations ranging from 23 to 30 mg/kg.

Concentrations of two pesticides (4,4'-DDT and gamma-chlordane) exceeded sediment screening levels (10 micrograms per kilogram [µg/kg] and 1 µg/kg, respectively) in samples collected at one location in the larger Site pond. 4,4'-DDT was reported at concentrations of 100 and 340 µg/kg in duplicate samples at this location while gamma-chlordane concentrations were 60 and 22 µg/kg. The 4,4'-DDT concentration in sediment was well below its Commercial SCO for soil (47,000 µg/kg); a Commercial SCO for gamma-chlordane has not been established.

Concentrations of one PCB Aroclor (PCB-1254) exceeded the applicable screening level (at 0.8 µg/kg) at all four of the sediment sampling locations. PCB-1254 concentrations ranged from 6.8 to 6,700 µg/kg. The PCB-1254 concentrations were also above the Commercial SCO (1,000 µg/kg) at two of the four sediment sampling locations, both in the larger Site pond.

Areas where sediment was delineated and removed are depicted on Figure 4.

1.4 SUMMARY OF REMEDIAL ACTIONS

The Site was remediated in accordance with the NYSDEC-approved Remedial Design Work Plan (Cummings/Riter, July 2012). The following is a summary of the Remedial Actions performed at the Site:

- Construction of a stabilized entrance and access road.
- Stabilization of 1,689 cy of impacted soil from the FDDA, four test pit areas, and the Large Pond CFS area outside of the former MSW disposal area as needed using Terrabond SC, a proprietary stabilizing reagent, to assure the material did not exhibit the characteristic of a hazardous waste under the RCRA and corresponding State regulations due to leachable cadmium or lead concentrations.
- Excavation of 3,747 cy of impacted soil, including stabilized soils from the FDDA, four test pit areas, and the Large Pond CFS area outside of the former MSW disposal area, where cadmium concentrations were greater than the commercial SCO.
- Stabilization of 2,061 cy of CFS materials identified in the former MSW disposal area as needed using Terrabond SC to assure the material did not exhibit the characteristic of a hazardous waste under the RCRA and corresponding State regulations due to leachable cadmium or concentrations.

- Consolidation of the treated soils and CFS materials in a designated Waste Management Area (WMA) located within the limits of the former MSW disposal area.
- Backfilling, grading, and revegetating excavated areas for surface water drainage and erosion protection.
- Excavation of 683 cy of sediments using conventional earthmoving equipment, stockpiling on Site, allowing to sufficiently dry to facilitate handling, and consolidation within the WMA.
- Construction of an engineered soil cover atop the WMA providing a minimum of two feet of cover including six inches of topsoil above the consolidated soils.
- Repair and enhancement of the existing soil cover in the former MSW disposal area outside the WMA as necessary to establish a nominal two-foot thick soil cover, including removal of surface debris, placement of geotextile on the prepared surface, placement of up to 24 inches of imported clean soil including six inches of topsoil, and revegetating to reduce potential soil erosion.
- Installation of a fence around the WMA to limit access.
- Imposition of institutional controls in the form of an environmental easement/deed restriction for the controlled property that:
    - Requires the remedial party or Site owner to complete and submit to NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
    - Allows the use and development of the controlled property for commercial purposes as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
    - Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County Department of Health;
    - Prohibits agriculture or vegetable gardens on the controlled property; and
    - Requires compliance with a NYSDEC-approved SMP.
- Development and implementation of a SMP for long-term management of remaining contamination as required by the Environmental Easement (Appendix B), which includes plans for: (1) ECs and ICs, (2) monitoring, (3) operation and maintenance (O&M), and (4) reporting.

As-built drawings showing excavation limits are included as Figures 2 through 7.

1.4.1 Removal of Contaminated Materials from the Site

The Contractor performed cleanup of Site debris from August 2, 2013 through November 21, 2013. Tires and other large surface debris items that were incompatible with a suitable subgrade for subsequent cover soil placement were collected and staged, decontaminated by a high-pressure spray and hand scraping of residual soils by visual inspection at the decontamination pad, and transported and disposed of off Site as non-hazardous waste. Decontamination waste, along with miscellaneous debris and smaller debris items, were placed within the limits of the WMA or former MSW disposal area, both of which were subsequently capped. Approximately 23 tons of tires and debris were collected from the Site, decontaminated, and disposed off-site as non-hazardous waste.

A small quantity of building construction debris was encountered northwest of the FDDA limits during debris consolidation. The material was sampled and results indicated greater than one percent asbestos. The material was covered with polyethylene sheeting until removed and disposed in accordance with state regulations on June 10, 2014.

1.4.2 Remaining Contamination

After treating/stabilizing the identified areas of CFS, no hazardous waste remains on the Site. Miscellaneous waste and soils exceeding commercial SCOs for lead and cadmium are located within the WMA beneath the cap. Following completion of treatment and excavation, post-excavation sampling results demonstrated some isolated locations of impacted soil remain with limited exceedances above the commercial SCO for cadmium of 9.3 mg/kg in the FDDA and Test Pit TP-7/16, as follows:

- The sample locations in the FDDA are between points Q1/Q2 and Q5/Q4. Results indicated soil exceedances of 9.6 mg/kg approximately one-foot deep at the base of the sidewalls in these two locations.
- The locations in the Test Pit TP-7/16 area consist of TP-7/16-2AFlr and TP-7/16-W3/W5-1CS. Sample TP-7/17-2AFlr indicated an exceedance of cadmium at 11 mg/kg approximately seven feet below grade. Sample TP-7/17-W3/W5-1CS indicated an exceedance of cadmium at 10.0 mg/kg approximately three feet below grade.

All exceedances were reviewed with the NYSDEC and approved to be left in place during Site remedial activities. These areas were backfilled with general fill and compacted to

within six inches of the surrounding ground surface. Six inches of topsoil was placed with permanent broadcast seeding and mulching.

Table 4 and Figure 9 summarize the results of the soil samples remaining at the Site after completion of Remedial Action that exceed the Commercial SCOs, and Figure 10 depicts the results of soil samples remaining at the Site after completion of Remedial Action that exceed Track 1 (unrestricted) SCOs.

2.0 ENGINEERING AND INSTITUTIONAL CONTROLS PLAN

2.1 INTRODUCTION

2.1.1 GENERAL

Because soils and waste materials remain at the Site with concentrations of cadmium exceeding the unrestricted use SCO, ECs and ICs are required to protect human health and the environment. The ECs and ICs Plan describes the procedures for the implementation and management of ECs and ICs at the Site. The ECs and ICs Plan is one component of the SMP and is subject to revision by the NYSDEC.

2.1.2 PURPOSE

The ECs and ICs Plan provides the following information:

- A description of ECs and ICs on the Site;
- The basic implementation and intended role of each EC or IC;
- A description of the key components of the ICs set forth in the Environmental Easement (Appendix B);
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of ECs and ICs, such as the implementation of the EWP 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 ECs and ICs required by the Site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

Exposure to remaining contamination (residual cadmium concentrations) in soil/fill at the Site is prevented by a soil cover system placed over the Site. This cover system is comprised of clean soil and enhanced the existing cover materials in the former MSW disposal area to provide a minimum two-foot cover. Depending on the thickness of supplemental fill required as shown on the construction drawings, components of cap

enhancement in the former MSW disposal area consisted of: 1) topsoil, 2) topsoil and general fill, or 3) topsoil, general fill, and a woven geotextile. Components of the constructed soil cap in the WMA consisted of a minimum of six inches of topsoil, a minimum of 18 inches of general fill, and a woven geotextile placed over excavated soils and treated stabilized soils from the test pits, the FDDA, and the large and small treated/stabilized CFS areas within the WMA.

Figure 11 shows the as-built cross sections for each remedial cover type used on the Site. Figure 12 shows the location of each cover type built at the Site. The EWP provided in Appendix C 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 and maintenance of this cover are provided in the Monitoring Plan included in Section 3.0 of this SMP.

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

2.2.1 ENGINEERING CONTROL SYSTEMS

Procedures for monitoring the cap and permanently installed Site features are included in the Monitoring Plan (Section 3.0 of this SMP). The Monitoring Plan also addresses inspections in the event of a severe condition, such as a major storm event, which may affect controls at the Site. Preparation of a Corrective Measures Plan will be required should the need for repairs be identified during monitoring activities (see Section 5.0)

2.2.1.1 Soil Cover

Exposure to residual cadmium concentrations in soil/fill at the Site is prevented by a cap comprised of clean soil. Disturbances of the cover system are prohibited. Procedures for the inspection of this cover are provided in the Monitoring Plan included in Section 3.0 of this SMP.

2.2.1.2 Fence

A six-foot high, chain-link fence was erected around the WMA primarily to help prevent vehicular access to the soil cap and avoid associated damage. As a secondary benefit, the fence will also help to discourage unauthorized Site visitors from accessing the WMA. Removal or modification of the fence is prohibited.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered to be complete when effectiveness monitoring indicates that the remedy has achieved the Remedial Action Objectives (RAOs) identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of DER-10.

2.2.2.1 Soil Cover

The composite cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals. As a mechanism to help prevent damage to the soil cap, the perimeter fence will be included as part of cap inspection and maintenance.

2.2.2.2 Groundwater Monitoring

Groundwater monitoring activities will continue to confirm that groundwater concentrations are below NYSDEC standards. As described in the ROD, Site monitoring is planned to be conducted over a period of five years. A period of an additional five years was added per the NYSDEC April 19, 2021, (2020) PRR acceptance letter.

2.3 Institutional Controls

A series of ICs is required by the ROD to: (1) implement, maintain and monitor ECs; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and (3) limit the use and development of the Site to commercial uses only. Adherence to the following ICs on the Site is required by the Environmental Easement (Appendix B) and will be implemented under this SMP:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- ECs must be maintained as specified in this SMP;

- ECs on the controlled property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater monitoring must be performed as defined in this SMP; and
- Data and information pertinent to site management of the controlled property must be reported at the frequency and in a manner defined in this SMP.

ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The Site has a series of ICs in the form of Site restrictions. Adherence to these ICs is required by the Environmental Easement. Site restrictions that apply to the controlled property are as follows:

- The property may only be used for restricted commercial purposes provided that the long-term ECs and ICs included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted or restricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC.
- All future activities on the property that may disturb remaining contaminated material must be conducted in accordance with this SMP.
- The use of the groundwater underlying the Site as a source of potable or process water is restricted without necessary water quality treatment as determined by the NYSDOH or County Department of Health.
- Vegetable gardens and farming of crops for human or animal consumption on the property are prohibited.
- The Site owner or remedial party will submit to the NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the controlled property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. The NYSDEC retains the right to access such controlled property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the

NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 EXCAVATION WORK PLAN

The 10-acre Site has been remediated for restricted commercial use. Disturbance of the soil cap at the MSW area, which includes the WMA, is prohibited. Any future on-Site intrusive work outside the limits of the soil cap that may encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system, will be performed in compliance with the EWP that is attached as Appendix C to 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 Community Air Monitoring Plan (CAMP) prepared for the Site. The HASP used for Site monitoring and the NYSDOH Generic CAMP are included in Appendix D. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any on-Site intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP, and will be included in the periodic inspection and certification reports submitted under the SMP (See Section 5.0).

The Site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are responsible for the safe performance of intrusive work, the structural integrity of excavations, proper disposal of excavation water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as drainage features). The Site owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the ECs described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 INSPECTIONS

Inspections of remedial components installed at the Site will be conducted at the frequency specified in the SMP schedule. A comprehensive Site-wide inspection and reporting will be conducted quarterly for the first year, and then semi-annually through year five, per the NYSDEC April 19, 2021, (2020) PRR acceptance letter, the frequency has been changed to every 15 months, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Performance of ECs as designed;
- Adequacy of ECs in protecting human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement (Appendix B);
- Achievement of remedial performance criteria;
- Required sampling and analysis of appropriate media during monitoring events;
- Completeness of Site records; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3.0). The reporting requirements are outlined in Section 5.0.

If an emergency occurs, such as a natural disaster, an inspection of the Site will be conducted within 5 days of the event or as soon as safe Site access is practicable to verify the effectiveness of the ECs and ICs implemented at the Site by a Qualified Environmental Professional or representative.

2.4.2 NOTIFICATIONS

Notifications will be submitted to the NYSDEC by the property owner or remedial party as needed for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the Order, Title 6 of the NYCRR, Part 375, and/or ECL.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the EWP.
- Verbal notice within 5 days 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 shall be submitted to the NYSDEC within 45 days and shall describe and document 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 has been provided with a copy of the Order 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.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 EMERGENCY TELEPHONE NUMBERS

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner, remedial party, or those representative(s) should contact the appropriate parties from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. These emergency contact lists must be maintained in an easily accessible location at the Site.

TABLE 5: EMERGENCY CONTACT NUMBERS

Medical, Fire, and Police	911
One Call Center	(800) 272-4480 (3-day notice required for utility markout)
Poison Control Center	(800) 222-1222
Pollution Toxic Chemical Oil Spills	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Owner: Northwoods Hunting Inc. Ontario, Canada	 Walter Allen (905) 894-3277

TABLE 5: EMERGENCY CONTACT NUMBERS	
Respondent: Paramount Pittsburgh, PA	Chad Coy, P.E. (412) 642-4162
Qualified Professional: Fagan Engineers & Land Surveyors, P.C. Elmira, New York	James B. Gensel, P.E. (607) 734-2165

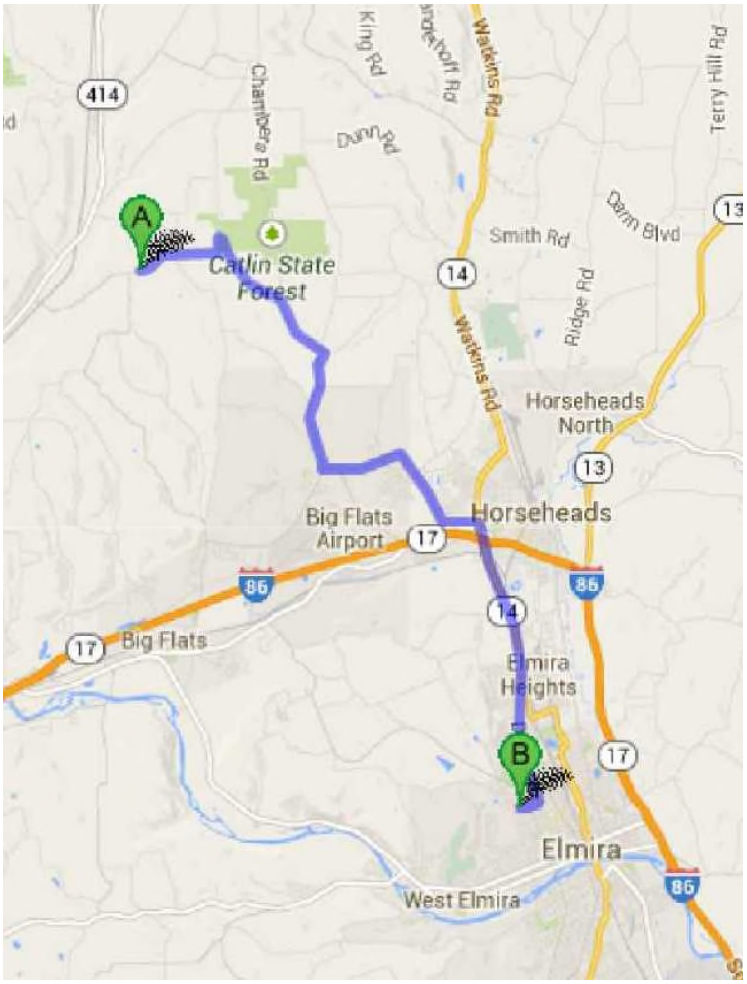
2.5.2 MAP AND DIRECTIONS TO NEAREST HEALTH FACILITY SITE

- Nearest Hospital Name: Arnot Ogden Medical Center
- Hospital Location: 600 Roe Ave Elmira, NY 14905
- Hospital Telephone: 607-737-4100
- Total Distance: 15.0 miles
- Total Estimated Travel Time: 32 minutes

Directions to the Hospital:

1. Head **northeast** on **Townley Hill Road** toward **Breed Hollow Road**
2. Continue onto **Sawdey Road**
3. Continue onto **Chambers Road/County Road 35**
4. Turn left onto **County Road 17/County Road 35/Sing Sing Road**
   Continue to follow Sing Sing Road
5. Turn left onto **West Broad Street**
6. Take the 1st right onto **Westinghouse Road**
7. Continue onto **NY-14 S/Corning Road**
   Continue to follow NY-14 S
8. Turn right onto **West McCanns Blvd.** go 0.2 mile
9. Turn left onto **Davis Street**
10. Take the 2nd right onto **Tompkins Street** go 0.2 mile
11. Turn left onto **Walnut Street**
12. Take the 3rd right onto **Roe Avenue;** destination will be on the right

Figure 13: Map Showing Route from the Site to the Hospital:
(Available from hospital web site.)



2.5.3 RESPONSE PROCEDURES

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is provided in Section 2.5.1. The list will be made readily available to Site personnel.

Evacuation Plan

Each Site visit will start with a health and safety session and a log will be made of all personnel and cell phone numbers. Site personnel without cell phones will be paired

with personnel who have cell phones. If Site evacuation is necessary, personnel shall be notified by verbal or phoned warning, and should proceed to the gate for vehicular entrance to the Site (unless advised otherwise). The personnel log will be used to account for the evacuation of personnel on-site.

Spill Response

At a minimum, should a spill or release occur which is a threat to human health or the environment, the employee observing the spill will first conduct or request an evacuation of all people at risk. Employees must report any chemical spill or release per the applicable HASP requirements to the contracting party, and coordinate any additional notifications required as dictated by the incident. In the event of a spill or release that is not an immediate threat to human health or the environment, Site personnel, per the applicable HASP requirements, may initiate containment and control measures. As appropriate, air monitoring will be implemented and personal protection equipment will be donned prior to initiating any containment and control measures. Depending upon the nature of the spill, containment and control measures may include constructing a temporary containment berm, digging a lined sump, containing leaks, or transferring contents from one container to another.

Amendments to the Contingency Plan

Site activities and associated responses to emergency situations are those identified in the HASP in Appendix D. Any changes to the scope of work and/or response activities will require review of the HASP, and amendments will include additional health and safety measures and response procedure as warranted by those tasks.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the soil cap in mitigating impacts of remaining contamination to Site media. The groundwater RAO for public health protection is to prevent ingestion of groundwater with COC levels exceeding drinking water standards. For environmental protection, the RAOs are to restore the groundwater aquifer to pre-disposal/pre-release conditions to the extent practicable, and to prevent the discharge of regulated substances in groundwater to surface water. The Monitoring Plan may only be revised with the approval of the NYSDEC.

3.2 PURPOSE AND SCHEDULE

The Monitoring Plan describes the methods to be used for the following:

- Inspection of the soil cover, fence, and Site access;
- Sampling and analysis of groundwater;
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards;
- Assessing achievement of the remedial performance criteria;
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, the Monitoring Plan provides information on the following:

- Inspection and maintenance requirements for soil cover, fence, access, and monitoring wells;
- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;

- Reporting requirements;
- Quality assurance/quality control (QA/QC) requirements;
- Monitoring well decommissioning procedures; and
- Inspection and periodic certification.

3.3 SOIL CAP, FENCE, AND ACCESS MONITORING

For years one through year five after Site stabilization, the soil cap, perimeter fence, and Site access will be inspected for signs of disrepair quarterly for the first year, and semi-annually thereafter through year five. An additional period of five years at 15-month intervals was added per the NYSDEC April 19, 2021, (2020) PRR acceptance letter. Unless modified by the NYSDEC. Inspections and reporting will include the following:

- Identification of ruts, erosion scars, or differential settlement in soil cap areas;
- Identification of scouring or blockage in ditches;
- Identification of excess sediment accumulated in sediment traps;
- Identification of disturbed soil areas where vegetative stabilization is not established;
- Identification of damage to perimeter fence including gates and vegetation that should be removed to help prevent future damage;
- Identification of fence posts or gates that are out of plumb and condition of affected fence footers; and
- Identification of overgrowth, rutting, or erosion of Site access.

3.4 GROUNDWATER MONITORING

Groundwater monitoring was performed three months after completion of construction and the final site inspection on September 29, 2014 to assess the performance of the remedy. A groundwater monitoring event will be conducted and evaluated to determine if the remedy was effective in achieving remedial goals and to assess the needed monitoring frequency. The SMP will be modified to reflect the sampling plans, and any changes to those plans, as approved by the NYSDEC. Groundwater monitoring was conducted annually for years 1-5. An additional period of five years at 15-month intervals was added per the NYSDEC April 19, 2021, (2020) PRR acceptance letter.

Sampling will be performed for Site groundwater monitoring wells MW-1, MW-2, MW-3, and MW-4. Site groundwater monitoring well locations are shown on Figure 8.

The closest downgradient residential well will also be monitored in conjunction with the Site monitoring wells.

Groundwater at the Site flows to the west and southwest toward the Post Creek Valley. The monitoring well network has been installed to monitor both upgradient and downgradient groundwater conditions at the Site in the shallowest water-bearing zone. Soil in this unit consists of brown and gray, silty sand and silty clay, with varying amounts of rock fragments. Cross-sections of the Site are provided on Figure 11, and cross-section locations are provided on Figure 12. Boring logs and well installation diagrams are included as Appendix E for Site groundwater monitoring wells. (*Note: Installation details for the off-Site residential wells are not available* .)

3.4.1 SAMPLING PROTOCOL

Groundwater sampling activities will be recorded on field forms and a groundwater-sampling log is presented in Appendix F. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Groundwater levels will be measured in the four monitoring wells prior to purging and sampling. Groundwater level measurements will be used to evaluate groundwater flow directions and calculate the horizontal hydraulic gradient in the first water-bearing unit beneath the Site. Water levels will be measured from a reference point on the top of the well casing as noted on the installation diagrams.

The four monitoring wells will be purged and sampled using low-flow sampling techniques substantially consistent with the Groundwater Sampling Procedure, Low Flow Purge and Sampling (USEPA Standard Operating Procedure No. GW001, 2010). The following geochemical parameters will be measured every five minutes during purging after the initial tubing volume had been removed:

- Temperature,
- pH,
- Specific conductance,
- Oxidation-reduction potential,

- Dissolved oxygen, and
- Turbidity.

Purging will be completed once the well readings stabilize (i.e., three readings within 10 percent for each geochemical field parameter) or until a maximum purging time of one hour is reached. Groundwater samples will then be collected by filling the sample containers from the pump discharge.

Residential supply well samples will be collected as close as possible to the existing well and before any in-line water treatment devices. The water will be allowed to flow for approximately five minutes before a sample is collected. Field parameters pH, specific conductivity, and temperature will be monitored during residential well purging.

The groundwater samples from both on-Site monitoring wells and the off-Site residential well will be analyzed for Site-related constituents, including arsenic, cadmium and lead, using USEPA Methods 6010B.

QA/QC samples, including a duplicate sample and an equipment blank, will be collected during each monitoring event. Groundwater monitoring field forms and sampling logs are provided in Appendix F.

3.4.2 MONITORING WELL REPAIRS, REPLACEMENT, AND DECOMMISSIONING

If biofouling or silt accumulation occurs in the on-Site monitoring wells, the wells will be physically agitated/surged and redeveloped.

Abandonment, repair, and/or replacement of on-Site monitoring wells will be performed based on assessments of structural integrity and overall performance. The NYSDEC will be notified prior to any repair or decommissioning of on-Site monitoring wells. Abandonment of on-Site monitoring wells will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures" upon completion of the planned monitoring period unless specifically directed otherwise by the NYSDEC.

3.5 SITE-WIDE INSPECTION

Site-wide inspections will be performed quarterly for one year, then semi-annually through year 5 unless modified by the NYSDEC. Site-wide inspections and reporting will be conducted every 15-months starting in July 2022. Site-wide inspections will also be performed after severe weather event that could have significantly affected ECs. During these inspections, an inspection form will be completed (Appendix G). The form will compile sufficient information to assess the following:

- Compliance with ICs, including Site usage;
- Condition and continued effectiveness of ECs;
- General Site conditions; and
- Completeness of Site records.

3.6 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

Sampling and analyses will be performed in accordance with the Quality Assurance Project Plan (QAPP) prepared for the Site (Appendix H). Main Components of the QAPP include the following:

- QA/QC objectives for data measurement.
- Sampling program:
  - Laboratory cleaned and certified sample containers will be used. The appropriate preservative will be added (if applicable) prior to shipment of the sample containers to the field. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC analytical services protocol requirements.
  - Field QC samples (e.g., equipment blanks) will be collected as necessary.
- Sample tracking and custody.
- Calibration procedures:
  - Field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical procedures.
- Internal QC and checks.
- QA performance and system audits.
- Preventative maintenance procedures and schedules.
- Corrective action measures.

3.7 MONITORING REPORTING REQUIREMENTS

Monitoring results, forms, and other relevant reporting formats used during the monitoring/inspection events will be included as part of the Periodic Review Report as specified in the Reporting Plan, Section 5.3 of this SMP. Reporting will include the following:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Copies of field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sampling locations;
- Copies of laboratory data sheets and the required laboratory data deliverables required for points sampled (to be submitted electronically in the NYSDEC-identified format);
- Observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed significantly since the last reporting event.

Data will be reported in digital format as required by the NYSDEC. A summary of the monitoring program deliverables is provided below.

TABLE 6: SCHEDULE OF MONITORING/INSPECTION AND REPORTING	
Task	Frequency*
Site-Wide Inspection	Every 15-Months; 2022 through 2027 Within 5 days after severe weather event**
Groundwater Monitoring and Reporting	Post-remediation – 3 months after completion of construction (September 2014) Every 15-Months 2022 through 2027
***Inspection & GW Report	Every 15-Months; 2022 through 2027

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC ** A severe weather event includes rain in excess of 3" in a 24-hour period.

***PRR Certification frequency will be every three-years.

4.0 OPERATION AND MAINTENANCE PLAN

The Site remedy does not rely on any mechanical systems. Therefore, the O&M of such components is not included in this SMP.

5.0 INSPECTIONS, REPORTING, AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 INSPECTION FREQUENCY

Inspections will be conducted at the frequency specified in the schedules provided in Section 3.0 of this SMP.

5.1.2 INSPECTION FORMS, SAMPLING DATA, AND MAINTENANCE REPORTS

Inspections and monitoring events will be recorded on the appropriate forms for their respective system. The forms are provided as Appendices E (groundwater) and F (Site-wide).

Applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be included as part of the Periodic Review Report (Section 5.3).

5.1.3 EVALUATION OF RECORDS AND REPORTING

The results of the inspection and Site monitoring data will be evaluated as part of the EC and IC certification to confirm the following:

- ECs and ICs are in place, are performing properly, and remain effective;
- Monitoring Plan is being implemented;
- Maintenance activities are being conducted properly; and
- Site remedy continues to be protective of public health and the environment and is performing as described in the ROD.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Qualified Environmental Professional will prepare the following certification:

For each EC or IC 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 ECs and ICs required by the remedial program was performed under my direction.
- The ECs and ICs employed at this Site are unchanged from the date the control was put in place, or last approved by the NYSDEC.
- 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 the SMP for this control.
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- Use of the Site is compliant with the Environmental Easement (Appendix B).
- The EC is performing as designed and is effective.
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices.
- The information presented in this SMP 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 and address**], am certifying as the **[remedial party's] [Owner's**] authorized representative and designated **[by all Site owners]** to sign this certification for the Site.

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

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the NYSDEC each year, beginning 18 months after approval of this SMP. In the event that the Site is subdivided into separate parcels with different ownership, multiple Periodic Review Reports may be prepared that addresses the Site described in Appendix A (Metes and Bounds). The report will be prepared in accordance with DER-10 and submitted within 45 days of

the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include the following:

- Identification, assessment, and certification of ECs and ICs required by the remedy for the Site.
- Results of the required Site inspections and severe condition inspections, if applicable.
- Applicable inspection forms and other records generated for the Site during the reporting period in electronic format.
- A summary of any monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables, which include a listing of 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 laboratory data sheets, and the required laboratory data deliverables for samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.
- A Site evaluation, which will include the following:
  - The compliance of the remedy with the requirements of the ROD;
  - The condition of the soil cap, Site access, WMA perimeter fence and storm water controls, 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 Plan for groundwater;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy. The Periodic Review Report will be submitted in electronic format to the NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed or to need repair, or if the periodic certification cannot be provided due to the failure of an IC or EC, a

Corrective Measures Plan will be submitted to the NYSDEC for approval. The plan will explain the needed repair and provide the details and schedule for performing work necessary to correct the deficiency or failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Plan until it is approved by the NYSDEC.

6.0 CLIMATE CHANGE ASSESSMENTS/EVALUATIONS

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT

The following sections rationalize the reason for not performing a vulnerability assessment of the Site.

6.2 SUMMARY

A climate change vulnerability assessment was not prepared for the site at the time of the preparation of the SMP in February 2015 because it was not a part of the guidance for SMP preparation at that time. The Site drainage, storm water and erosion are inspected as part of the current Site-Wide Inspections and any severe weather events should any occur.

6.3 FLOOD PLAIN

The Site is not located in a flood plain, low lying area or low-groundwater recharge area.

The Site elevation is 1655 mean sea level (msl) to 1645 msl from north to south-southeast in the WMA and 1642 msl to 1622 msl in the FDDA. No rivers, ponds, streams or lakes are topographically upgradient of either the WMA or FDDA with the exception of a drainage ditch that was located to preserve trees upgradient of the WMA.

6.4 SITE DRAINAGE AND STORMWATER MANAGEMENT

The ground surface of the Site is relatively flat with steeply sloping sides. The surrounding hillsides are wooded. Surface run-off appears to generally flow into the unnamed tributary to Post Creek located to the southeast of the Site area, or directly toward Post Creek to the west. (Refer to Figures 1 and 2.).

There are two man-made ponds at the Site, both of which are believed to be hydraulicallyisolated from navigable waters and downgradient of the WMA.

The Site includes two sediment traps, Sediment Trap #1 is located west of the WMA and Sediment Trap #2 is southeast of the FDDA, and are part of the Site stormwater management.

6.5 EROSION

The Site remediation and subsequent closure was completed per the Final Engineering Report (Cummings/Riter,November 2014). Site (Wide) Inspections were conducted quarterly beginning in March 2015. They were then reduced to semi-annual beginning in May 2016 through October 2019, thus completing the requirements for the first 5-years of post-closure inspections. One annual inspection was conducted in October 2020 for the purposes of completion of the Site Management Periodic Review Report Notice Institutional and Engineering Controls Certification Form for the Reporting Period: January 14, 2020 to January 14, 2021. The Site Wide Inspections include inspection of the Site for any erosion.

Over the 5-years since final closure of the Site the vegetation has become well established and no erosion of significance has occurred. Only some minor bare areas remain on the steep rocky upslope of Sediment Trap 2. The erosion in the bare areas has not increased and due to the rocky nature of the steep side slope in these areas it has been determined that vegetation will most likely not establish beyond its current state and erosion will not occur due to the rocky surface.

6.6 HIGH WIND

Because the Site remedy does not rely on any mechanical systems, no electric lines or structures are present.

Because the Site is located within a mostly wooded area there are several trees on and surrounding the site. The only areas of concern are the fence around the WMA, which has trees located close enough to the north and parts of the east side to damage the fence should a period of high wind occur, and the Site access road which could become blocked should any trees fall across it.

Because the fence was installed primarily to keep vehicular traffic from driving on and damaging the WMA cover system, should a high wind event occur that fells trees it should not compromise the fence enough that vehicular traffic could enter. In addition, the fence is located within the overall property boundary with only one area of ingress and egress which is limited by a gate (maintained by the owner of the property).

6.7 ELECTRICITY

Because the Site remedy does not rely on any mechanical systems, no electricity is required or present.

TABLES

TABLE 1
SOIL EXCEEDANCE SUMMARY
FORMER DRUM DISPOSAL AREA
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

Constituents	Concentration Range Detected (mg/kg)[a]	Unrestricted Use Soil Cleanup Objective[b]	Frequency Exceeding Standard	Restricted Use Soil Cleanup Objective - Commercial[d]	Frequency Exceeding Standard
Metals					
Arsenic	11.1 - 13.1	13	1 / 4	16	0 / 4
Chromium	16.8 - 19.3	30[c]	0 / 4	1,500	0 / 4
Cadmium	0.097 - 699	2.5	25 / 47	9.3	13 / 47
Lead	8 - 68.8	63	2 / 47	1,000	0 / 47

Notes:

[a] "mg/kg" is milligrams per kilogram or parts per million (ppm).

[b] New York Code, Rules and Regulations (NYCRR), Title 6, Part 375, Subpart 375-6.8(a): Unrestricted Use Soil Cleanup Objectives.

[c] Trivalent chromium standard was used in screening based on expected geochemical environment of impacted soils.

[d] NYCRR, Title 6, Part 375, Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.

TABLE 1
SOIL EXCEEDANCE SUMMARY
TEST PITS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

Constituents	Concentration Range Detected	Unrestricted Use Soil Cleanup Objective[d]	Frequency Exceeding Standard	Restricted Use Soil Cleanup Objective - Commercial[f]	Frequency Exceeding Standard
Metals (mg/kg) [a]					
Arsenic	4.4 - 14.7	13	3 / 33	16	0 / 33
Cadmium	ND[c] - 23.2	2.5	8 / 33	9.3	5 / 33
Chromium	11.7 - 26.1	30[e]	0 / 33	1,500	0 / 33
Lead	3.8 - 289	63	1 / 33	1,000	0 / 33
Nickel	14.5 - 32.6	30	3 / 33	310	0 / 33
Zinc	44 - 233	109	7 / 33	10,000	0 / 33
Polychlorinated Biphenyls (µg/kg) [b]					
Aroclor 1254	ND - 880	100	5 / 33	1,000	0 / 34
Pesticides (µg/kg)					
4,4'-DDE	ND - 14	3.3	2 / 33	62,000	0 / 33
4,4'-DDT	ND - 12	3.3	3 / 33	47,000	0 / 33
Endrin	ND - 21	14	1 / 33	89,000	0 / 33

Notes:

[a] "mg/kg" is milligrams per kilogram or parts per million (ppm).

[b] "µg/kg" is micrograms per kilogram or parts per billion (ppb).

[c] "ND" indicates not detected.

[d] New York Code, Rules and Regulations (NYCRR), Title 6, Part 375, Subpart 375-6.8(a): Unrestricted Use Soil Cleanup Objectives.

[e] Trivalent chromium standard was used in screening based on expected geochemical environment of impacted soils.

[f] NYCRR, Title 6, Part 375, Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.

TABLE 2
GROUNDWATER EXCEEDANCE SUMMARY
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

Constituents	Concentration Range Detected (µg/l)[a]	Groundwater Quality Standard (µg/l)[c]	Frequency Exceeding Standard
Metals			
Antimony	ND[b] - 3.2	3	1 / 10
Arsenic	ND - 48	25	2 / 10
Iron	190 - 2,700	300	8 / 10
Manganese	3.6 - 540	300	4 / 10
Sodium	7,500 - 76,000	20,000	2 / 10

Notes:

[a] "µg/l" is micrograms per liter or parts per billion (ppb).

[b] "ND" indicates not detected.

[c] NYCRR Title 6, Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations (August 1999).

TABLE 3
SEDIMENT EXCEEDANCE SUMMARY
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

Constituents	Concentration Range Detected	NYDEC Sediment Criteria [(d)]	Frequency Exceeding Standard
Metals (mg/kg) [(a)]			
Arsenic	7.0 - 15	6	5 / 5
Cadmium	0.072 - 4.6	0.6	2 / 5
Iron	25,000 - 30,000	20,000	5 / 5
Nickel	23 - 30	16	5 / 5
Polychlorinated Biphenyls (µg/kg) [(b)]			
PCB-1254	6.8 - 2,300	0.8	5 / 5
Pesticides (µg/kg)			
4,4'-DDT	ND[(c)] - 340	10	2 / 5
gamma-Chlordane	ND - 60	1	2 / 5

Notes:

[(a)] "mg/kg" is milligrams per kilogram or parts per million (ppm).

[(b)] "µg/kg" is micrograms per kilogram or parts per billion (ppb).

[(c)] "ND" indicates not detected.

[(d)] NYSDEC Sediment Criteria from Technical Guidance for Screening Contaminated Sediments (January 1999). Results were compared to the most stringent criteria.

TABLE 4
POST-EXCAVATION SOIL SAMPLE RESULTS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

		Restricted Use Soil Cleanup Objective - Commercial [6NYCRR Table 375-6.8(b)] [a]		Unrestricted Use Soil Cleanup Objective [6NYCRR Table 375-6.8(a)] [b]		Approximate Depth of Sample (inches)[d]
		Total Cadmium (mg/kg) [c]	Total Lead (mg/kg)	Total Cadmium (mg/kg)	Total Lead (mg/kg)	
		9.3	1,000	2.5	63	
Former Drum Disposal Area (FDDA)						
Sample ID/ Location	Date	Result		Result		Depth
FDDA-Q5/Q6-1S [e]	8/7/2013	0.034 J [f]	7.4	0.034 J	7.4	12
FDDA-Q6/Q7-1S	8/7/2013	0.12 J	11	0.12 J	11	12
FDDA-Q6/Q7-2S	8/7/2013	0.050 J	6.4	0.050 J	6.4	12
FDDA-1Flr/Dup 1 [g]	8/7/2013	0.29 J / 0.15 J	7.6 / 11	0.29 J / 0.15 J	7.6 / 11	12
FDDA-1Flr/MS	8/7/2013	5.77	65.1	5.77	65.1	12
FDDA-1Flr/MSD	8/7/2013	5.91	66.3	5.91	66.3	12
FDDA-2Flr	8/7/2013	**21** [h]	16	**21**	16	12
FDDA-2flrA	8/13/2013	1.1	7.8	1.1	7.8	24
FDDA-Q6/Q7-3S	8/7/2013	0.77	13	0.77	13	12
FDDA-Q5/Q4-1S	8/7/2013	3.3	18	**3.3** [i]	18	12
FDDA-Q5/Q4-2S	8/7/2013	**9.6** [j]	16	**9.6**	16	12
FDDA-Q8/Q9-1S	8/27/2013	0.11 J	8.3 B	0.11 J	8.3 B	12
FDDA-Q8/Q9-2S	8/27/2013	3.7	13 B	**3.7**	13 B	12
FDDA-Q8/Q9-3S	8/27/2013	0.21 J	8.5 B	0.21 J	8.5 B	12
FDDA-Q7/Q8-1S	8/27/2013	0.43 J	8.9 B	0.43 J	8.9 B	12
FDDA-Q7/Q8-2S	8/27/2013	1.0	9.7 B	1.0	9.7 B	12
FDDA-Q7/Q8-3S	8/27/2013	2.2	18 B	2.2	18 B	12
FDDA-Q7/Q8-4S	8/27/2013	2.2	14	2.2	14	12
FDDA-Q7/Q8-5S	8/27/2013	0.66	9.7	0.66	9.7	12
FDDA-A1-1Flr	8/27/2013	0.63 U	8.4	0.63 U	8.4	12
FDDA-A2-1Flr	8/27/2013	1.5	11	1.5	11	12
FDDA-A3-1Flr	8/27/2013	3.4	20	**3.4**	20	12
FDDA-B1-1Flr	8/27/2013	0.72	7.6	0.72	7.6	12
FDDA-C1-1Flr	8/27/2013	3.9	11	**3.9**	11	12
FDDA-D1-1Flr	8/27/2013	**12**	11	**12**	11	12
FDDA-D1-1AFlr	9/6/2013	1.5	7.3	1.5	7.3	24
FDDA-E1-1Flr	8/27/2013	0.13 J	7.8	0.13 J	7.8	12
FDDA-Q9/Q10-1S	8/27/2013	0.13 J	16	0.13 J	16	12
FDDA-Q5/Q4-3S	9/6/2013	5.6	13	**5.6**	13	12
FDDA-Q5/Q4-4S	9/6/2013	0.38 J	11	0.38 J	11	12
FDDA-Q3/Q4-1S/Dup 3[g]	9/6/2013	0.99 / 1.3	11 / 9.0	0.99 / 1.3	11 / 9.0	12
FDDA-Q3/Q4-1S/MS	9/6/2013	11.8 F	57.8	11.8 F	57.8	12
FDDA-Q3/Q4-1S/MSD	9/6/2013	55.2 F	58.3	55.2 F	58.3	12
FDDA-Q3/Q4-2S	9/6/2013	0.74	6.6	0.74	6.6	12
FDDA-Q2/Q3-1S	9/6/2013	0.59	7.2	0.59	7.2	12
FDDA-F1-1Flr	9/6/2013	**100**	20	**100**	20	12
FDDA-F1-1AFlr	9/12/2013	0.27 J	15	0.27 J	15	24
FDDA-F2-1Flr	9/6/2013	1.4	12	1.4	12	12
FDDA-F3-1Flr	9/6/2013	0.42 J	9.4	0.42 J	9.4	12
FDDA-G3-1Flr	9/6/2013	0.91	8.8	0.91	8.8	12
FDDA-B2-1Flr	9/10/2013	**220**	32	**220**	32	12
FDDA-B2-1AFlr	10/10/2013	0.55 U	18	0.55 U	18	24
FDDA-B3-1Flr/Dup 4[g]	9/10/2013	3.3 / 1.1	9.3 / 9.4	**3.3** / 1.1	9.3 / 9.4	36
FDDA-B3-1Flr/MS	9/10/2013	7.01 F	57.6	7.01 F	57.6	36
FDDA-B3-1Flr/MSD	9/10/2013	5.64 F	53.9	5.64 F	53.9	36
FDDA-B4-1Flr	9/10/2013	0.16	8.6	0.16	8.6	12

TABLE 4
POST-EXCAVATION SOIL SAMPLE RESULTS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

		Restricted Use Soil Cleanup Objective - Commercial [6NYCRR Table 375-6.8(b)] [a]		Unrestricted Use Soil Cleanup Objective [6NYCRR Table 375-6.8(a)] [b]		Approximate Depth of Sample (inches)[d]
		Total Cadmium (mg/kg) [c]	Total Lead (mg/kg)	Total Cadmium (mg/kg)	Total Lead (mg/kg)	
		9.3	1,000	2.5	63	
Former Drum Disposal Area (FDDA) (Cont'd)						
Sample ID/ Location	**Date**	**Result**		**Result**		**Depth**
FDDA-C2-1Flr	9/10/2013	0.95	12	0.95	12	36
FDDA-C3-1Flr	9/10/2013	0.46 J	11	0.46 J	11	36
FDDA-D2-1Flr	9/10/2013	0.095 J	13	0.095 J	13	36
FDDA-D3-1Flr	9/10/2013	**55**	19	**55**	19	12
FDDA-D3-1AFlr	9/18/2013	1.3	19	1.3	19	24
FDDA-D5-1Flr	9/10/2013	6.3	9.4	**6.3**	9.4	12
FDDA-D6-1Flr	9/10/2013	8.6	10	**8.6**	10	12
FDDA-E2-1Flr	9/10/2013	**23**	13	**23**	13	30
FDDA-E2-1AFlr	9/18/2013	0.14 J	11	0.14 J	11	42
FDDA-E3-1Flr	9/10/2013	**110**	33	**110**	33	12
FDDA-E3-1AFlr	9/18/2013	0.096 J	14	0.096 J	14	24
FDDA-E4-1Flr/Dup 5[g]	9/10/2013	**130 / 94**	31 / 26	**130 / 94**	31 / 26	12
FDDA-E4-1Flr/MS	9/10/2013	115 F	79.1 F	115 F	79.1 F	12
FDDA-E4-1Flr/MSD	9/10/2013	134	77.8	134	77.8	12
FDDA-E4-1AFlr/Dup 6[g]	10/10/2013	1.5 / 0.64	17 / 18	1.5 / 0.64	17 / 18	24
FDDA-E4-1AFlr/MS	10/10/2013	6.50	65.9	6.50	65.9	24
FDDA-E4-1AFlr/MSD	10/10/2013	7.43	65.2	7.43	65.2	24
FDDA-E5-1Flr	9/10/2013	0.083 J	9.4	0.083 J	9.4	36
FDDA-F4-1Flr	9/10/2013	9.0	9.6	**9.0**	9.6	12
FDDA-F5-1Flr	9/10/2013	3.8	13	**3.8**	13	12
FDDA-G4-1Flr	9/10/2013	1.2	6.8	1.2	6.8	12
FDDA-Q9/Q10-2S	9/10/2013	0.15 J	11	0.15 J	11	12
FDDA-Q10/Q11-1S	9/10/2013	2.5	15	2.5	15	12
FDDA-Q10/Q11-2S	9/10/2013	0.25 J	16	0.25 J	16	12
FDDA-Q10/Q11-3S	9/10/2013	**29**	38	**29**	38	12
FDDA-Q10/Q11-3AS	9/18/2013	0.69	17	0.69	17	24
FDDA-Q11/Q12-1S	9/10/2013	1.5	14	1.5	14	12
FDDA-Q12/Q13-1S	9/10/2013	4.6	15	**4.6**	15	12
FDDA-Q12/Q13-2S	9/10/2013	0.052 J	14	0.052 J	14	12
FDDA-Q13/E1-1S	9/10/2013	**300**	53	**300**	53	12
FDDA-Q13/E1-1AS	9/18/2013	5.6	29	**5.6**	29	12
FDDA-E3/E4-1S	9/10/2013	0.77	7.3	0.77	7.3	12
FDDA-E4/E1-1S	9/10/2013	**21**	12	**21**	12	12
FDDA-E4/E1-1AS	9/18/2013	0.60	11	0.60	11	12
FDDA-E1/Q1-1S	9/10/2013	2.7	10	**2.7**	10	12
FDDA-E1/Q1-2S	9/10/2013	0.67	7.5	0.67	7.5	12
FDDA-E1/Q1-3S	9/10/2013	9.0	14	**9.0**	14	12
FDDA-E1/Q1-4S	9/10/2013	1.2	8.5	1.2	8.5	12
FDDA-Q1/Q2-1S	9/10/2013	**24**	18	**24**	18	12
FDDA-Q1/Q2-1AS	9/18/2013	**9.6**	26	**9.6**	26	12
FDDA-G1/G2-1S	9/10/2013	0.62	13	0.62	13	12
FDDA-G2/Q2-1S	9/10/2013	3.4	14	**3.4**	14	12
Test Pit 3:						
Sample ID/ Location	**Date**	**Result**		**Result**		**Depth**
TP3-V1/V2-1S	8/27/2013	2.4	16	2.4	16	12
TP3-V2/V3-1S	8/27/2013	2.7	15	**2.7**	15	12
TP3-V3/V4-1S	8/27/2013	3.0	17 B	**3.0**	17 B	12
TP3-V4/V1-1S	8/27/2013	0.57 U	6.9 B	0.57 U	6.9 B	12
TP3-1Flr	8/27/2013	5.8	23 B	**5.8**	23 B	12

TABLE 4
POST-EXCAVATION SOIL SAMPLE RESULTS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

		Restricted Use Soil Cleanup Objective - Commercial [6NYCRR Table 375-6.8(b)] [a]		Unrestricted Use Soil Cleanup Objective [6NYCRR Table 375-6.8(a)] [b]		Approximate Depth of Sample (inches)[d]
		Total Cadmium (mg/kg) [c]	Total Lead (mg/kg)	Total Cadmium (mg/kg)	Total Lead (mg/kg)	
		9.3	1,000	2.5	63	
Test Pit 5:						
Sample ID/ Location	**Date**	**Result**		**Result**		**Depth**
TP5-X1/X5-1S	8/16/2013	0.24 J	11 B	0.24 J	11 B	24
TP5-X1/X2-1S	8/16/2013	0.65	12 B	0.65	12 B	24
TP5-X2/X3-1S	8/16/2013	1.6	24 B	1.6	24 B	24
TP5-X3/X4-1S/Dup 2[g]	8/16/2013	7.4 / 5.4	11 B / 13 B	**7.4 / 5.4**	11 B / 13 B	24
TP5-X3/X4-1S/MS	8/16/2013	14.4 F	62.8	14.4 F	62.8	24
TP5-X3/X4-1S/MSD	8/16/2013	20.3 F	61.7	20.3 F	61.7	24
TP5-X4/X5-1S	8/16/2013	0.31 J	12 B	0.31 J	12 B	24
TP5-X4/X5-2S	8/16/2013	1.6	17 B	1.6	17 B	24
TP5-1Flr	8/16/2013	0.46 J	14 B	0.46 J	14 B	24
TP5-2Flr	8/16/2013	0.30 J	14 B	0.30 J	14 B	24
Test Pit 7/16:						
Sample ID/ Location	**Date**	**Result**		**Result**		**Depth**
TP7/16-W1/W2-1S	9/6/2013	1.8	7.0	1.8	7.0	48
TP7/16-W2/W3-1S	9/6/2013	5.9	11	**5.9**	11	48
TP7/16-W3/W4-1S	9/6/2013	**24**	77	**24**	**77**	24
TP7/16-W4/W5-1S	9/6/2013	**49**	150	**49**	**150**	60
TP7/16-W3/W5-1AS	9/18/2013	**76**	140	**76**	**140**	60
TP7/16-W3/W5-1BS	10/15/2013	**18**	91	**18**	**91**	48
TP7/16-W3/W5-1CS	10/23/2013	**10**	60 B	**10**	60 B	60
TP7/16-W8/W9-1S	9/6/2013	3.9	18	**3.9**	18	60
TP7/16-W9/W10-1S	9/6/2013	1.7	12	1.7	12	24
TP7/16-W10/W11-1S	9/6/2013	**20**	47	**20**	47	24
TP7/16-W10/W11-1AS	9/18/2013	0.37	8.8	0.37	8.8	36
TP7/16-W11/W1-1S	9/6/2013	0.055 J	7.5	0.055 J	7.5	48
TP7/16-1Flr	9/6/2013	0.34 J	6.5	0.34 J	6.5	48
TP7/16-2Flr	9/6/2013	**18**	91	**18**	**91**	24
TP7/16-2AFlr	9/18/2013	**11**	74	**11**	**74**	36
TP7/16-3Flr	9/6/2013	2.3	9.5	2.3	9.5	60
TP7/16-W5/W6-1S	10/15/2013	**42**	140	**42**	**140**	48
TP7/16-W5/W6-1AS	10/23/2013	1.3	23 B	1.3	23 B	48
TP7/16-W5/W6-2S	10/15/2013	0.53 U	14	0.53 U	14	48
TP7/16-4Flr	10/15/2013	0.58 U	3.3	0.58 U	3.3	48

Notes:

[a] NYCRR, Title 6, Part 375, Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.

[b] NYCRR, Title 6, Part 375, Subpart 375-6.8(a): Unrestricted Use Soil Cleanup Objectives.

[c] "mg/kg" is milligram per kilogram, or parts per million (ppm).

[d] Samples were collected X inches below ground surface.

[e] "S" in sample ID name indicates a sidewall sample. "Flr" in sample ID name indicates a floor sample.

[f] Laboratory data qualifiers are as follows:

"J" and "UJ" - represent a value that is estimated . Data present a usable estimation of the conditions being measured.

"U" - Indicates the parameter was not detected above the laboratory detection limit.

"B" - Indicates that the compound was found in the laboratory blank.

"F" - MS or MSD exceeds the control limits.

[g] Indicates that a duplicate sample was collected.

[h] **Bolded** results indicate an exceedance of the corresponding Soil Cleanup Objective that was subsequently excavated.

[i] **Bolded** and shaded green results indicate an exceedance of the Unrestricted Use Soil Cleanup Objective which was left in place.

[j] **Bolded** and shaded yellow results indicate an exceedance of the Restricted Use Soil Cleanup Objective-Commercial which was left in place.

TABLE 7
CRITERIA FOR ON-SITE RE-USE OF EXCAVATED MATERIALS OR IMPORTED SOILS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

ON-SITE RE-USE / POST-EXCAVATION	
Parameter (mg/kg) [a]	**Restricted Use Soil Cleanup Objective - Commercial [6NYCRR Subpart 375-6.8] [b]**
Total Cadmium	9.3
Total Lead	1,000
IN-SITU SOIL TREATMENT	
Parameter (mg/kg)	**Site-Specific Maximum Concentration of Contaminants Requiring Treatment [c]**
Total Cadmium	111
Parameter (mg/L)[d]	**Maximum Concentration of Contaminants for the Toxicity Characteristic [NYSDEC Regulations Subpart 371.3 Table 1.] [e]**
TCLP Cadmium	1.0
TCLP Lead	5.0
SPLP Cadmium	1.0
SPLP Lead	5.0
IMPORTED FILL	
Parameter (ug/kg) [f]	**Unrestricted Use Soil Cleanup Objectives [NYSDEC Regulations Subpart 375-6.8]**
Volatile Organic Compounds (VOCs)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2,4-Trimethylbenzene	3.6
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,3,5-Trimethylbenzene	8.4
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
2-Butanone	0.12
Acetone	0.05
Benzene	0.06
Carbon Tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
cis-1,2-Dichloroethene	0.19
Ethyl Benzene	1
Methyl tert-butyl Ether	0.93
Methylene Chloride	0.05
n-Butylbenzene	12
n-propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Total Xylenes	0.26
trans-1,2-Dichloroethene	0.19

TABLE 7
CRITERIA FOR ON-SITE RE-USE OF EXCAVATED MATERIALS OR IMPORTED SOILS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

IMPORTED FILL (cont'd)	
Parameter (ug/kg)	**Unrestricted Use Soil Cleanup Objectives [NYSDEC Regulations Subpart 375-6.8 Table a]**
Semivolatile Organic Compounds (SVOCs)	
Trichloroethene	0.47
Vinyl Chloride	0.02
2-Methylphenol	0.33
3+4-Methylphenols	0.33
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	--
Fluoranthene	100
Fluorene	30
Hexachlorobenzene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	12
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100
Pesticides	
4,4-DDD	0.0033
4,4-DDE	0.0033
4,4-DDT	0.0033
Aldrin	0.005
alpha-BHC	0.02
alpha-Chlordane	0.094
beta-BHC	0.036
delta-BHC	0.04
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan Sulfate	2.4
Endrin	0.014
gamma-BHC (Lindane)	0.01
Heptachlor	0.042

TABLE 7
CRITERIA FOR ON-SITE RE-USE OF EXCAVATED MATERIALS OR IMPORTED SOILS
TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

IMPORTED FILL (cont'd)	
Parameter (ug/kg)	**Unrestricted Use Soil Cleanup Objectives [NYSDEC Regulations Subpart 375-6.8 Table a]**
Polychlorinated Biphenyls (PCBs)	
Total PCBs	0.1
Herbicides	
2,4,5-TP (Silvex)	3.8
Metals	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium	--
Copper	50
Lead	63
Manganese	1600
Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109
Wet Chemistry	
Cyanide	27
Hexavalent Chromium	1
Trivalent Chromium	30

Notes:

(a) "mg/kg" indicates milligrams per kilogram or parts per million (ppm).

(b) NYSDEC Regulations, Chapter IV Quality Services, Subpart 375-6.8, Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives and Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.

(c) Interim Data Deliverable Pre-Design Investigations, Townley Hill Road Dump Site; Cummings Riter Consultants, Inc.; October 31, 2012.

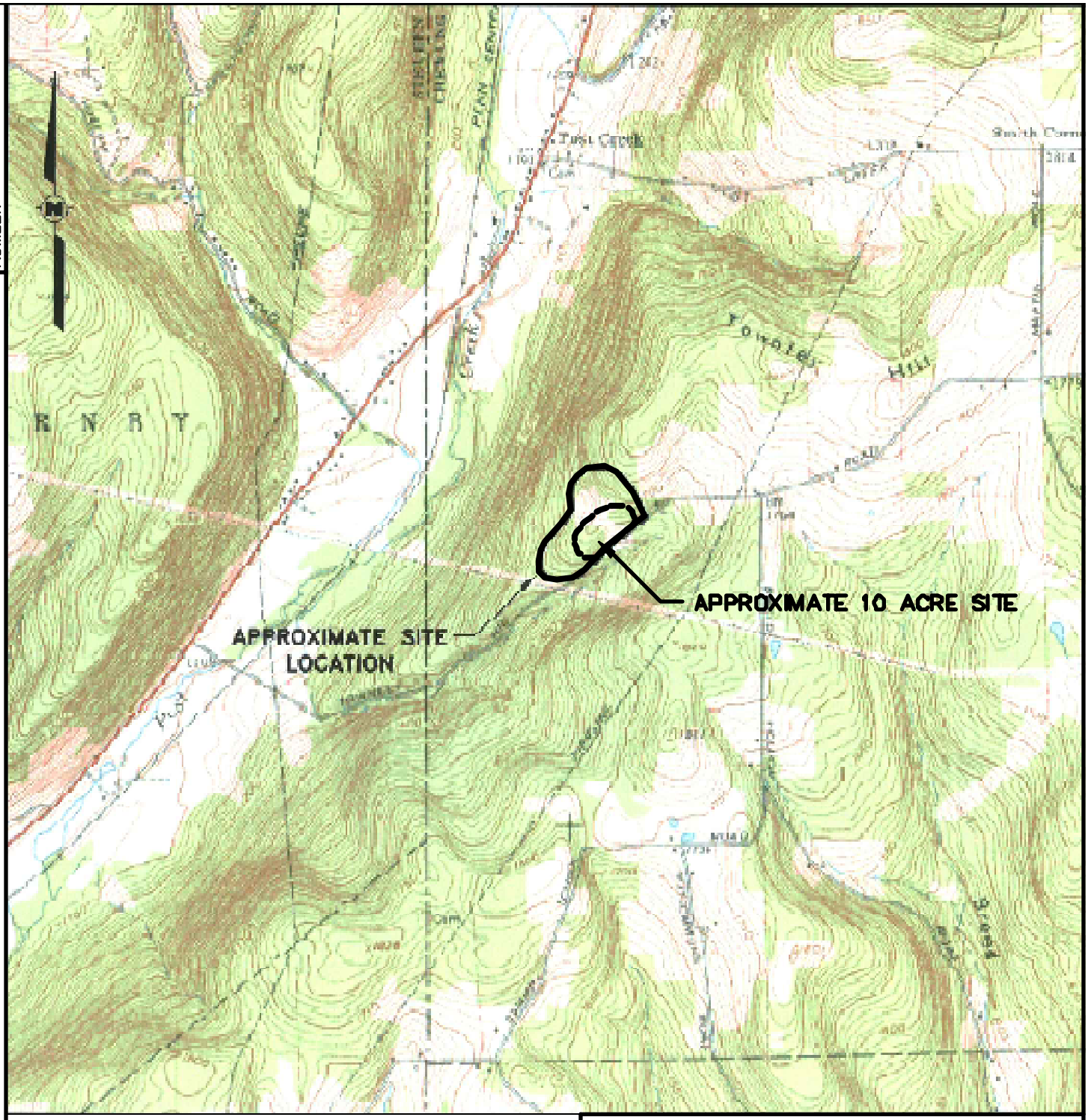
(d) "mg/L" indicates milligrams per liter or ppm.

(e) NYSDEC Regulations, Chapter IV Quality Service, Subpart 371.3, Table 1. Maximum Concentration of Contaminants for the Toxicity Characteristic where TCLP = Toxicity Characteristic Leaching Procedure and SPLP = Synthetic Precipitation Leaching Procedure.

(f) "ug/kg" indicates micrograms per kilogram or parts per billion (ppb).

FIGURES

DRAWING NUMBER 01304A10



SCALE

0 2000 4000 FEET

REFERENCES:

7.5–MIN. TOPOGRAPHIC QUADRANGLE
BIG FLATS, NY, DATED 1969
PHOTOINSPECTED 1976
SCALE 1 24000

QUADRANGLE LOCATION

FIGURE 1

SITE LOCATION MAP

TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

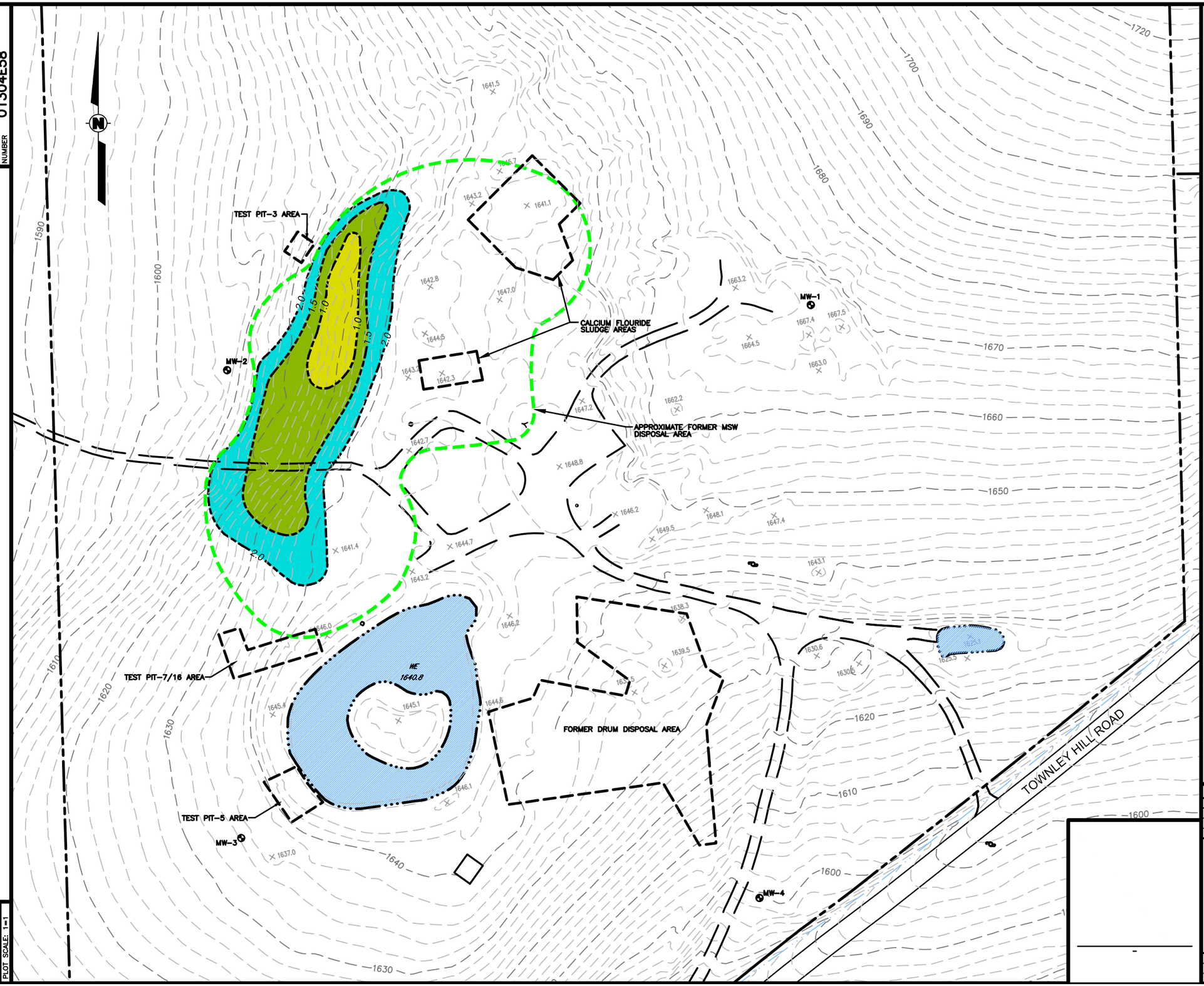
CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER 01304A10

REVISION	DATE	DESCRIPTION

DRAWN BY:	T.N. Fitzroy	DATE:	0-24-13
CHECKED BY:	B. Geno	DATE:	1-24-13
APPROVED BY:	B. Geno	DATE.	1-24-13

DRAWING NUMBER 01304E58



LEGEND:

- ~0.5' TO ~1.0' EXISTING SOIL COVER THICKNESS (3,680 SF)
- ~1.0' TO ~1.5' EXISTING SOIL COVER THICKNESS (11,140 SF)
- ~1.5' TO ~2.0' EXISTING SOIL COVER THICKNESS (12,660 SF)
- APPROXIMATE PROPERTY LINE
- APPROXIMATE LIMITS OF FORMER MSW DISPOSAL AREA
- POND

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES BY DICKERSON AERIAL SURVEYS, INC.
DRAWING FROM MAY 3, 1989 AERIAL PHOTOGRAPHY.
PROJECT REFERENCE 890410

SCALE
40 0 40 80 FEET

PLOT SCALE: 1=1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

PRE-REMEDIATION SITE CONDITIONS

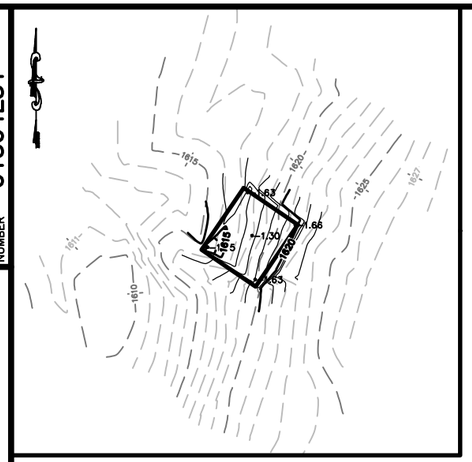
TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

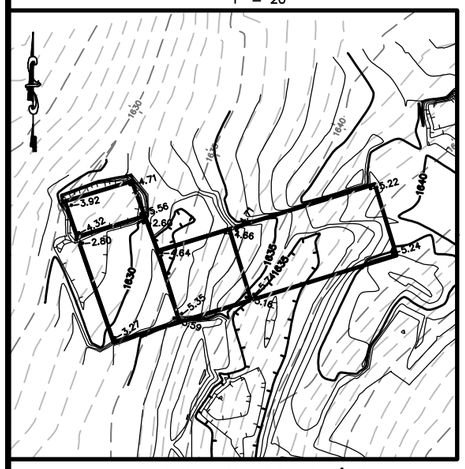
AUTOCAD FILE NUMBER: 01304E58

DRAWN BY:	T.N. Fitzroy	DATE: 2-4-14	FIGURE NUMBER 2
CHECKED BY:	R.P. HRENKO	DATE: 8-6-14	
APPROVED BY:	A.E. PROCTOR	DATE: 8-6-14	

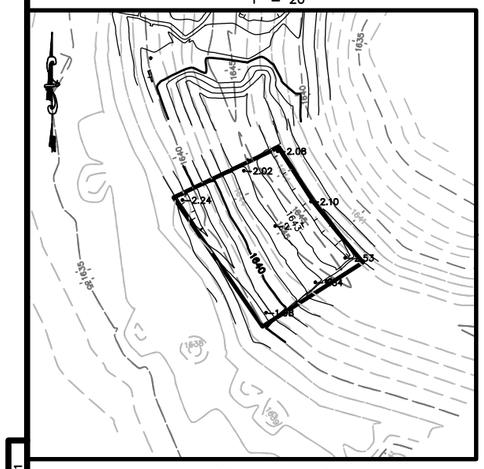
DRAWING NUMBER 01304E51



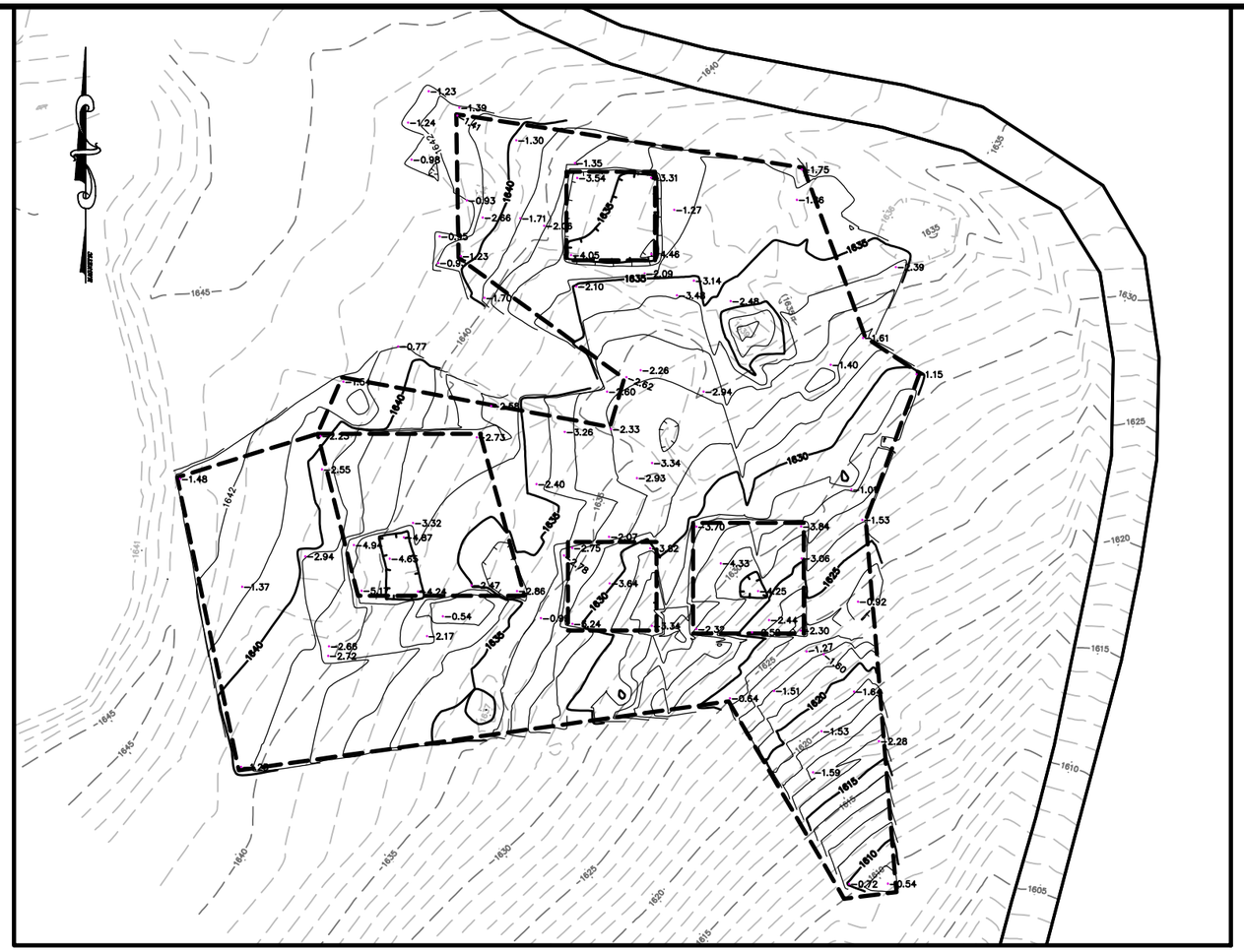
TEST PIT TP-3
1" = 20'



TEST PIT TP-7/16
1" = 20'



TEST PIT TP-5
1" = 20'



FORMER DRUM DISPOSAL AREA
1" = 20'

LEGEND:

- PROPOSED LIMITS OF SOIL EXCAVATION
- —1640— EXISTING GRADE CONTOUR
- 1640 FINAL EXCAVATED SOIL CONTOUR
- FINAL EXCAVATED SOIL CONTOUR DEPRESSION
- • –3.10 EXCAVATED DEPTH

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

SCALE
20 0 20 40 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

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A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

EXCAVATION AND MATERIAL REMOVAL AS-BUILT AREAS

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E51

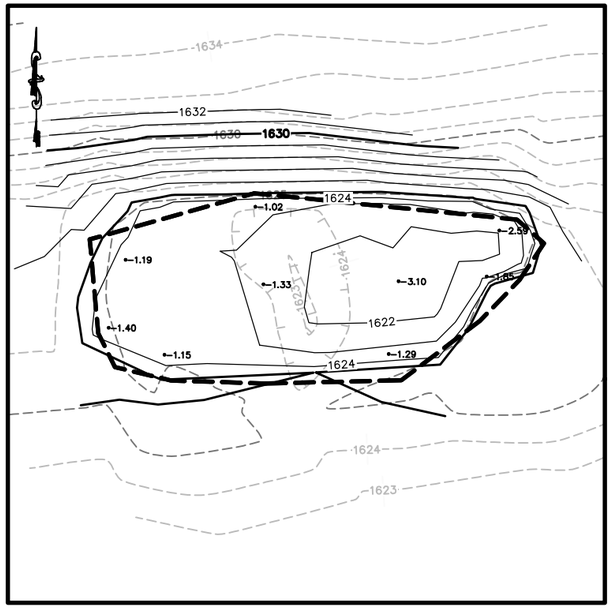
DRAWN BY:	D.J. Martino	DATE:	1-22-14
CHECKED BY:	R.P. HRENKO	DATE:	8-6-14
APPROVED BY:	A.E. PROCTOR	DATE:	8-6-14

FIGURE NUMBER 3

PLOT SCALE: 1=1

DRAWING NUMBER 01304E54

LARGER POND
1" = 20'



SMALLER POND
1" = 10'

LEGEND:

- PROPOSED LIMITS OF SOIL EXCAVATION
- 1640 EXISTING GRADE CONTOUR
- EXISTING GRADE CONTOUR DEPRESSION
- 1640 EXCAVATION CONTOUR
- 3.10 EXCAVATED DEPTH

NOTE:

DRAWING INDICATES ORIGINAL CONTOURS COMPARED TO FINAL EXCAVATION CONTOURS WITH EXCAVATION DEPTHS.

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

PLOT SCALE: 1=1

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

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Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

LARGER AND SMALLER POND SEDIMENT AND LARGER POND CALCIUM FLOURIDE SLUDGE REMOVAL AREAS AS-BUILT

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

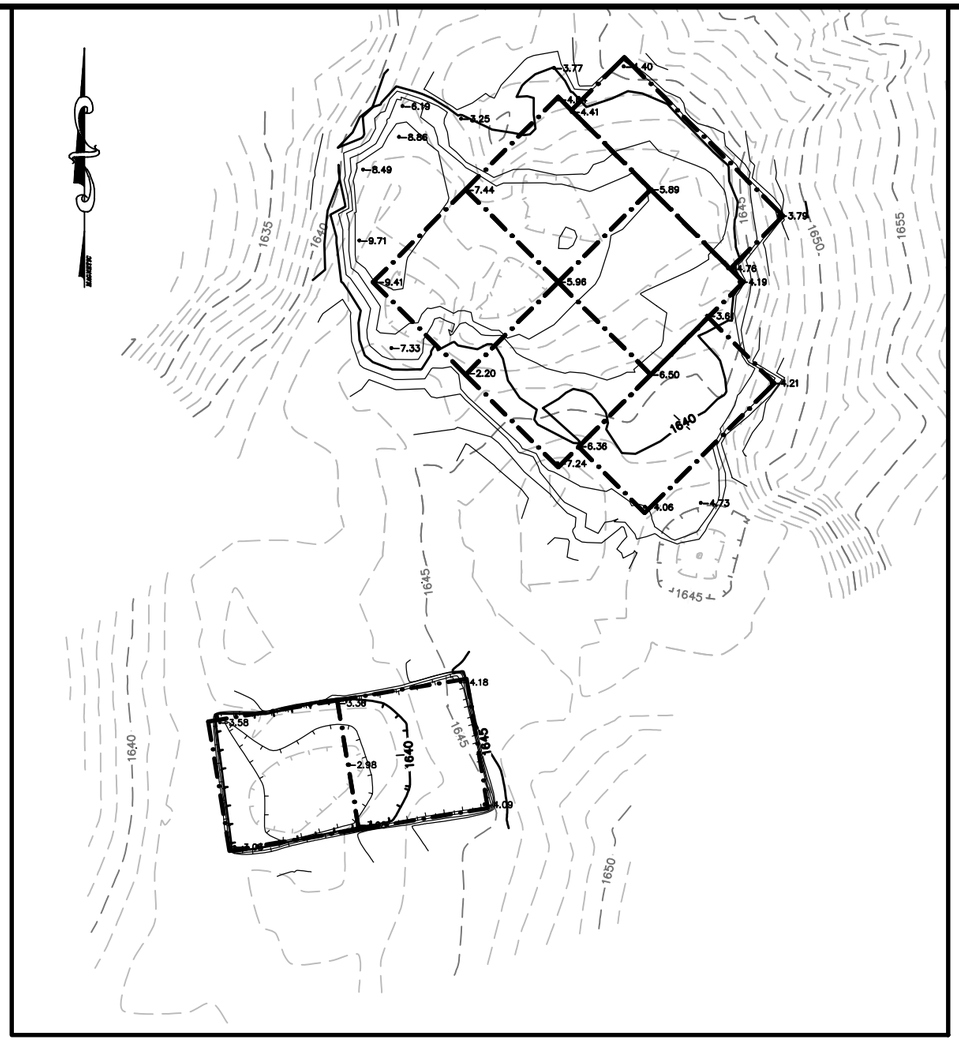
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E54

DRAWN BY:	T.N. Fitzroy	DATE:	1-28-14
CHECKED BY:	R.P. HRENKO	DATE:	8-6-14
APPROVED BY:	A.E. PROCTOR	DATE:	8-6-14

FIGURE NUMBER 4

DRAWING NUMBER 01304E52



CALCIUM FLUORIDE
SLUDGE IN SITU STABILIZATION AREAS
1" = 20'

LEGEND:

- LIMITS OF IN SITU SOIL TREATMENT
- EXISTING GRADE CONTOUR
- EXISTING GRADE CONTOUR DEPRESSION
- 1640 EXCAVATED SOIL CONTOUR
- EXCAVATED SOIL CONTOUR DEPRESSION
- 6.36 EXCAVATED DEPTH

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

SCALE
20 0 20 40 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

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A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

CALCIUM FLUORIDE SLUDGE IN SITU STABILIZATION AREAS

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

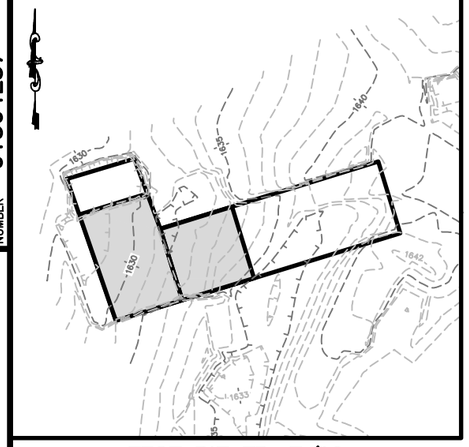
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E52

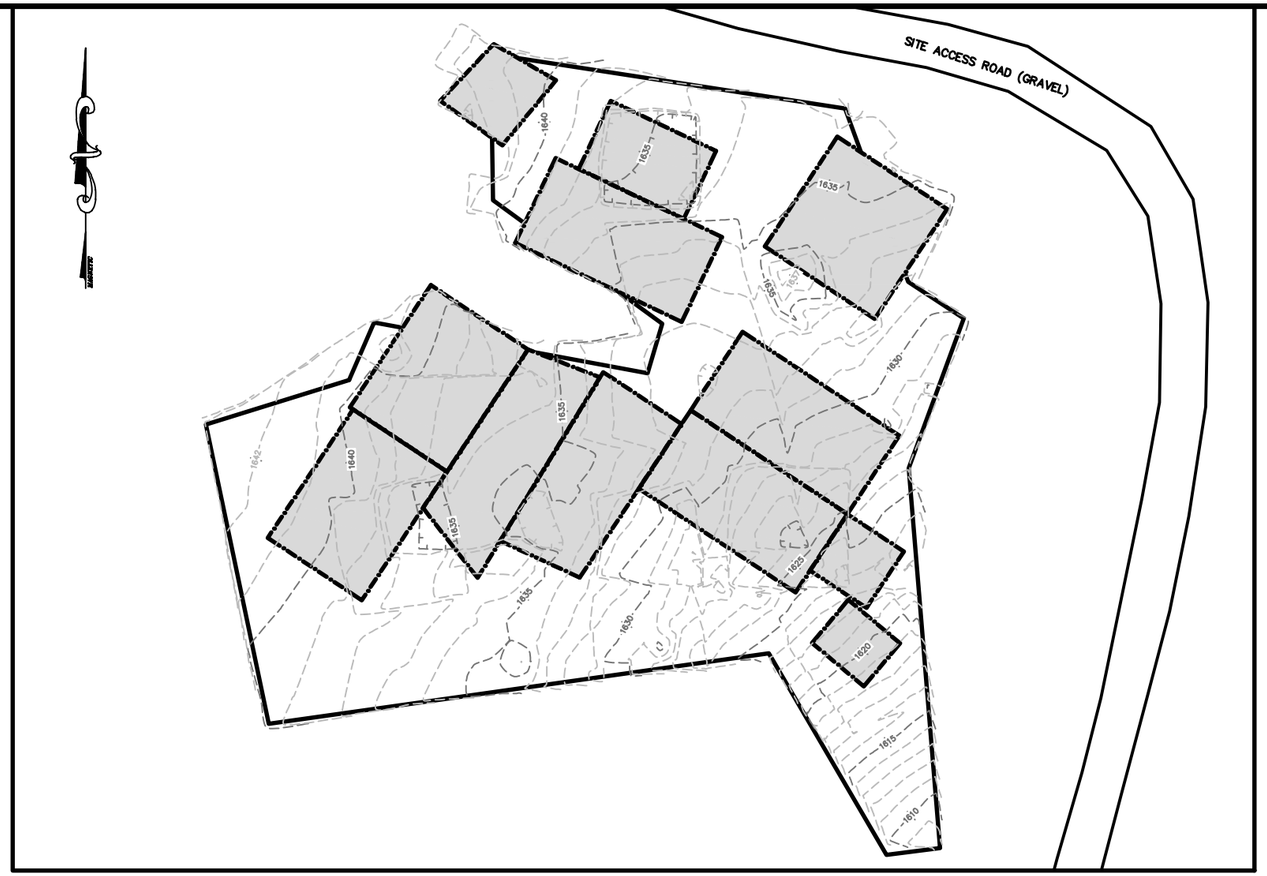
DRAWN BY:	D.J. Martino	DATE: 01-23-14	FIGURE NUMBER 5
CHECKED BY:	R.P. HRENKO	DATE: 8-6-14	
APPROVED BY:	A.E. PROCTOR	DATE: 8-6-14	

PLOT SCALE: 1=1

DRAWING NUMBER 01304E57



TEST PIT TP-7/16
1" = 20'



FORMER DRUM DISPOSAL AREA
1" = 20'

LEGEND:

- LIMITS OF SOIL TREATMENT
- 1640 EXISTING / EXCAVATED GRADE CONTOUR
- EXISTING / EXCAVATED GRADE CONTOUR DEPRESSION
- PROPOSED LIMITS OF SOIL EXCAVATION
- SOIL STABILIZATION AREAS

GENERAL NOTE:

1. DELINEATED SOIL STABILIZATION AREAS CORRESPOND TO ESTIMATED SOIL WEIGHTS NEEDED TO ACHIEVE 7 PERCENT MIXTURE USING 1 TON OF STABILIZING AGENT.
2. EXCAVATION AREAS WERE BACKFILLED IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.
3. OVERBURDEN WAS REMOVED IN TP-7/16 PRIOR TO PERFORMING SOIL STABILIZATION.

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

SCALE
20 0 20 40 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

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A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

TP-7/16 AND FDDA SOIL STABILIZATION AREAS

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

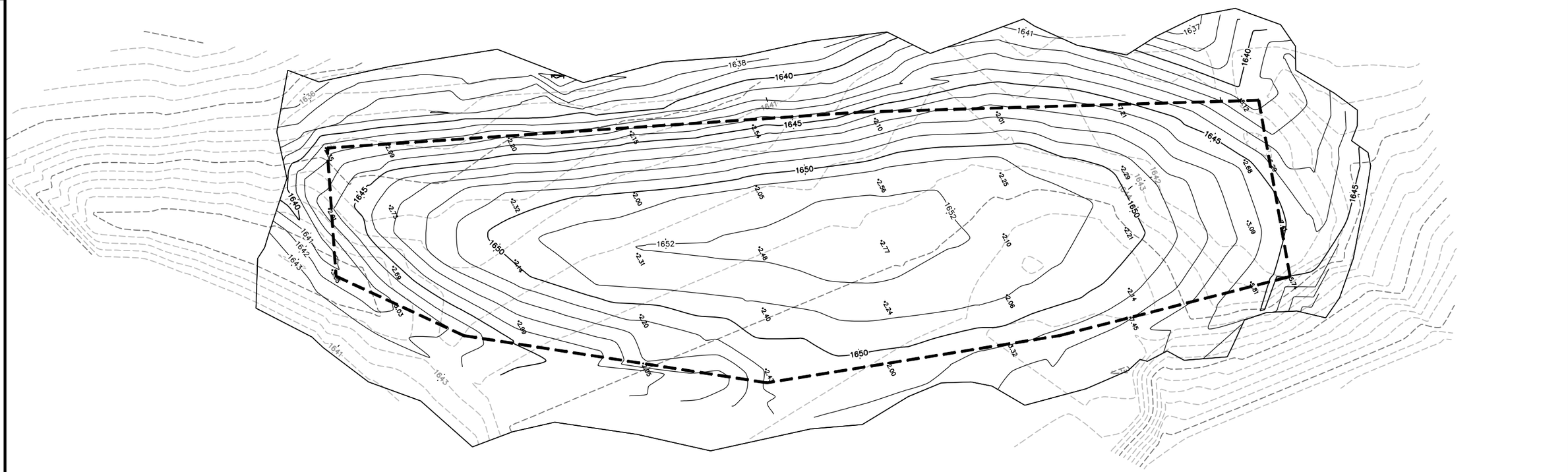
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E57

DRAWN BY:	D.J. Martino	DATE: 1-22-14	FIGURE NUMBER
CHECKED BY:	R.P. HRENKO	DATE: 8-6-14	6
APPROVED BY:	A.E. PROCTOR	DATE: 8-6-14	

PLOT SCALE: 1=1

DRAWING NUMBER 01304E55



LEGEND:

—1640— EXISTING GRADE CONTOUR

EXISTING GRADE CONTOUR DEPRESSION

—1640— INTERMEDIATE GRADE PLACED SOIL CONTOUR

+1.62 INTERMEDIATE GRADE FILL THICKNESS

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	FINAL SURVEY	8–14–14	R.P.H.

A WOODARD & CURRAN COMPANY

FIGURE 7
WASTE PLACED SOILS
WASTE MANAGEMENT AREA
AS–BUILT

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

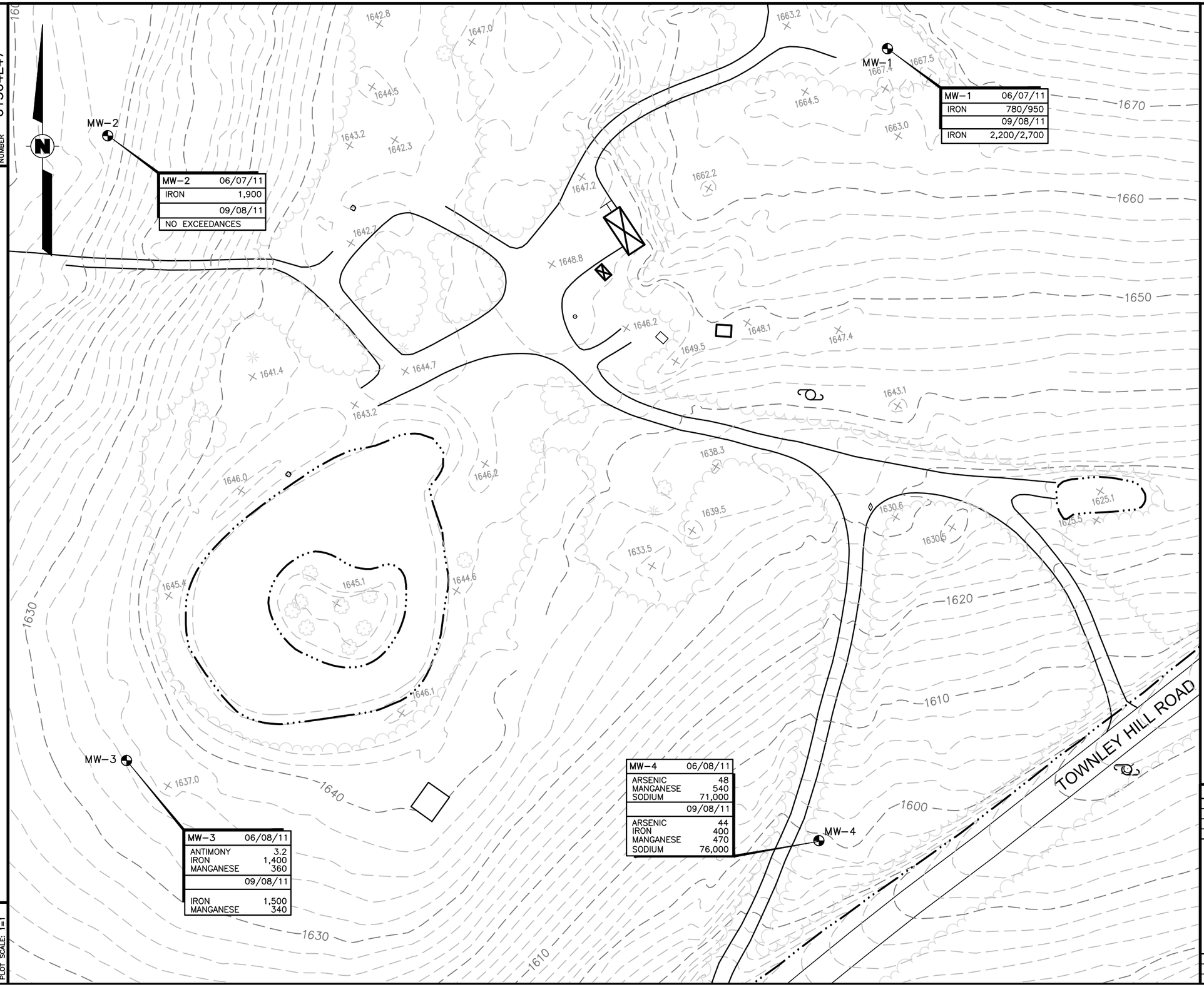
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E55

DRAWN BY: T.N. Fitzroy	DATE: 1–28–14	FIGURE NUMBER 7
CHECKED BY: R.P. HRENKO	DATE: 8–14–14	
APPROVED BY: A.E. PROCTOR	DATE: 8–14–14	

PLOT SCALE: 1=1

DRAWING NUMBER 01304E47



LEGEND:

MW-1 MONITORING WELL LOCATION

NOTES:

1. RESULTS WERE COMPARED TO NYSDEC GROUNDWATER QUALITY STANDARDS.
2. ANALYTICAL RESULTS REPORTED IN MICROGRAMS PER LITER.
3. "X/X" INDICATES A DUPLICATE SAMPLE WAS COLLECTED.

SCALE
30 0 30 60 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
CORPORATE HEADQUARTERS
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

FIGURE 8

SUMMARY OF GROUNDWATER EXCEEDANCES

TOWNLEY HILL ROAD DUMP SITE
CHEMUNG COUNTY, NEW YORK

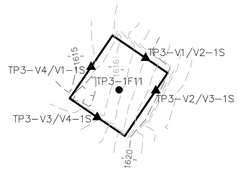
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	SCALE	REV.	DRAWING NUMBER
E	1" = 30'	X	8

DRAWN BY:	R.J. Koenigsberg	DATE: 10-14-11
CHECKED BY:	C.L. Nix	DATE: 10-28-11
APPROVED BY:	M.J. Valentine	DATE: 10-28-11

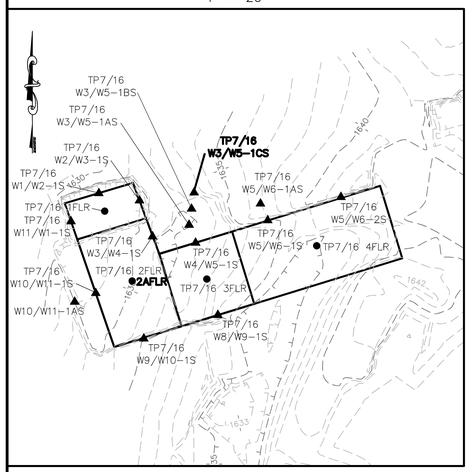
PLOT SCALE: 1=1

DRAWING NUMBER 01304E50



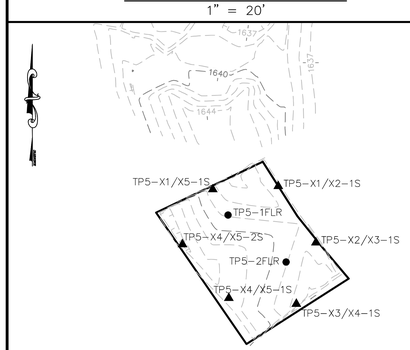
TEST PIT TP-3

1" = 20'



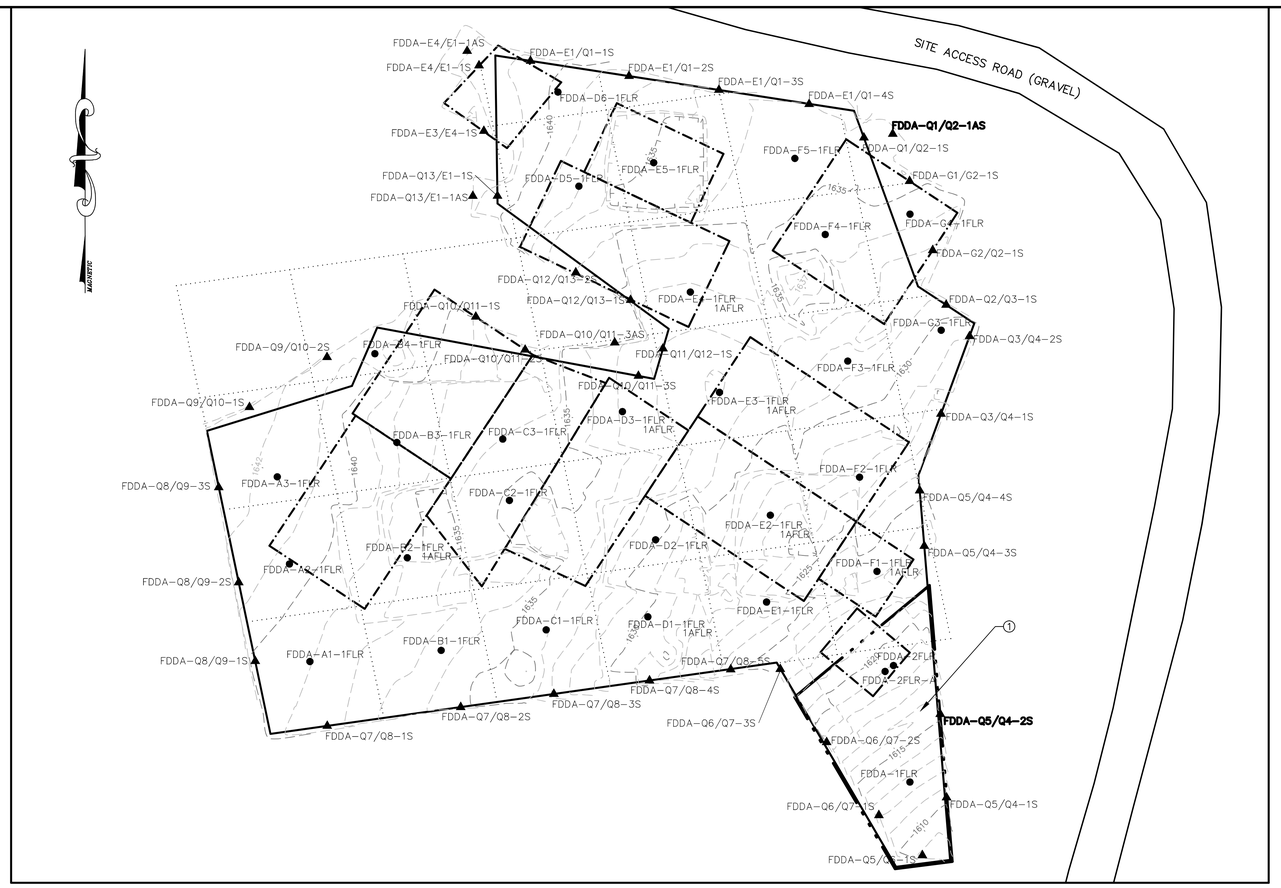
TEST PIT TP-7/16

1" = 20'



TEST PIT TP-5

1" = 20'



FORMER DRUM DISPOSAL AREA

1" = 20'

LEGEND:

- LIMITS OF IN SITU SOIL TREATMENT
- SAMPLE GRID
- —1640— EXISTING / EXCAVATED GRADE CONTOUR
- EXISTING / EXCAVATED GRADE CONTOUR DEPRESSION
- PROPOSED LIMITS OF SOIL EXCAVATION
- FDDA-F4-1FLR — FLOOR SOIL SAMPLE LOCATION
- FDDA-Q1/Q2-1S — SIDEWALL SOIL SAMPLE LOCATION
- **FDDA-Q1/Q2-1AS** — SCO SOIL SAMPLE EXCEEDANCE LOCATION

GENERAL NOTE:

1. DELINEATED IN SITU SOIL STABILIZATION AREAS CORRESPOND TO ESTIMATED SOIL WEIGHTS NEEDED TO ACHIEVE 7 PERCENT MIXTURE USING 1 TON OF STABILIZING AGENT.
2. EXCAVATION AREAS WERE BACKFILLED IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.
3. SAMPLE LOCATIONS IN **BOLD** AND SHADED INDICATE LOCATIONS SCO SOIL SAMPLE EXCEEDANCES LEFT IN PLACE AS APPROVED BY NYSDEC PROJECT MANAGER. RESULTS ARE INDICATED IN THE TABLE BELOW.

SPECIFIC NOTE:

① EXCAVATION COMPLETED PRIOR TO SEDIMENT TRAP 2 CONSTRUCTION AND ESTABLISHED SAMPLING GRID.

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

Restricted Use Soil Cleanup Objective - Commercial [6NYCRR Table 375-6.8(b)][a]	Total Cadmium (mg/kg)[b] 9.3	Total Lead (mg/kg) 1,000
Former Drum Disposal Area (FDDA):		
Sample ID/ Location	**Date**	**Result**
FDDA-Q5/Q6-1S[c]	8/7/2013	0.034 J[d] 7.4
FDDA-Q6/Q7-1S	8/7/2013	0.12 J 11
FDDA-Q6/Q7-2S	8/7/2013	0.050 J 6.4
FDDA-1Flr/Dup 1[e]	8/7/2013	0.29 J / 0.15 J 7.6 / 11
FDDA-1Flr/MS	8/7/2013	5.77 65.1
FDDA-1Flr/MSD	8/7/2013	5.91 66.3
FDDA-2Flr	8/7/2013	**21**[f] 16
FDDA-2FlrA	8/13/2013	1.1 7.8
FDDA-Q6/Q7-3S	8/7/2013	0.77 13
FDDA-Q5/Q4-1S	8/7/2013	3.3 18
FDDA-Q5/Q4-2S	8/7/2013	**9.6**[g] 16
FDDA-Q8/Q9-1S	8/27/2013	0.11 J 8.3 B
FDDA-Q8/Q9-2S	8/27/2013	3.7 13 B
FDDA-Q8/Q9-3S	8/27/2013	0.21 J 8.5 B
FDDA-Q7/Q8-1S	8/27/2013	0.43 J 8.9 B
FDDA-Q7/Q8-2S	8/27/2013	1.0 9.7 B
FDDA-Q7/Q8-3S	8/27/2013	2.2 18 B
FDDA-Q7/Q8-4S	8/27/2013	2.2 14
FDDA-Q7/Q8-5S	8/27/2013	0.66 9.7
FDDA-A1-1Flr	8/27/2013	0.63 U 8.4
FDDA-A2-1Flr	8/27/2013	1.5 11
FDDA-A3-1Flr	8/27/2013	3.4 20
FDDA-B1-1Flr	8/27/2013	0.72 7.6
FDDA-C1-1Flr	8/27/2013	3.9 11
FDDA-D1-1Flr	8/27/2013	**12** 11
FDDA-D1-1AFlr	9/6/2013	1.5 7.3
FDDA-E1-1Flr	8/27/2013	0.13 J 7.8
FDDA-Q10-1S	8/27/2013	0.13 J 16
FDDA-Q5/Q4-3S	9/6/2013	5.6 13
FDDA-Q5/Q4-4S	9/6/2013	0.38 J 11
FDDA-Q3/Q4-1S/Dup 3[e]	9/6/2013	0.99 / 1.3 11 / 9.0
FDDA-Q3/Q4-1S/MS	9/6/2013	11.8 F 57.8
FDDA-Q3/Q4-1S/MSD	9/6/2013	55.2 F 58.3
FDDA-Q3/Q4-2S	9/6/2013	0.74 6.6
FDDA-Q2/Q3-1S	9/6/2013	0.59 7.2
FDDA-F1-1Flr	9/6/2013	**100** 20
FDDA-F1-1AFlr	9/12/2013	0.27 J 15
FDDA-F2-1Flr	9/6/2013	1.4 12
FDDA-F3-1Flr	9/6/2013	0.42 J 9.4
FDDA-G3-1Flr	9/6/2013	0.91 8.8
FDDA-B2-1Flr	9/10/2013	**220** 32
FDDA-B2-1AFlr	10/10/2013	0.55 U 18
FDDA-B3-1Flr/Dup 4[e]	9/10/2013	3.3 / 1.1 9.3 / 9.4
FDDA-B3-1Flr/MS	9/10/2013	7.01 F 57.6
FDDA-B3-1Flr/MSD	9/10/2013	5.64 F 53.9
FDDA-B4-1Flr	9/10/2013	0.16 8.6

Former Drum Disposal Area (FDDA): (Continued)		
Sample ID/ Location	**Date**	**Result**
FDDA-C2-1Flr	9/10/2013	0.95 12
FDDA-C3-1Flr	9/10/2013	0.46 J 11
FDDA-D2-1Flr	9/10/2013	0.095 J 13
FDDA-D3-1Flr	9/10/2013	**55** 19
FDDA-D3-1AFlr	9/18/2013	1.3 19
FDDA-D5-1Flr	9/10/2013	6.3 9.4
FDDA-D6-1Flr	9/10/2013	8.6 10
FDDA-E2-1Flr	9/10/2013	**23** 13
FDDA-E2-1AFlr	9/18/2013	0.14 J 11
FDDA-E3-1Flr	9/10/2013	**110** 33
FDDA-E3-1AFlr	9/18/2013	0.096 J 14
FDDA-E4-1Flr/Dup 5[e]	9/10/2013	**130 / 94** 31 / 26
FDDA-E4-1Flr/MS	9/10/2013	115 F 79.1 F
FDDA-E4-1Flr/MSD	9/10/2013	134 77.8
FDDA-E4-1AFlr/Dup 6[e]	10/10/2013	1.5 / 0.64 17 / 18
FDDA-E4-1AFlr/MS	10/10/2013	6.50 65.9
FDDA-E4-1AFlr/MSD	10/10/2013	7.43 65.2
FDDA-E5-1Flr	9/10/2013	0.083 J 9.4
FDDA-F4-1Flr	9/10/2013	9.0 9.6
FDDA-F5-1Flr	9/10/2013	3.8 13
FDDA-G4-1Flr	9/10/2013	1.2 6.8
FDDA-Q9/Q10-2S	9/10/2013	0.15 J 11
FDDA-Q10/Q11-1S	9/10/2013	2.5 15
FDDA-Q10/Q11-2S	9/10/2013	0.25 J 16
FDDA-Q10/Q11-3S	9/10/2013	**29** 38
FDDA-Q10/Q11-3AS	9/18/2013	0.69 17
FDDA-Q11/Q12-1S	9/10/2013	1.5 14
FDDA-Q12/Q13-1S	9/10/2013	4.6 15
FDDA-Q12/Q13-2S	9/10/2013	0.052 J 14
FDDA-Q13/E1-1S	9/10/2013	**300** 53
FDDA-Q13/E1-1AS	9/18/2013	5.6 29
FDDA-E3/E4-1S	9/10/2013	0.77 7.3
FDDA-E4/E1-1S	9/10/2013	**21** 12
FDDA-E4/E1-1AS	9/18/2013	0.60 11
FDDA-E1/Q1-1S	9/10/2013	2.7 10
FDDA-E1/Q1-2S	9/10/2013	0.67 7.5
FDDA-E1/Q1-3S	9/10/2013	9.0 14
FDDA-E1/Q1-4S	9/10/2013	1.2 8.5
FDDA-Q1/Q2-1S	9/10/2013	**24** 18
FDDA-Q1/Q2-1AS	9/18/2013	**9.6** 26
FDDA-G1/G2-1S	9/10/2013	0.62 13
FDDA-G2/Q2-1S	9/10/2013	3.4 14

Test Pit 3:		
Sample ID/ Location	**Date**	**Result**
TP3-V1/V2-1S	8/27/2013	2.4 16
TP3-V2/V3-1S	8/27/2013	2.7 15
TP3-V3/V4-1S	8/27/2013	3.0 17 B
TP3-V4/V1-1S	8/27/2013	0.57 U 6.9 B
TP3-1Flr	8/27/2013	5.8 23 B
Test Pit 5:		
Sample ID/ Location	**Date**	**Result**
TP5-X1/X5-1S	8/16/2013	0.24 J 11 B
TP5-X1/X2-1S	8/16/2013	0.65 12 B
TP5-X2/X3-1S	8/16/2013	1.6 24 B
TP5-X3/X4-1S/Dup 2[e]	8/16/2013	7.4 / 5.4 11 B / 13 B
TP5-X3/X4-1S/MS	8/16/2013	14.4 F 62.8
TP5-X3/X4-1S/MSD	8/16/2013	20.3 F 61.7
TP5-X4/X5-1S	8/16/2013	0.31 J 12 B
TP5-X4/X5-2S	8/16/2013	1.6 17 B
TP5-1Flr	8/16/2013	0.46 J 14 B
TP5-2Flr	8/16/2013	0.30 J 14 B
Test Pit 7/16:		
Sample ID/ Location	**Date**	**Result**
TP7/16-W1/W2-1S	9/6/2013	1.8 7.0
TP7/16-W2/W3-1S	9/6/2013	5.9 11
TP7/16-W3/W4-1S	9/6/2013	**24** 77
TP7/16-W4/W5-1S	9/6/2013	**49** 150
TP7/16-W3/W5-1AS	9/18/2013	**76** 140
TP7/16-W3/W5-1BS	10/15/2013	**18** 91
TP7/16-W3/W5-1CS	10/23/2013	**10** 60 B
TP7/16-W8/W9-1S	9/6/2013	3.9 18
TP7/16-W9/W10-1S	9/6/2013	1.7 12
TP7/16-W10/W11-1S	9/6/2013	**20** 47
TP7/16-W10/W11-1AS	9/18/2013	0.37 8.8
TP7/16-W11/W1-1S	9/6/2013	0.055 J 7.5
TP7/16-1Flr	9/6/2013	0.34 J 6.5
TP7/16-2Flr	9/6/2013	**18** 91
TP7/16-2AFlr	9/18/2013	***11*** 74
TP7/16-3Flr	9/6/2013	2.3 9.5
TP7/16-W5/W6-1S	10/15/2013	**42** 140
TP7/16-W5/W6-1AS	10/23/2013	1.3 23 B
TP7/16-W5/W6-2S	10/15/2013	0.53 U 14
TP7/16-4Flr	10/15/2013	0.58 U 3.3

Table Notes:

(a) NYCRR, Title 6, Part 375, Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.
(b) "mg/kg" is milligram per kilogram, or parts per million (ppm).
(c) "S" in sample ID name indicates a sidewall sample. "Flr" in sample ID name indicates a floor sample.
(d) Laboratory data qualifiers are as follows:
"J" and "UJ" - represent a value that is estimated . Data present a usable estimation of the conditions being measured.
"U" - Indicates the parameter was not detected above the laboratory detection limit.
"B" - Indicates that the compound was found in the laboratory blank.
"F" - MS or MSD exceeds the control limits.
(e) Indicates tha a duplicate sample was collected.
(f) Bold results indicate an exceedance of the Restricted Use Soil Cleanup Objective - Commercial which was subsequently excavated.
(g) Bold and Shaded result Idicates an exceedance of the Restricted Use Soil Cleanup Objective-Commercial which was left in place.

SCALE
20 0 20 40 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

SUMMARY OF POST-EXCAVATION SAMPLE POINTS MEETING SCO AND RESTRICTED SCO EXCEEDANCES - COMMERCIAL

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

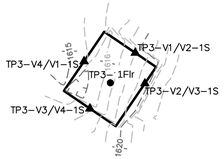
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E50

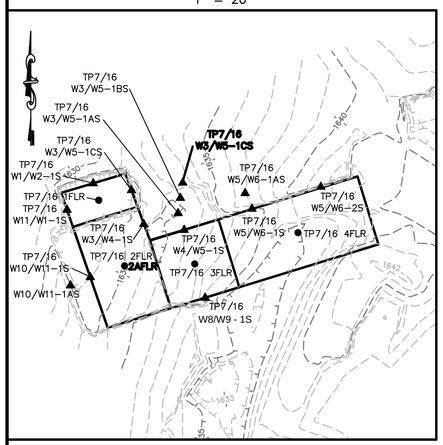
DRAWN BY:	*D.J. Martino*	DATE: *1-22-14*	FIGURE NUMBER 9
CHECKED BY:	*R.P. HRENKO*	DATE: *8-6-14*	
APPROVED BY:	*A.E. PROCTOR*	DATE: *8-6-14*	

PLOT SCALE: 1=1

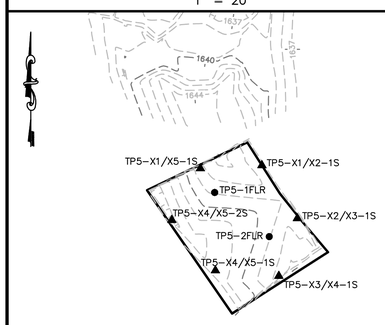
DRAWING NUMBER 01304E60



TEST PIT TP-3
1" = 20'

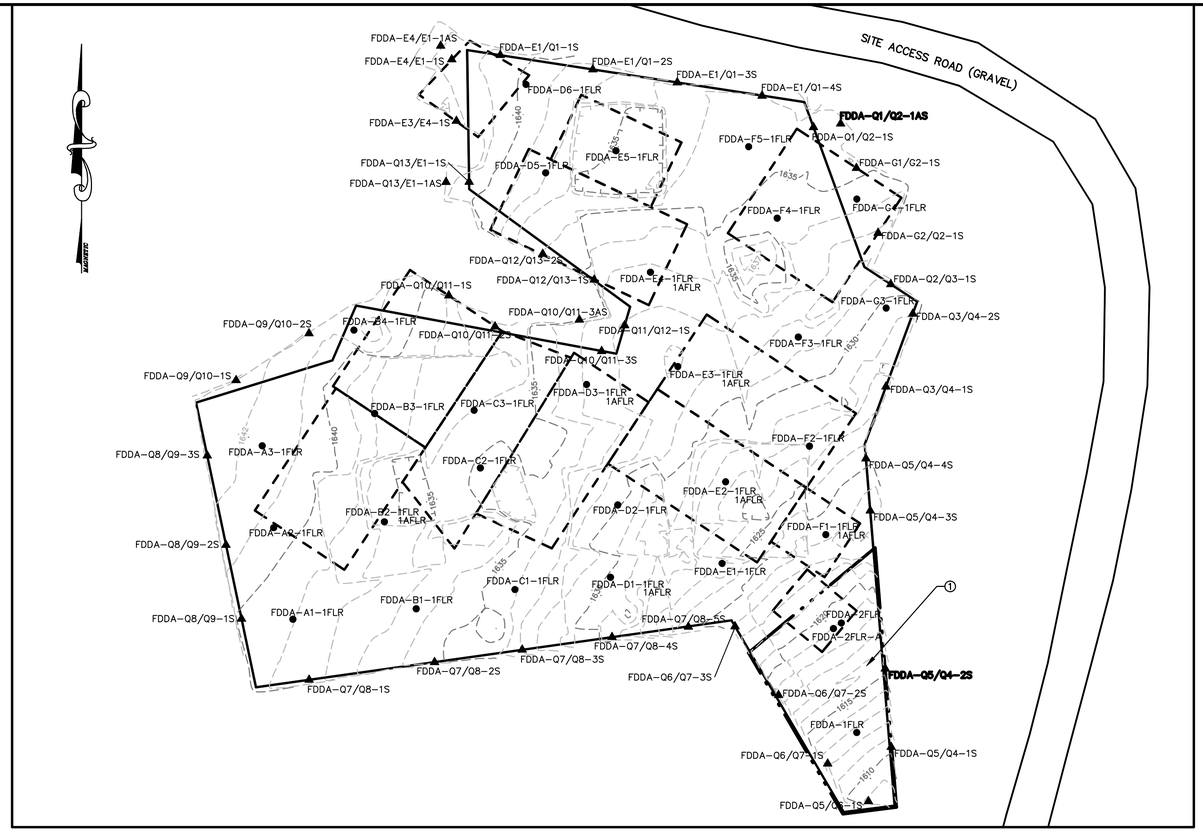


TEST PIT TP-7/16
1" = 20'



TEST PIT TP-5
1" = 20'

PLOT SCALE: 1=1



FORMER DRUM DISPOSAL AREA
1" = 20'

LEGEND:

- LIMITS OF IN SITU SOIL TREATMENT
- SAMPLE GRID
- 1640 EXISTING / EXCAVATED GRADE CONTOUR
- EXISTING / EXCAVATED GRADE CONTOUR DEPRESSION
- PROPOSED LIMITS OF SOIL EXCAVATION
- FDDA-F4-1FLR FLOOR SOIL SAMPLE LOCATION
- FDDA-Q1/Q2-1S SIDEWALL SOIL SAMPLE LOCATION
- **FDDA-Q1/Q2-1AS** SCO SOIL SAMPLE EXCEEDANCE LOCATION

GENERAL NOTE:

1. DELINEATED IN SITU SOIL STABILIZATION AREAS CORRESPOND TO ESTIMATED SOIL WEIGHTS NEEDED TO ACHIEVE 7 PERCENT MIXTURE USING 1 TON OF STABILIZING AGENT.
2. EXCAVATION AREAS WERE BACKFILLED IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.
3. SAMPLE LOCATIONS IN **BOLD** INDICATE LOCATIONS SCO COMMERCIAL SOIL SAMPLE EXCEEDANCES LEFT IN PLACE AS APPROVED BY NYSDEC PROJECT MANAGER. RESULTS ARE INDICATED IN THE TABLE BELOW.

SPECIFIC NOTE:

① EXCAVATION COMPLETED PRIOR TO SEDIMENT TRAP 2 CONSTRUCTION AND ESTABLISHED SAMPLING GRID.

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

Unrestricted Use Soil Cleanup Objective [6NYCRR Table 375-6.8(a)](b)	Total Cadmium (mg/kg)	Total Lead (mg/kg)
	2.5	63
Former Drum Disposal Area (FDDA):		
Sample ID/ Location	**Date**	**Result**
FDDA-Q5/Q6-1S(c)	8/7/2013	0.034 J	7.4
FDDA-Q6/Q7-1S	8/7/2013	0.12 J	11
FDDA-Q6/Q7-2S	8/7/2013	0.050 J	6.4
FDDA-1Flr/Dup 1(c)	8/7/2013	0.29 J / 0.15 J	7.6 / 11
FDDA-1Flr/MS	8/7/2013	5.77	65.1
FDDA-1Flr/MSD	8/7/2013	5.91	66.3
FDDA-2Flr	8/7/2013	21	16
FDDA-2FlrA	8/13/2013	1.1	7.8
FDDA-Q6/Q7-3S	8/7/2013	0.77	13
FDDA-Q5/Q4-1S	8/7/2013	**3.3**	18
FDDA-Q5/Q4-2S	8/7/2013	**9.6**	16
FDDA-Q8/Q9-1S	8/27/2013	0.11 J	8.3 B
FDDA-Q8/Q9-2S	8/27/2013	**3.7**	13 B
FDDA-Q8/Q9-3S	8/27/2013	0.21 J	8.5 B
FDDA-Q7/Q8-1S	8/27/2013	0.43 J	8.9 B
FDDA-Q7/Q8-2S	8/27/2013	1.0	9.7 B
FDDA-Q7/Q8-3S	8/27/2013	2.2	18 B
FDDA-Q7/Q8-4S	8/27/2013	2.2	14
FDDA-Q7/Q8-5S	8/27/2013	0.66	9.7
FDDA-A1-1Flr	8/27/2013	0.63 U	8.4
FDDA-A2-1Flr	8/27/2013	1.5	11
FDDA-A3-1Flr	8/27/2013	**3.4**	20
FDDA-B1-1Flr	8/27/2013	0.72	7.6
FDDA-C1-1Flr	8/27/2013	**3.9**	11
FDDA-D1-1Flr	8/27/2013	12	11
FDDA-D1-1AFlr	9/6/2013	1.5	7.3
FDDA-E1-1Flr	8/27/2013	0.13 J	7.8
FDDA-Q9/Q10-1S	8/27/2013	0.13 J	16
FDDA-Q5/Q4-3S	9/6/2013	**5.6**	13
FDDA-Q5/Q4-4S	9/6/2013	0.38 J	11
FDDA-Q3/Q4-1S/Dup 3(c)	9/6/2013	0.99 / 1.3	11 / 9.0
FDDA-Q3/Q4-1S/MS	9/6/2013	11.8 F	57.8
FDDA-Q3/Q4-1S/MSD	9/6/2013	55.2 F	58.3
FDDA-Q3/Q4-2S	9/6/2013	0.74	6.6
FDDA-Q2/Q3-1S	9/6/2013	0.59	7.2
FDDA-F1-1Flr	9/6/2013	100	20
FDDA-F1-1AFlr	9/12/2013	0.27 J	15
FDDA-F2-1Flr	9/6/2013	1.4	12
FDDA-F3-1Flr	9/6/2013	0.42 J	9.4
FDDA-G3-1Flr	9/6/2013	0.91	8.8
FDDA-B2-1Flr	9/10/2013	220	32
FDDA-B2-1AFlr	10/10/2013	0.55 U	18
FDDA-B3-1Flr/Dup 4(c)	9/10/2013	**3.3** / 1.1	9.3 / 9.4
FDDA-B3-1Flr/MS	9/10/2013	7.01 F	57.6
FDDA-B3-1Flr/MSD	9/10/2013	5.64 F	53.9
FDDA-B4-1Flr	9/10/2013	0.16	8.6

Former Drum Disposal Area (FDDA): (Continued)			
Sample ID/ Location	**Date**	**Result**	
FDDA-C2-1Flr	9/10/2013	0.95	12
FDDA-C3-1Flr	9/10/2013	0.46 J	11
FDDA-D2-1Flr	9/10/2013	0.095 J	13
FDDA-D3-1Flr	9/10/2013	55	19
FDDA-D3-1AFlr	9/18/2013	1.3	19
FDDA-D5-1Flr	9/10/2013	**6.3**	9.4
FDDA-D6-1Flr	9/10/2013	**8.6**	10
FDDA-E2-1Flr	9/10/2013	23	13
FDDA-E2-1AFlr	9/18/2013	0.14 J	11
FDDA-E3-1Flr	9/10/2013	110	33
FDDA-E3-1AFlr	9/18/2013	0.096 J	14
FDDA-E4-1Flr/Dup 5(c)	9/10/2013	130 / 94	31 / 26
FDDA-E4-1Flr/MS	9/10/2013	115 F	79.1 F
FDDA-E4-1Flr/MSD	9/10/2013	134	77.8
FDDA-E4-1AFlr/Dup 6(c)	10/10/2013	1.5 / 0.64	17 / 18
FDDA-E4-1AFlr/MS	10/10/2013	6.50	65.9
FDDA-E4-1AFlr/MSD	10/10/2013	7.43	65.2
FDDA-E5-1Flr	9/10/2013	0.083 J	9.4
FDDA-F4-1Flr	9/10/2013	**9.0**	9.6
FDDA-F5-1Flr	9/10/2013	**3.8**	13
FDDA-G4-1Flr	9/10/2013	1.2	6.8
FDDA-Q9/Q10-2S	9/10/2013	0.15 J	11
FDDA-Q10/Q11-1S	9/10/2013	2.5	15
FDDA-Q10/Q11-2S	9/10/2013	0.25 J	16
FDDA-Q10/Q11-3S	9/10/2013	29	38
FDDA-Q10/Q11-3AS	9/18/2013	0.69	17
FDDA-Q11/Q12-1S	9/10/2013	1.5	14
FDDA-Q12/Q13-1S	9/10/2013	**4.6**	15
FDDA-Q12/Q13-2S	9/10/2013	0.052 J	14
FDDA-Q13/E1-1S	9/10/2013	300	53
FDDA-Q13/E1-1AS	9/18/2013	**5.6**	29
FDDA-E3/E4-1S	9/10/2013	0.77	7.3
FDDA-E4/E1-1S	9/10/2013	21	12
FDDA-E4/E1-1AS	9/18/2013	0.60	11
FDDA-E1/Q1-1S	9/10/2013	**2.7**	10
FDDA-E1/Q1-2S	9/10/2013	0.67	7.5
FDDA-E1/Q1-3S	9/10/2013	**9.0**	14
FDDA-E1/Q1-4S	9/10/2013	1.2	8.5
FDDA-Q1/Q2-1S	9/10/2013	24	18
FDDA-Q1/Q2-1AS	9/18/2013	**9.6**	26
FDDA-G1/G2-1S	9/10/2013	0.62	13
FDDA-G2/Q2-1S	9/10/2013	**3.4**	14

Test Pit 3:			
Sample ID/ Location	**Date**	**Result**	
TP3-V1/V2-1S	8/27/2013	2.4	16
TP3-V2/V3-1S	8/27/2013	**2.7**	15
TP3-V3/V4-1S	8/27/2013	**3.0**	17 B
TP3-V4/V1-1S	8/27/2013	0.57 U	6.9 B
TP3-1Flr	8/27/2013	**5.8**	23 B
Test Pit 5:			
Sample ID/ Location	**Date**	**Result**	
TP5-X1/X5-1S	8/16/2013	0.24 J	11 B
TP5-X1/X2-1S	8/16/2013	0.65	12 B
TP5-X2/X3-1S	8/16/2013	1.6	24 B
TP5-X3/X4-1S/Dup 2(d)	8/16/2013	**7.4 / 5.4**	11 B / 13 B
TP5-X3/X4-1S/MS	8/16/2013	14.4 F	62.8
TP5-X3/X4-1S/MSD	8/16/2013	20.3 F	61.7
TP5-X4/X5-1S	8/16/2013	0.31 J	12 B
TP5-X4/X5-2S	8/16/2013	1.6	17 B
TP5-1Flr	8/16/2013	0.46 J	14 B
TP5-2Flr	8/16/2013	0.30 J	14 B
Test Pit 7/16:			
Sample ID/ Location	**Date**	**Result**	
TP7/16-W1/W2-1S	9/6/2013	1.8	7.0
TP7/16-W2/W3-1S	9/6/2013	5.9	11
TP7/16-W3/W4-1S	9/6/2013	24	77
TP7/16-W4/W5-1S	9/6/2013	49	150
TP7/16-W3/W5-1AS	9/18/2013	76	140
TP7/16-W3/W5-1BS	10/15/2013	18	91
TP7/16-W3/W5-1CS	10/23/2013	**10**	60 B
TP7/16-W8/W9-1S	9/6/2013	**3.9**	18
TP7/16-W9/W10-1S	9/6/2013	1.7	12
TP7/16-W10/W11-1S	9/6/2013	20	47
TP7/16-W10/W11-1AS	9/18/2013	0.37	8.8
TP7/16-W11/W1-1S	9/6/2013	0.055 J	7.5
TP7/16-1Flr	9/6/2013	0.34 J	6.5
TP7/16-2Flr	9/6/2013	18	91
TP7/16-2AFlr	9/18/2013	**11**	**74**
TP7/16-3Flr	9/6/2013	2.3	9.5
TP7/16-W5/W6-1S	10/15/2013	42	140
TP7/16-W5/W6-1AS	10/23/2013	1.3	23 B
TP7/16-W5/W6-2S	10/15/2013	0.53 U	14
TP7/16-4Flr	10/15/2013	0.58 U	3.3

Table Notes:
(a) NYCRR, Title 6, Part 375, Subpart 375-6.8(b): Restricted Use Soil Cleanup Objectives - Commercial.
(b) NYCRR, Title 6, Part 375, Subpart 375-6.8(a): Unestricted Use Soil Cleanup Objectives.
(c) "mg/kg" is milligram per kilogram, or parts per million (ppm).
(d) Samples were collected X inches below ground surface.
(e) "S" in sample ID name indicates a sidewall sample. "Flr" in sample ID name indicates a floor sample.
(f) Laboratory data qualifiers are as follows:
"J" and "UJ" - represent a value that is estimated. Data present a usable estimation of the conditions being measured.
"U" - Indicates the parameter was not detected above the laboratory detection limit.
"B" - Indicates that the compound was found in the laboratory blank.
"F" - MS or MSD exceeds the control limits.
(g) Indicates tha a duplicate sample was collected.
(h) **Bolded** results indicate an exceedance of the corresponding Soil Cleanup Objective. Shaded results were excavated.

SCALE
20 0 20 40 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

SUMMARY OF POST-EXCAVATION SAMPLE POINTS MEETING SCO AND UNRESTRICTED SCO EXCEEDANCES

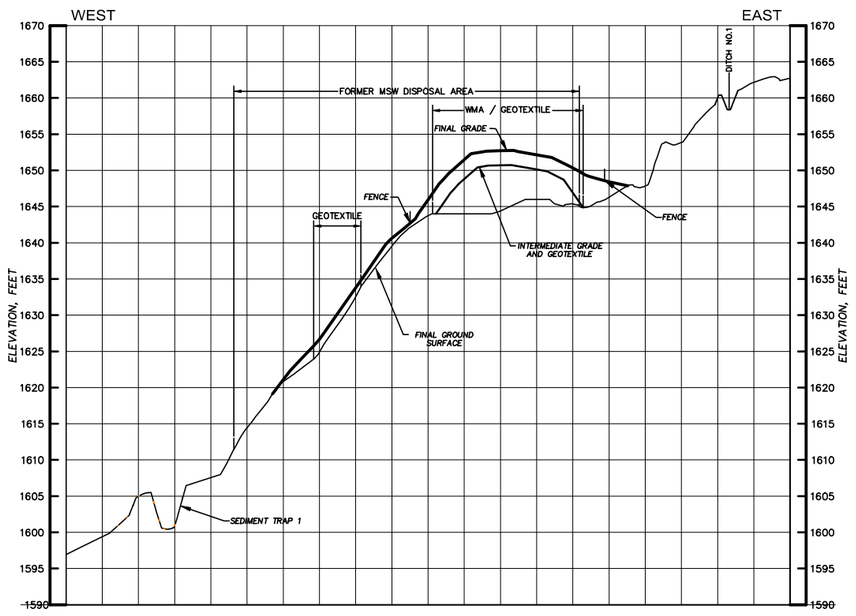
TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

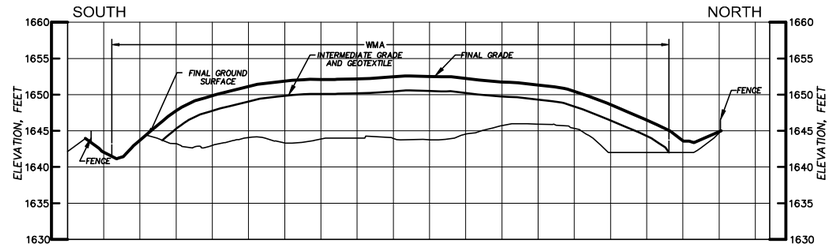
AUTOCAD FILE NUMBER: 01304E60

DRAWN BY: *D.J. Martino*	DATE: *1-22-14*	FIGURE NUMBER 10
CHECKED BY:	DATE:	
APPROVED BY:	DATE:	

AUTOCAD FILE NUMBER 01304E53



SECTION A (12|14)
WEST AND EAST



SECTION B (12|14)
SOUTH AND NORTH

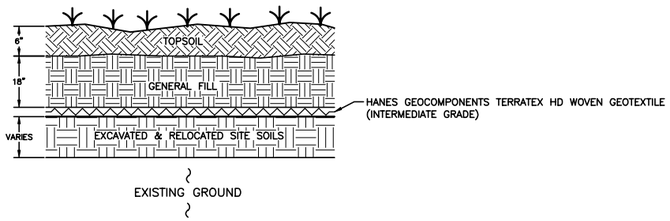
5X VERTICAL EXAGGERATION

HORIZONTAL SCALE
50 0 50 100 FEET

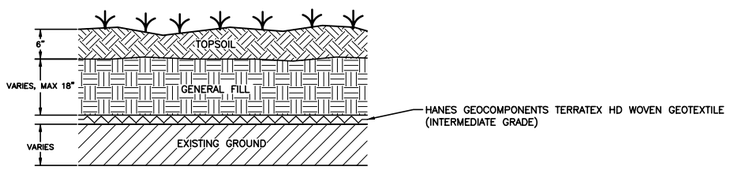
VERTICAL SCALE
10 0 10 20 FEET

GENERAL NOTE:

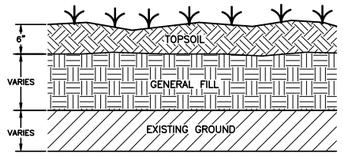
1. SURVEY INFORMATION FOR SECTIONS A AND B WERE PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.



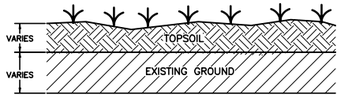
DETAIL 1
WASTE MANAGEMENT AREA
(NTS)



DETAIL 2
FORMER MSW AREA DISPOSAL PLACEMENT OF >6" GENERAL FILL PLUS 6" TOPSOIL
(NTS)



DETAIL 3
FORMER MSW DISPOSAL AREA PLACEMENT OF <6" GENERAL FILL AND 6" TOPSOIL
(NTS)



DETAIL 4
FORMER MSW DISPOSAL AREA PLACEMENT OF NO GENERAL FILL AND <6" TOPSOIL
(NTS)

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	FINAL SURVEY	8-14-14	R.P.H

CUMMINGS RITER CONSULTANTS, INC.
A WOODARD & CURRAN COMPANY
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241-4500
Fax: (412) 241-7500

SOIL COVER CROSS-SECTIONS AND DETAILS

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

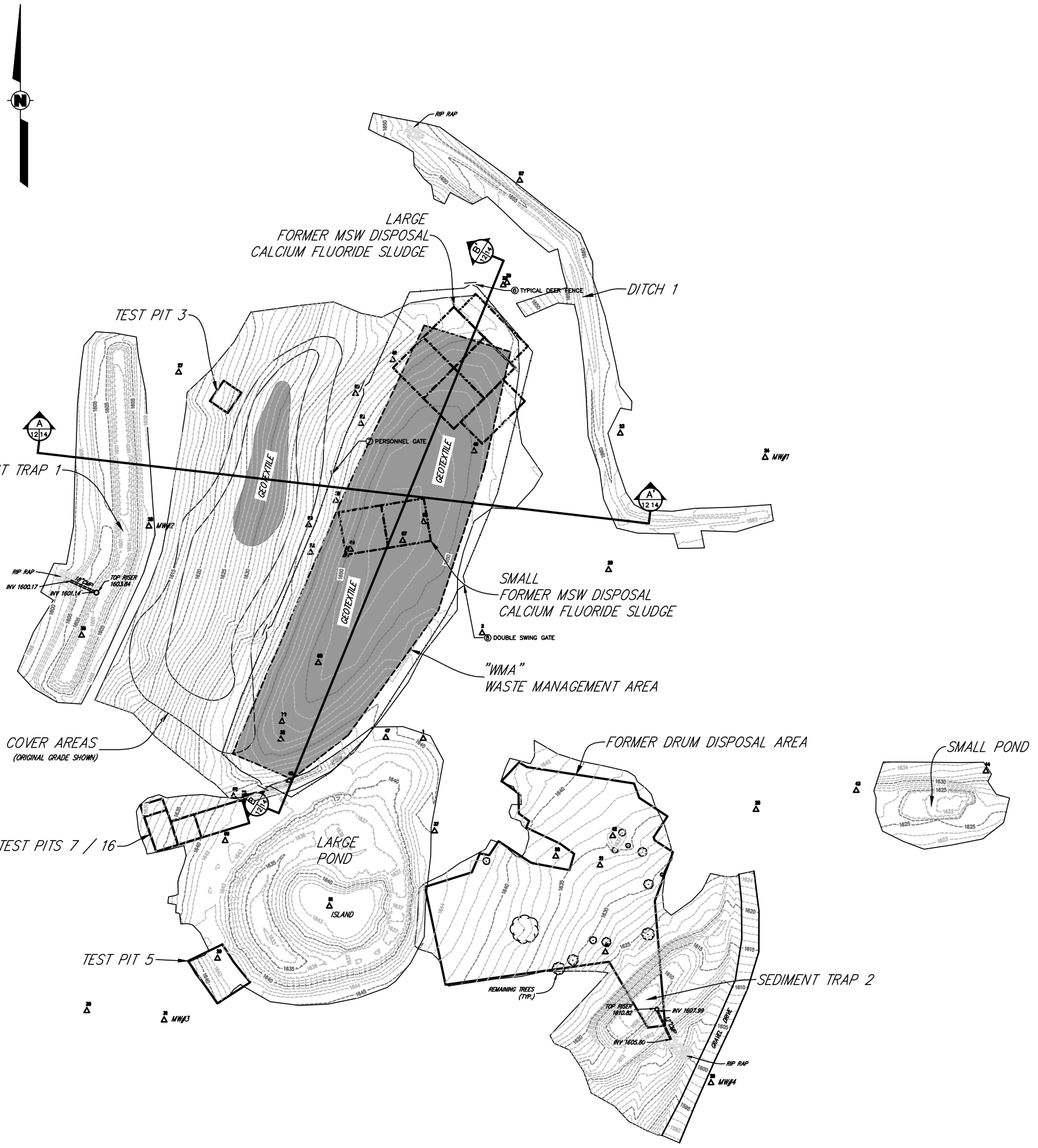
PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E53

DRAWN BY:	D.J. Martino	DATE: 01-27-14	FIGURE NUMBER
CHECKED BY:	R.P. HRENCKO	DATE: 08-14-14	11
APPROVED BY:	A.E. PROCTOR	DATE: 08-14-14	

PLOT SCALE: 1=2

DRAWING NUMBER 01304E59



HORIZONTAL/VERTICAL DATUM NOTE:

VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88/GEOID12A) MINUS 0.2'.

HORIZONTAL CONTROL IS REFERENCED TO AN APPROXIMATE UTM ZONE 18 COORDINATE SYSTEM.

SITE PLAN (CUMMINGS RITTER) NORTH

PRIMARY CONTROL MONITORING WELLS 1–4
REMAINING SURVEY CONTROL POINTS NOT VERIFIED

SURVEY CONTROL POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	15341493.72	1110567.93	1646.22	CP–PK
2	15341579.47	1110615.75	1648.78	CP–PK
20	15341630.93	1110718.51	1661.68	CP–IR
21	15341390.70	1110711.43	1634.90	CP–N
22	15341645.09	1110476.29	1638.97	CP–N
23	15341741.87	1110727.97	1661.85	CP–N
24	15341722.20	1110845.76	1668.15	HUNT–MW1
25	15341435.86	1110838.37	1631.25	CP–N
26	15341213.68	1110801.74	1601.90	HUNT–MW4
27	15341791.44	1110369.07	1613.70	CP–N
28	15341668.32	1110344.88	1610.27	HUNT–MW2
29	15341315.02	1110400.68	1644.99	CP–N
30	15341272.28	1110294.46	1628.12	CP–N
31	15341264.78	1110357.27	1636.86	HUNT–MW3
32	15341493.07	1110452.20	1640.97	CP–N
33	15341882.33	1110632.67	1648.97	CP–N

SURVEY CONTROL POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
34	15341643.01	1110504.92	1642.46	CP–N
35	15341577.83	1110280.24	1604.02	CP–N
36	15341444.09	1110420.95	1643.89	CP–N
37	15341418.47	1110577.07	1644.95	CP–N
38	15341687.09	1110486.95	1642.57	CP–N
39	15341884.37	1110635.88	1649.64	CP–N
40	15341459.71	1110468.78	1645.63	CP–N
41	15341320.09	1110715.81	1626.72	CP–N
42	15341414.49	1110721.88	1639.35	CP–N
43	15341451.36	1110919.80	1627.31	CP–N
44	15341467.11	1111025.15	1632.49	CP–N
45	15341801.57	1110543.18	1643.28	CP–N
46	15341727.39	1110809.22	1646.67	CP–N
47	15341494.49	1110537.41	1644.45	CP–N
49	15341647.47	1110508.75	1645.34	CP–N
50	15341397.93	1110675.60	1635.62	CP–N
51	15341357.34	1110491.60	1644.22	CP–N
52	15341749.81	1110517.11	1643.55	CP–N
53	15341669.86	1110568.09	1648.88	CP–N
57	15341947.43	1110646.30	1661.66	CP–N

SURVEY CONTROL POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
58	15341446.74	1110413.65	1641.68	CP–N
59	15341774.11	1110512.80	1640.73	CP–N
60	15341667.34	1110474.69	1640.10	CP–PK
66	15341410.60	1110408.88	1642.64	CP–N
67	15341654.60	1110551.15	1651.19	CP–N
68	15341555.32	1110482.56	1650.06	CP–N
70	15341507.57	1110453.20	1652.46	CP–PK

TOPOGRAPHY REFERENCE:

TOPOGRAPHIC FEATURES PROVIDED BY HUNT ENGINEERS ARCHITECTS & LAND SURVEYORS, PC.

SCALE
40 0 40 80 FEET

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	FINAL SURVEY	8–14–14	R.P.H.

CUMMINGS RITTER CONSULTANTS, INC.
CORPORATE HEADQUARTERS
300 Penn Center Blvd.
Suite 800
Pittsburgh, PA 15235
(412) 241–4500
Fax: (412) 241–7500

PLACEMENT OF FILL AS–BUILT

TOWNLEY HILL ROAD DUMP SITE
TOWN OF CATLIN, NEW YORK

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 01304E59

DRAWN BY: T.N. Fitzroy	DATE: 1–30–14	FIGURE NUMBER 12
CHECKED BY: R.P. Hrenko	DATE: 8–14–14	
APPROVED BY: A.E. Proctor	DATE: 8–14–14	

APPENDIX A

HORIZONTAL/VERTICAL DATUM NOTE:

VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

HORIZONTAL CONTROL IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83).

LEGEND:

- EXISTING IRON ROD
- DEED AND/OR MAP LINE
- N/F — NOW OR FORMERLY
- O/H — OVERHEAD UTILITY LINE
- UTILITY POLE
- WIRE FENCE
- DECIDUOUS TREE WITH WIRE FENCE
- UTILITY POLE ANCHOR
- MONITORING WELL

GRID NORTH — N — NY CENTRAL ZONE

OTHER LANDS OWNED BY:
NORTHWOODS HUNTING INC.
F.1059, P.57D
TAX ID NO. 26.00-1-45.2

PROPERTY LINE LOCATION OF TAX ID NO. 26.00-1-45.1 IS TAKEN FROM SOUTHERN TIER CENTRAL GIS PORTAL.
NOTE: A WRITTEN LEGAL DESCRIPTION SPECIFIC TO THIS 28.16 ACRES PARCEL HAS NOT BEEN FOUND IN THE CHEMUNG COUNTY CLERK'S OFFICE.

- W O O D E D -

LANDS OWNED BY:
NORTHWOODS HUNTING INC.
F.1059, P.57D
TAX ID NO. 26.00-1-45.1

N/F
WILLIAM PETRASEK
L.562, P.557 & L.343, P.428

28.16 ACRES (OVERALL)

NOTE: A WRITTEN LEGAL DESCRIPTION SPECIFIC TO THIS 28.16 ACRES PARCEL HAS NOT BEEN FOUND IN THE CHEMUNG COUNTY CLERK'S OFFICE.

1.188 ACRES
(WMA ONLY)

WMA LINE TABLE		
LINE #	BEARING	DISTANCE
L1	N21°18'31"E	404.85
L2	N86°30'49"E	63.44
L3	S38°28'08"E	72.51
L4	S13°52'14"W	115.96
L5	S23°19'33"W	115.81
L6	S33°16'30"W	107.68
L7	S44°33'05"W	44.04
L8	S57°37'18"W	39.84
L9	N69°26'49"W	49.73
L10	N30°24'15"W	23.13

0.835 ACRES
(MSW ONLY)

MSW LINE TABLE		
LINE #	BEARING	DISTANCE
L11	N68°41'29"W	103.84
L12	N21°18'31"E	350.11
L13	S68°41'29"E	103.84
L14	S21°18'31"W	350.11

S73°33'43"E 112.38'
N8°40'54"E 153.48'
N79°39'07"E 284.52'
S43°29'07"E 633.93'
N2°05'57"W 279.72'
N21°08'09"W 325.53'
S84°44'27"W 303.92'
N24°16'24"W 220.77'
S02°47'35"E 191.91'

6" TOPSOIL
18" MAX. GENERAL FILL (VARIES)
WOVEN GEOTXTILE
EXISTING GROUND (VARIES)
AREA: 3705 SQ.FT.

FORMER MSW DISPOSAL AREA

"RESTRICTED USE AREA"

WASTE MANAGEMENT AREA

6" TOPSOIL
18" MAX. GENERAL FILL (VARIES)
WOVEN GEOTEXTILE
EXCAVATED AND RELOCATED SOILS (VARIES)
EXISTING GROUND (VARIES)
AREA: 51740 SQ.FT.

6" TOPSOIL
GENERAL FILL (VARIES)
EXISTING GROUND (VARIES)
AREA: 11115 SQ.FT.

6' HIGH CHAIN LINK FENCE

< 6" TOPSOIL
EXISTING GROUND (VARIES)
AREA: 12830 SQ.FT.

WMA & MSW POB
N809163.5688'
E718871.2605'

GRAVEL ACCESS DRIVE

APPROXIMATE POND LIMITS

LARGE POND

ISLAND

APPROXIMATE POND LIMITS

SMALL POND

11.291 ACRES
(ENVIRONMENTAL EASEMENT ONLY)

2,090' TO CENTER LINE INT. WITH BREED HOLLOW RD.

POINT OF BEGINNING
N809022.8971'
E719538.0134'

S50°19'16"W 57.55'
S50°20'27"W 57.57'
S51°05'19"W 56.23'
S51°54'35"W 55.51'
S51°55'01"W 52.78'
S50°46'18"W 54.33'
S49°50'32"W 51.90'
S47°57'07"W 48.58'

NOTE: ALL ENGINEERING CONTROL AREAS AND DATA SHOWN ABOVE ARE FROM LOCATIONS MADE DURING EXCAVATION AND CONSTRUCTION.

N/F
MICHAEL OVERHISER AND DIANNA OVERHISER
INST. #200711131

N/F
MICHAEL OVERHISER AND DIANNA OVERHISER
INST. #200711131

PROPERTY LINE LOCATION OF TAX ID NO. 26.00-1-45.1 IS TAKEN FROM SOUTHERN TIER CENTRAL GIS PORTAL.
NOTE: A WRITTEN LEGAL DESCRIPTION SPECIFIC TO THIS 28.16 ACRES PARCEL HAS NOT BEEN FOUND IN THE CHEMUNG COUNTY CLERK'S OFFICE.

- W O O D E D -

TOWNLEY HILL ROAD
(ASSUMED 49.5' WIDE)

ASPHALT ROAD
ASSUMED ROAD BOUNDARY

EDGE OF WOODED AREA

OTHER LANDS OWNED BY:
NORTHWOODS HUNTING INC.
F.1059, P.57D
TAX ID NO. 26.00-1-45.2

O/H

ENVIRONMENTAL EASEMENT DESCRIPTION:

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Catlin, County of Chemung and State of New York, bounded and described as follows:

Beginning at a point on the center line of Townley Hill Road, said point being westerly, along said center line, a distance of 2,090 feet from the intersection with the center line of Breed Hollow Road;

Thence the following eight (8) courses and distances along the above mentioned center line of Townley Hill Road:
1) S 50° 19' 16" W, a distance of 57.55 feet to a point;
2) S 50° 20' 27" W, a distance of 57.57 feet to a point;
3) S 51° 05' 19" W, a distance of 56.23 feet to a point;
4) S 51° 54' 35" W, a distance of 55.51 feet to a point;
5) S 51° 55' 01" W, a distance of 52.78 feet to a point;
6) S 50° 46' 18" W, a distance of 54.33 feet to a point;
7) S 49° 50' 32" W, a distance of 51.90 feet to a point;
8) S 47° 57' 07" W, a distance of 48.58 feet to a point;

Thence the following nine (9) courses and distances through lands owned by Northwoods Hunting Inc. (L.1059, P.57D):
1) N 24° 16' 24" W, a distance of 220.77 feet to a point;
2) S 84° 44' 27" W, a distance of 303.92 feet to a point;
3) N 21° 08' 09" W, a distance of 325.53 feet to a point on the westerly boundary of tax parcel 26.00-1-45.1;
4) N 02° 05' 57" W, along said westerly tax parcel boundary, a distance of 279.72 feet to a point;
5) N 79° 39' 07" E, a distance of 284.52 feet to a point;
6) N 08° 40' 54" E, a distance of 153.48 feet to a point;
7) S 73° 33' 43" E, a distance of 112.38 feet to a point;
8) S 43° 29' 07" E, a distance of 633.93 feet to a point;
9) S 02° 47' 35" E, a distance of 191.91 feet to the first above described center line and the point of beginning; containing 11.291 acres, more or less.

NOTE:
"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 New York Environmental Conservation Law. The engineering and institutional controls for this Easement are set forth in the Site Management Plan (SMP). A copy of the SMP must be obtained by any party with an interest in the property. The SMP can be obtained from NYS Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@dec.ny.gov"

DEED REFERENCE:

COUNTY OF CHEMUNG TO NORTHWOODS HUNTING INC. BY QUIT CLAIM DEED RECORDED IN THE CHEMUNG COUNTY CLERK'S OFFICE ON JULY 6, 1999 IN FICHE 1059 OF DEEDS AT PAGE 57D.

Record legal description as recited in the quit claim deed referenced above: "All that Tract, Piece or Parcel of Land, situate in the Town of Catlin, County of Chemung and State of New York, vacant land located at 153 Townley Hill Road - Tax Map #26.00-1-45 - Account #001230000 and being a parcel of one hundred twenty-six (126) acres, be the same more or less, on the Townley Road, bounded on the north by lands now or formerly of Kimble, on the east by lands now or formerly of Voorhees, on the south by lands now or formerly of Seeley, and on the west by lands now or formerly of Stevens.

SUBJECT, however, to rights and easements of record.

BEING the same premises conveyed to James C. Case by Warranty Deed dated August 27, 1969 and recorded September 22, 1969 in the Chemung County Clerk's Office on September 22, 1969 in Book 600 of Deeds at Page 1172.

This property is conveyed subject to a documented hazardous waste site situated on the parcel. This site is specifically named the 'Townley Hill Road Dump Site'.

New York State Department of Environmental Conservation Site Number 808006 said site consists of approximately 10 acres and until fully remediated, no residence or other structure may be built on the 10 acre site which should be fenced to exclude possible human contact from the site.

Subject to all prior restrictions, covenants, and easements as previously recorded."

TITLE SEARCH:

AN ABSTRACT OF TITLE WAS NOT PROVIDED FOR THIS SURVEY. THIS MAP IS SUBJECT TO ANY AND ALL RIGHTS OF WAYS, EASEMENTS OR ANY OTHER ENCUMBRANCES THAT AN UPDATED ABSTRACT OF TITLE MAY REVEAL.

CERTIFICATION:

TO THE PEOPLE OF THE STATE OF NEW YORK THROUGH THEIR COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION. THIS IS TO CERTIFY THAT I AM A NEW YORK STATE LICENSED LAND SURVEYOR AND THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION ON AUGUST 20, 2014 USING FIELD NOTES FROM AN INSTRUMENT SURVEY COMPLETED ON MAY 5, 2014.

SIGNED: Timothy A. Olmstead
TIMOTHY A. OLMSTEAD, L.S. 050161

REVISED ON NOVEMBER 20, 2014 TO ADD RECORD LEGAL DESCRIPTION AND MODIFY CERTIFICATION.

REVISED ON DECEMBER 2, 2014 TO ADD SITE MANAGEMENT PLAN NOTE.

STATE OF NEW YORK · TIMOTHY A. OLMSTEAD · 050161 · LICENSED LAND SURVEYOR

"Unauthorized alteration or addition to a survey map bearing a Licensed Land Surveyors seal is a violation of section 7209, sub-division 2, of the New York State Education Law."

"Copies from the original of this survey map not marked with an original of the land surveyor's inked seal or his embossed seal, shall not be considered to be a valid true copy."

SCALE IN FEET
0 37.5 75 150 225
1 INCH = 75 FEET
(2.54 CM = 22.860 M)

HUNT
ENGINEERS•ARCHITECTS•SURVEYORS
AIRPORT CORPORATE PARK, 100 HUNT CENTER
HORSEHEADS, NEW YORK 14845
607•358•1000
FAX•358•1800

SURVEY MAP PREPARED FOR:

ENVIRONMENTAL EASEMENT DESCRIPTION SITE #808006

KNOWN AS TOWNLEY HILL ROAD DUMP SITE
LOCATED AT 153 TOWNLEY HILL ROAD
SITUATE IN:
TOWN OF CATLIN, COUNTY OF CHEMUNG, STATE OF NEW YORK

SCALE:	DWG.BY:	CHK.BY:	TAX PARCEL NO:	JOB NO:
1" = 75'	T.A.O./J.R.H.	G.L.T.	26.00–1–45.1	5607–001

APPENDIX B

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

THIS INDENTURE made this 12th day of January, 2015, between Owner(s) Northwoods Hunting Inc., having an office at 3083 Thunder Bay Road, Ridgeway, Province of Ontario, Canada (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 293 Townley Hill Road in the Town of Catlin, County of Chemung and State of New York, known and designated on the tax map of the County Clerk of Chemung as tax map parcel numbers: Section 26 Block 1 Lot 45.1, being the same as that property conveyed to Grantor by deed dated July 6, 1999 and recorded in the Chemung County Clerk's Office in Fiche 1059 of Deeds, page 57D. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 11.291 +/- acres, and is hereinafter more fully described in the Land Title Survey dated August 20, 2014 prepared by Timothy A. Olmstead, L.S. 050161, 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

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: Index #B8-0650-30-12, 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:

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 must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls 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 Chemung 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 Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), 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 institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) 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

(7) 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: 8-08-006
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.

Northwoods Hunting Inc.:

By: W Allen

Print Name: WALTER ALLEN

Title: President Date: Jan 17th 4

Grantor's Acknowledgment

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

On the 17th day of November, in the year 20 14, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Oriana R. Montani

Notary Public - State of New York

ORIANA R. MONTANI
Notary Public, State of New York
No. 02MO6291187
Qualified in Niagara County
Commission Expires October 15, 2017

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 12th day of January, in the year 2015, 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(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ 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

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Catlin, County of Chemung and State of New York, bounded and described as follows:

Beginning at a point on the center line of Townley Hill Road, said point being westerly, along said center line, a distance of 2,090 feet from the intersection with the center line of Breed Hollow Road;

Thence the following eight (8) courses and distances along the above mentioned center line of Townley Hill Road:
1) S 50° 19' 16" W, a distance of 57.55 feet to a point;
2) S 50° 20' 27" W, a distance of 57.57 feet to a point;
3) S 51° 05' 19" W, a distance of 56.23 feet to a point;
4) S 51° 54' 35" W, a distance of 55.51 feet to a point;
5) S 51° 55' 01" W, a distance of 52.78 feet to a point;
6) S 50° 46' 18" W, a distance of 54.33 feet to a point;
7) S 49° 50' 32" W, a distance of 51.90 feet to a point;
8) S 47° 57' 07" W, a distance of 48.58 feet to a point;

Thence the following nine (9) courses and distances through lands owned by Northwoods Hunting Inc. (L.1059, P.57D):
1) N 24° 16' 24" W, a distance of 220.77 feet to a point;
2) S 84° 44' 27" W, a distance of 303.92 feet to a point;
3) N 21° 08' 09" W, a distance of 325.53 feet to a point on the westerly boundary of tax parcel 26.00-1-45.1;
4) N 02° 05' 57" W, along said westerly tax parcel boundary, a distance of 279.72 feet to a point;
5) N 79° 39' 07" E, a distance of 284.52 feet to a point;
6) N 08° 40' 54" E, a distance of 153.48 feet to a point;
7) S 73° 33' 43" E, a distance of 112.38 feet to a point;
8) S 43° 29' 07" E, a distance of 633.93 feet to a point;
9) S 02° 47' 35" E, a distance of 191.91 feet to the first above described center line and the point of beginning; containing 11.291 acres, more or less;

LESS AND EXCEPT all that portion of the above described property lying and being within the bounds of Townley Hill Road.

APPENDIX C

APPENDIX C
EXCAVATION WORK PLAN

C-1 NOTIFICATION

Disturbance of the soil cap in the former MSW Disposal Area is prohibited. Proposed excavation activities outside of the former MSW Disposal Area as described in Appendix A – Metes and Bounds, shall follow this EWP.

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. Currently, this notification will be made to:

Mr. Vivek Nattanmai, P.E. or current Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233

And

Bart Putzig, P.E. or current Regional Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation
6274 Avon-Lima Rd. (Rtes. 5 and 20)
Avon, NY 14414-9516

This notification will include the following:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site regrading, intrusive elements or utilities to be installed in the restricted use area, estimated volumes of impacted soil to be excavated and any work that may impact Site access or surface water controls.
- A summary of environmental conditions anticipated 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 Code of Federal Regulations 1910.120.
- A copy of the contractor's HASP and CAMP.
- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

C-2 SOIL SCREENING METHODS

Visual screening and instrument-based dust monitoring will be performed by a Qualified Environmental Professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Dust monitoring will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work.

Soils will be segregated based on the metes and bounds descriptions of restricted areas (Appendix A in the SMP), previous environmental data, and screening results into material that requires off-Site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

C-3 STOCKPILE 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; 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.

C-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 its contractors are solely responsible for safe execution of all invasive and other work performed under this EWP.

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 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 and local requirements including NYSDOT and all other applicable transportation requirements.

An equipment decontamination station will be operated on Site. The Qualified Environmental Professional will be responsible for ensuring that all equipment is cleaned at the decontamination station before leaving the Site, or transitioning from handing impacted to non-impacted media, until intrusive activities are complete.

Locations where vehicles enter or exit the Site shall be inspected at least 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 activities. Cleaning of the adjacent streets will be performed, as needed, to maintain a clean condition with respect to Site-derived materials.

C-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.

All trucks will be cleaned prior to leaving the Site. Decontamination materials will be collected and disposed off-Site in an appropriate manner.

All trucks loaded with Site materials will exit the Site using pre-determined truck routes taking 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; (f) overall safety in transport; and (g) community input (where necessary).

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.

C-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the Site will be transported and disposed of in accordance with applicable local, state (including 6NYCRR Part 360) and federal regulations. If disposal of soil/fill 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., solid waste landfill, C/D recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC per Section 5.3 of the SMP. 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).

C-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-Site reuse of material are governed by NYSDEC Remedial Program Commercial SCOs as given in Title 6 of the NYCRR, Part 375 Subpart 375-6 (refer to Table 7 in the SMP). The Qualified Environmental Professional will ensure that procedures defined

for materials reuse in the SMP are followed and that material does not remain on-Site in an unacceptable manner. Contaminated on-Site material, including historic fill and contaminated soil, that is acceptable for reuse on-Site will be placed below demarcation geotextile or 2-foot minimum soil cover, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site unless approved by the NYSDEC.

C-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including excavation water and decontamination fluids, will be handled, transported, and disposed in accordance with applicable local, state, and federal regulations. Dewatering and decontamination fluids will not be recharged back to the land surface or subsurface of the Site unless approved by the 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 NYSDEC State Pollution Discharge Elimination System permit.

C-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored to pre-disturbed conditions or otherwise in a manner that complies with the ROD. The demarcation layer, consisting of geotextile or equivalent material, will be replaced to provide a visual reference for disturbance of remaining contaminated soils as described in the 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 remedy and SMP, and will be subject to approval by the NYSDEC.

C-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 EWP prior to receipt at the Site.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and

protection of ecological resources criteria, the resulting soil quality standards are NYSDEC Unrestricted SCOs as given in Title 6 of the NYCRR Part 375 Subpart 375-6. 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 the NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

C-11 STORM WATER POLLUTION PREVENTION

Erosion control measures will be installed and inspected in accordance with the project documents. 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 promptly. Accumulated sediments will be removed as required to keep the erosion control measures functional. Undercutting or erosion shall be repaired promptly with appropriate backfill materials. Manufacturer's recommendations will be followed for repairing and replacing erosion control measures damaged due to wear or weathering.

Erosion control measures identified in project documents 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

C-12 CONTINGENCY PLAN

If previously unidentified contaminant sources are found during 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 waste, sediment and surrounding soils, etc., as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for TAL metals, TCL VOCs, TCL SVOCs, 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 in accordance with Section 2.5 of the SMP. These findings will be also included in the periodic reports prepared pursuant to Section 5.3 of the SMP.

C-13 COMMUNITY AIR MONITORING PLAN

Community air monitoring will be conducted during soil excavation, test pitting, or other activity that can generate airborne contaminant or nuisance releases in accordance with the NYSDOH Generic CAMP (in Appendix D in the SMP) or as required and approved by the NYSDEC and NYSDOH in a task-specific CAMP for the planned activity. Whether using a generic or site-specific plan, the CAMP requires, at a minimum, real-time monitoring for VOCs and particulates (i.e., dust) from a work area when Site activities are in progress that could generate airborne contaminants 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), and to mitigate the spread of contamination off-site by air. Air monitoring for VOCs and particulates should be conducted upwind and downwind at the work area perimeter, and as required in the work area to protect workers directly involved with the subject work activities. The CAMP will identify action levels for all monitored parameters and mitigation measures, up to and including stoppage of work, upon an action level exceedance.

A figure showing the location of air sampling stations based on generally prevailing wind conditions will be provided NYSDEC for approval. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

C-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site, if there are tenants on the property. Specific odor control methods to be used will be developed for the task subject to the approval of the NYSDEC. If nuisance odors are identified at the Site

boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils; if odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods, and other measures as necessary.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

C-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during intrusive on-Site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-Site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

C-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

Additional nuisance controls required to execute the work will be developed and implemented as necessary by the contracted parties.

APPENDIX D

HEALTH AND SAFETY PLAN
TOWNLEY HILL ROAD DUMP SITE
CATLIN, CHEMUNG COUNTY, NEW YORK

1.0 INTRODUCTION

On behalf of CBS Corporation, Cummings/Riter Consultants, Inc. (Cummings/Riter) has prepared this Health and Safety Plan (HASP) to support activities to be conducted at a former waste disposal site located in the town of Catlin, Chemung County, New York known as the Townley Hill Road Dump Site (the Site) (see Figure 1 of the Site Management Plan [SMP]). On October 10, 2010, the New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision (ROD) for the Site. A revised Remedial Design Work Plan was submitted in July 2012 and Site remedial activities were implemented in 2013 and 2014.

This HASP has been prepared for post-remedial activities conducted by Cummings/Riter on behalf of CBS Corporation in general accordance with the U.S. Environmental Protection Agency's (USEPA) *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (EPA 540/G-89/004, October 1988). The purpose of the HASP is to protect project personnel, Site workers, and the public from potential environmental exposures.

Work other than that described in this HASP, or work by others than Cummings/Riter employees, must be conducted under a HASP specific to the task(s) to be conducted and the employing contractor.

1.1 PROJECT DESCRIPTION

This section provides the Site description and history including a physical description of the Site. A more detailed discussion of the Site is presented in the draft 2014 Final Engineering Report (FER).

1.2 SITE LOCATION AND DESCRIPTION

The Site is an inactive hazardous waste landfill (New York State Registry No. 8-08-006) which occupies an approximate 10-acre portion of a larger 28-acre property located on Townley Hill Road in the Town of Catlin, Chemung County, New York. The area is rural with small population centers along the Post Creek Valley to the northwest. The Site is within the Susquehanna River basin. An unnamed tributary to Post Creek passes within 500 feet of the Site, Post Creek itself is approximately 1,700 feet northwest of the fill area, and a private residence is situated approximately 700 feet east of the former drum disposal area.

1.3 SITE HISTORY

The Site is currently owned by Northwoods Hunting Inc. of Ridgeway, Ontario (Northwoods). During the period of operation (approximately late 1950s until 1967), the Site was owned by Mr. Joseph Lobell and subsequently, beginning in 1964, by Mr. John Mandzak. The Site was reportedly used for disposal of municipal waste under a permit issued by the Chemung County Department of Health. The Site also reportedly received miscellaneous debris, including tires, junk automobiles, 55-gallon drums, and calcium fluoride sludge (Engineering-Science, 1988). According to NYSDEC, approximately 300 drums containing an incinerator ash-like waste material were also disposed of at the Site.

Calcium fluoride sludge was reportedly buried in eight-foot trenches to the east of the Site access road (Engineering-Science, 1988). This sludge reportedly consisted of "waste treatment plant sludge intermittently containing traces of lead phosphate and cadmium" from the Westinghouse Industrial & Government Tube Division manufacturing facility in Horseheads, New York. According to available Westinghouse records, an unknown quantity of calcium fluoride sludge from its Horseheads plant was disposed of in bulk at the "Madzac property" (presumably the Townley Hill Road Dump Site) between 1964 and 1967.

On October 16, 1967, the Site was closed by the Chemung County Health Department due to complaints of odors and open burning. Beginning in 1969, most of the debris was removed by the new owner, Mr. James Case. The Site was also covered with topsoil and revegetated.

In April 1980, the Site was identified by NYSDEC as an inactive hazardous waste disposal site and placed on the Registry of Inactive Hazardous Waste Disposal Sites in New York. In 1983 and 1984, NYSDEC sampled the contents of the drums and analyzed these drum samples for metals by the Extraction Procedure (EP) to determine if these materials were characteristic hazardous waste under New York and Federal Resource Conservation and Recovery Act regulations. Results from the 1984 sampling event indicated an exceedance of the threshold EP toxicity concentrations for cadmium and lead. The Site was subsequently classified as a "Class 2" site in December 1986.

In July 1988, NYSDEC conducted an interim remedial measure (IRM) in which it removed approximately 300 drums containing ash waste and approximately 100 cubic yards (cy) of soil impacted by cadmium. Following the IRM, several Site investigations were conducted from 1990 through 1997, including the collection of numerous surface and subsurface soil samples.

In 2013 and 2014, the Site was remediated in accordance with the 2012 Remedial Design Work Plan. Remedial activities are described in the FER. Excavation and other invasive activities at the Site are subject to the draft 2014 SMP

1.4 ABBREVIATIONS AND CONVENTIONS

Abbreviations for terms used in the text are as follows:

CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
EP	Extraction Procedure
FER	Final Engineering Report
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
JSA	Job Safety Analysis
mg/m^3	milligrams per cubic meter
mg/kg	milligrams per kilogram
NYSDEC	New York State Department of Environmental Conservation
OSC	On-scene Coordinator
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
ROD	Record of Decision

SMP	Site Management Plan
OSHA	Occupational Safety and Health Administration
OV	Organic Vapor
SHSO	Site Health and Safety Officer
USEPA	United States Environmental Protection Agency

2.0 PROGRAM ORGANIZATION AND ADMINISTRATION

Remedial work will be conducted in a manner such that the health and safety of field personnel and the public are protected for work performed by Cummings/Riter. The project manager and Site health and safety officer (SHSO) will be responsible for seeing that remedial work is carried out in accordance with the safety procedures described herein. It is their responsibility to implement the applicable measures defined in this HASP.

The HASP will be implemented through an integrated team effort of the following key project staff:

- **PROJECT MANAGER – ANNE PROCTOR OR DESIGNEE**
  The primary contact between Cummings/Riter and CBS responsible for interfacing with the agency technical representatives (as necessary) and for review of agency submittals. Also responsible for technical, financial, and scheduling matters.

- **KENNETH J. BIRD – HEALTH AND SAFETY COORDINATOR AND QUALITY ASSURANCE OFFICER**
  Mr. Bird is responsible for reviewing the standard operating procedures and modifications to the HASP, as needed, based on field monitoring results. Mr. Bird will review field and laboratory data as needed for compliance of quality assurance objectives (precision, accuracy, comparability, and completeness); and report any deficiencies to project management.

- **ON-SITE HEALTH AND SAFETY OFFICER – TO BE DETERMINED**
  Responsible for executing HASP requirements on Site during remedial work.

- **OTHER CONTRACTORS**
  Other contractors will assign qualified individuals to be responsible for health and safety during remedial activities under their HASP.

The SHSO will normally be the Cummings/Riter staff member on Site or, if necessary, another Cummings/Riter staff member will be designated by the project manager, if the SHSO is not present on Site. The SHSO will have the required training (Section 5.0) and experience to implement the HASP.

3.0 MEDICAL SURVEILLANCE

Cummings/Riter personnel performing field work will be required to participate in a medical surveillance program prior to the initiation of field activities. Certification of conformance with Occupational Safety and Health Administration (OSHA) 1910.120 will be maintained in the project files. Other project participants will similarly need to be participants in a medial surveillance program pursuant to OSHA 1910.120, or provide a notarized statement that they are not subject to the medical surveillance requirement (e.g., do not work in respiratory protection for a minimum of 30 days per year).

4.0 HAZARD ASSESSMENT

An evaluation of conditions at the Site has been made to determine the potential effects upon Site personnel and the general public during the field activities. This qualitative evaluation is based on the following:

- Nature of potential constituents;
- Presence of potential constituents at specific work areas;
- Anticipated levels of constituents;
- Potential for personnel and public exposure during various Site activities; and
- Effects of potential constituents on human health.

The hazard associated with exposure varies directly with the amount of constituents to which an individual is exposed and the length of exposure. Exposure potential is defined as the probability of a worker or the public receiving harmful exposures.

4.1 FIELD INVESTIGATION ACTIVITIES

The potential hazard for personnel performing investigation activities varies from slight to moderate depending upon the activity. Field activities to be performed at this time primarily include Site visits and groundwater sampling; however, tasks could include:

- Surface geophysical surveying,
- Soil sampling,
- Test pit excavation,
- Drilling,
- Well installation,
- Surface water and sediment, and groundwater sampling, and
- Land surveying.

Attachment D-1 includes a Job Safety Analysis (JSA) for groundwater sampling and Site visits/inspections; the SHSO must obtain additional JSAs as applicable.

Most of these tasks were performed previously at the Site. Because these tasks were performed safely before, potential exposure is considered low to moderate during soil and

water sampling, well installation, and test pit excavation work. It is noted that these activities may occur within or adjacent to areas of known impact.

Previous results from these areas indicate that the primary substances of concern and concentration range reported in soil are as follows:

- Cadmium – Not detected to 9,870 milligrams per kilogram (mg/kg);
- Lead – Not detected to 671 mg/kg;
- Chrysene – Not detected to 0.250 mg/kg;
- Benzo(a)anthracene – Not detected to 0.260 mg/kg; and
- Benzo(a)pyrene – Not detected to 0.240 mg/kg.

Several other semivolatile compounds were detected at trace levels (less than 0.06 mg/kg). Groundwater, sediment, and surface water are expected to contain lower (if detectable) concentrations of these compounds. These media have not been sampled previously.

Because airborne lead and cadmium concentrations cannot be measured with real-time instruments, a total dust concentration can be conservatively used to control employee exposure. Using the following factors, a controlling dust concentration of 0.13 milligrams per cubic meter (mg/m^3) was calculated:

- Safety factor of 4,
- OSHA permissible exposure limit (PEL) for lead and cadmium, and
- Maximum soil sample listed previously.

This indicates that if airborne dust concentration at the property with the highest lead concentration does not exceed 0.13 mg/kg, lead or cadmium concentration will not exceed the OSHA PEL. Because dust measurements will be obtained while the exposure assessment is being performed, respiratory protection is not required if total dust measurements are below 0.13 mg/m^3. If higher soil lead concentrations are determined, a revised total dust criterion will be developed.

Survey activities will not disturb the ground surface. Physical hazards, many associated with excavation and drilling activities, will also be present on Site. The potential physical

hazards will be reduced by adherence to accepted safety practices and by daily inspection of the backhoe and drill rig (or other equipment) by the specific subcontractors performing the work.

The disturbance of soil in select areas will have moderate potential exposures. Air monitoring (Section 8.0) will be performed to evaluate potential health and safety hazards. Workers will not enter test pits deeper than two feet.

Small aliquots of acids (e.g., hydrochloric acid) will be used as sample preservatives. The acids are diluted with the water samples. Samplers will be potentially exposed to the acids while filling sample containers. Protective equipment (i.e., gloves) will be worn as listed in Section 7.3.

Decontamination solutions will be used in small quantities. Gloves will be worn during decontamination. Potential inhalation exposure to methanol is expected to be less than one minute per sample. Decontamination will occur at an outside area. A material safety data sheet for methanol is provided in Attachment D-2.

Based on the results of past sampling and analysis, remedial activities in select areas will require protective equipment. Through the use of protective clothing and equipment, air monitoring, decontamination procedures, and other standard procedures listed in this plan, exposures will be minimized.

4.2 REMEDIAL ACTIVITIES

The specific tasks to be performed during the remedial work at the Site are as follows:

- Project planning;
- Community relations;
- Field investigation (as listed in Section 4.1);
- Sample analysis;
- Analytical support and data validation;
- Data evaluation/Geographic Information System setup;
- Qualitative risk assessment; and
- Report preparation.

Each of the work scope tasks is discussed in the SMP or task-specific work plan(s). Sampling and analysis procedures for the relevant tasks will be conducted in accordance with the Quality Assurance Project Plan (Appendix H to the SMP).

5.0 TRAINING

Project field personnel will have received 40 hours of training in accordance with OSHA 29 Code of Federal Regulations (CFR) 1910.120. In addition, the SHSO will conduct brief Site-specific training sessions ("tailgate meetings"). Training sessions may cover the following topics:

- Site history;
- Compounds identified on Site;
- Explanation of acute and chronic effects of toxic chemicals identified at the Site;
- Site requirements for personnel protection (respirators, etc.); effectiveness and limitations;
- Prohibited actions or procedures in designated work zones;
- Safety precautions and buddy system;
- Work tasks;
- Accident preventive procedures;
- Decontamination procedures;
- Work zones and Site control procedures;
- Health and safety personnel and organization;
- Air monitoring program; and
- Symptoms and treatment of heat- or cold-related illness.

Contractors and subcontractors on Site will be required to have documented training in accordance with OSHA requirements. Documentation of the training will be submitted to the project manager and will be placed in the project files.

6.0 WORK AREAS AND PRACTICES

6.1 WORK AREAS

The field activities will not be confined to one contiguous area but will be spread out. Thus, the Site will be divided into several zones. A 25-foot radius around each location will be used to establish the work zone. If contaminants are likely to be encountered, the zone will be considered an exclusion zone. An exclusion zone is defined by the USEPA as an area where contamination does or could occur. Anyone entering an exclusion zone will be required to wear the appropriate protective equipment when work activities are occurring.

A contamination-reduction zone may also be established on the Site. A contamination-reduction zone is an area where equipment and personnel are decontaminated so that the possibility of the support zones becoming contaminated is minimized. Support zones are areas in which no hazardous conditions exist under ambient conditions.

6.2 WORK PRACTICES

Standard safety practices will be enforced for this project. Personnel entering an exclusion or contamination reduction zone will not be permitted to do the following:

- Work alone;
- Smoke, eat, or drink in the zones;
- Enter test pits deeper than two feet;
- Work without proper lighting; and
- Work without appropriate protective equipment.

These practices will be reviewed during the initial training session (Section 5.0).

7.0 PERSONAL PROTECTIVE EQUIPMENT

Equipment for personnel protection will be based on USEPA levels of protection (A, B, C, and D) as specified in the Standard Operation Safety Guides (USEPA, 1984). In general, project personnel will be wearing Level D protective equipment. If necessary, upgrades in personal protective equipment (PPE) may be performed based on the results of field screening methods (e.g., air monitoring). PPE will be compatible with and provide protection from the class of compounds known to be on Site, and any additional compounds identified during the investigation. The PPE will provide respiratory protection and skin and eye protection for personnel operating in the designated exclusion and contamination reduction zones. PPE selection will also be based on task-specific conditions.

The following sections provide a description of the minimum PPE for initial use based on task and location. The initial PPE requirements are based on maximum concentrations reported in soil and groundwater in areas to be investigated and the PPE worn to collect this data. Past activities were safely performed. The results of the air monitoring program (Section 8.0) may require changes (upgrade/downgrade) in the protection required. Potential changes could be more or less PPE, depending upon the type and concentration of contaminants detected.

Personnel in Site work areas identified as presenting no toxic hazards will be required to wear the following basic work clothing:

- Steel-toe boots,
- Eye protection, and
- Gaiters, insect repellant, and other PPE to deter pests.

This equipment will be used in support areas whenever intrusive activities are being conducted in other portions of the Site.

7.1 SOIL SAMPLING

Personnel handling contaminated or potentially contaminated drilling equipment, soil, fluids, or groundwater must wear the following PPE, in addition to the basic work clothing:

- Hard hat (during test pit excavation and drilling),
- Latex or nitrile inner gloves, and
- Heavy-duty rubber or other low-permeability outer gloves.

Leather outer work gloves may also be worn (in lieu of low-permeability outer gloves) when handling sampling tools or drilling equipment.

Initially, the PPE will be equivalent to USEPA Level D for skin and respiratory protection. Subsequent selection of respiratory protection equipment (Section 8.0) will be based on air monitoring data (as applicable).

7.2 TEST PIT EXCAVATION AND DRILLING/WELL INSTALLATION

Personnel handling contaminated or potentially contaminated excavation/drilling equipment, soil, fluids, or groundwater must wear the following PPE, in addition to the basic work clothing:

- Hard hat (during test pit excavation and drilling), and
- Latex or nitrile inner gloves, and
- Heavy-duty rubber or other low-permeability outer gloves.

Initially, the PPE will be equivalent to USEPA Level D for skin and respiratory protection. Subsequent selection of respiratory protection equipment (Section 8.0) will be based on air monitoring data (as applicable). Hearing protection will be worn during the operation of the drill rig.

7.3 GROUNDWATER AND SURFACE WATER/SEDIMENT SAMPLING

Previous samples of groundwater/surface water/sediment samples have not been collected at the Site. Therefore, initial worker protection, for the majority of sampling activities, will include basic work clothes and nitrile gloves. Air monitoring will be conducted to

determine if upgraded PPE is required. Waterproof overboots or waders will be worn if samplers are in contact with surface water.

8.0 AIR MONITORING

Although volatile organic compounds have not been reported as a concern in the historical activities at the Site, air quality monitoring will be conducted as part of remedial field activities and in accordance with the Community Air Monitoring Plan (CAMP). Collected air monitoring data will serve as input to decisions regarding worker protection measures, routine work procedures, and emergency events.

Organic vapors (OVs) will be monitored with a photoionization analyzer (10.2 eV). Because some of the substances (metals) can be a concern as an airborne dust, dust monitoring will be conducted with a Mini-Ram or equivalent. Monitoring will be performed during test pit excavation, drilling, and sampling activities.

Because dust monitors measure dust concentrations (not metals), a hazard assessment using maximum soil concentrations was performed as described in Section 4.0. The hazard assessment determined that the initial trigger level will be 0.13 mg/m^3.

The action levels and required responses to OV and dust monitoring are as follows:

- **LEVEL I**
  OV not above background (<1 part per million), dust measurements below 0.13 mg/m^3. No respiratory protection required.

- **LEVEL II**
  OV measurements of above background, work will stop. A determination of the substances causing the measurements will be performed. Based upon this assessment, additional PPE may be required. In this case, an addendum will be prepared for the HASP. Levels of OV above background are not expected.

  Dust concentrations of above 0.13 mg/m^3 and less than 1.0 mg/m^3, workers will be required to use full-face, air-purifying respirators with an OV cartridge and particulate filter (or equivalent). Dust levels above 0.13 mg/m^3 are not expected.

- **LEVEL III**
  Work will stop if dust concentrations are above 1.0 mg/m^3. The use of dust suppression measures will be implemented. If work is to continue when dust is at these levels, a hazard assessment will be performed by the HSC prior to continuing. The findings of the assessment will be used to determine the PPE requirements for dust conditions above 1.0 mg/m^3.

Although organic substances have not been identified as substances of concern at the Site, OV concentrations will be measured in the worker breathing zone during soil sampling, test pit excavation, and drilling for the purpose of monitoring well installation. Background concentrations will be determined upwind of the work area on a daily basis. The photoionization detector will be calibrated daily in accordance with the manufacturer's instructions. As an additional precaution, work will be suspended if OV concentrations exceed background for a sustained period (one minute) in the worker breathing zone (Level II).

9.0 DECONTAMINATION

Personnel decontamination will occur when the potential for the spread of contamination exists. A decontamination station will be established in the contamination reduction zone. The decontamination station will consist of the following:

- Glove wash/rinse, and
- Removal of disposable clothing.

If leather work gloves are worn, these will be managed as disposable clothing.

Decontamination fluids and disposable clothing will be placed in containers for off-Site disposal. Decontamination of heavy equipment (e.g., drill rig) will be performed at a temporary decontamination pad constructed using plastic with wooden framing.

10.0 RESPIRATORY PROTECTION PROGRAM

As respirators are required, a respiratory protection program that meets OSHA Standard 29 CFR 1910.134 will be implemented for Cummings/Riter personnel. The training required by OSHA covers maintenance and cleaning of respirators. Each individual will be responsible for his or her own respirator.

Cummings/Riter personnel will use Mine Safety Appliances Company respiratory equipment. The air-purifying cartridges will be the high-efficiency OV type. Respirators will be stored in a clean, sanitary area, protected against mechanical damage, dust, heat, extreme cold, excessive moisture, or damage by chemical contact.

11.0 HEAT/COLD STRESS

Depending on when the field activities take place, hot and cold weather conditions are a concern for employee health and safety.

Various control measures shall be employed if heat stress becomes a problem. These include:

- Provision for liquids to replace body fluids;
- Establishment of a work regimen that allows for rest periods to cool down; and
- Training of workers in the prevention of heat stress.

Cold-related problems may also occur during this project. Employees will be instructed to dress warmly and to avoid getting wet. They will also receive instruction in the recognition of symptoms of cold-related problems (e.g., frostbite).

12.0 REPORTS AND RECORD KEEPING

Records of health and safety activities will be maintained in accordance with OSHA requirements. The records will document air monitoring levels, PPE worn, incidents, and training.

12.1 LOGS AND REPORTS

Logs and reports covering the implementation of the HASP will be maintained. The documentation will include training logs, daily logs, incident reports, and medical and training certificates.

- **TRAINING LOGS** (shall be completed for both initial training and refresher training)
  - employee signature,
  - topics covered,
  - test score,
  - date,
  - time, and
  - signature of trainer(s).

- **DAILY LOGS**
  - date,
  - area (Site-specific) checked,
  - employees in a particular area,
  - equipment utilized by employees and job function,
  - protective clothing and devices worn by employees,
  - area air monitoring results,
  - perimeter air monitoring results, and
  - SHSO signature and date.

- **INCIDENT REPORT**
  Describing injuries, off-Site release or accident as listed in Section 13.1.

- **MEDICAL CERTIFICATES**
  Documenting that a Site employee is in a medical surveillance program and medically able to perform assigned tasks (Section 3.0).

- **TRAINING CERTIFICATES**
  Documenting that employees have received training in accordance with OSHA.

12.2 RECORD KEEPING

Health and safety records will be maintained after completion of the project. Employees will have access to these records as required under state and federal regulations.

13.0 EMERGENCY RESPONSE

Emergency response procedures have been developed to cover extraordinary conditions that may occur during sampling and analysis activities.

13.1 GENERAL RESPONSE CONSIDERATIONS

Emergencies must be dealt with in a manner that minimizes the health and safety risks to Site personnel and the public. Site personnel will not be required to perform emergency-related tasks for which they have not received training.

The following procedures shall be implemented in the event of an emergency:

- First aid or other appropriate initial action will be administered by those closest to the accident/event. This assistance will be coordinated by the ranking individual on Site and will be conducted in a manner so that those rendering assistance are not placed in a situation of unacceptable risk. The primary concern is to avoid placing a greater number of workers in jeopardy.

- Employees shall immediately report accidents and unusual events to:
  - SHSO,
  - Project manager, and
  - CBS project coordinator.

- The SHSO will decide if off-Site assistance and/or medical treatment are required, and shall be responsible for alerting off-Site authorities and arranging for their assistance.

- The SHSO will provide to the above personnel an Incident Report (Section 12.0) which includes the following:
  - A description of the incident (including date, time, and duration);
  - Date, time, and name of all persons/agencies notified and their response;
  - List of workers who may have been directly or indirectly affected by the incident;
  - List of individuals who may have observed incident; and
  - A description of corrective actions implemented or other resolution of the incident.

- All workers on Site are responsible for conducting themselves in a mature, calm manner in the event of an accident/unusual event. All personnel must conduct themselves in a manner to avoid spreading the danger to themselves and to surrounding workers.

13.2 RESPONSIBILITIES

The SHSO or a designated substitute shall have responsibility for directing response activities in the event of an emergency. He/she will do the following:

- Assess the situation;
- Determine required response measures;
- Notify appropriate response teams;
- Determine and direct on-Site personnel during the emergency; and
- With the CBS project coordinator, contact and coordinate with government agencies.

The SHSO or a designated substitute shall coordinate response activities with those of public agencies.

Initially, the SHSO or other designated personnel shall be responsible for implementing the emergency response procedures for all personnel and visitors on Site.

- **IMMEDIATE EMERGENCY PHONE NUMBER**

All Emergency Response	911

- **EMERGENCY SUPPORT**

CBS Project Coordinator (Office)	724-444-0377
Cummings/Riter Office	412-241-4500
Qualisys (Cummings/Riter medical consultants)	800-874-4676
NYSDEC (Division of Environmental Remediation)	518-402-9812

Workers requiring transportation to off-Site emergency medical providers are to be transported via ambulance service. The Site is located in a rural setting on Townley Hill Road, approximately one-half mile west of Breed Hollow Road in Chemung County, New York. Cummings/Riter personnel will have cellular phones for use during emergencies.

If a spill occurs that results in the release of hazardous substances outside the Site perimeter, the federal government has the authority (under the National Oil and Hazardous Substances Contingency Plan) to initiate response activities which are directed by a federal on-scene coordinator (OSC). In the event that such a release occurs, CBS response activities will be initiated immediately, and will be coordinated with those of the OSC.

13.3 EMERGENCY RESPONSE EQUIPMENT

Before Site operations are initiated, the following emergency equipment will be stored in field vehicles on Site:

- First-aid kit;
- Eye-wash bottles;
- Chemical fire extinguishers, Type ABC, 20 pounds;
- List of persons and phone numbers for emergency notification; and
- Water for washing hands and face.

Other equipment used for the routine implementation of the worker health and safety protection and monitoring programs will be made available as needed to support any emergency response activity.

13.4 ACCIDENTS AND NON-ROUTINE EVENTS

Several types of emergencies are outlined in the following subsections. These are not intended to cover all potential situations, and the corresponding response procedures should not be followed blindly. Every accident is a unique event that must be dealt with by trained personnel working in a calm, controlled manner. In the event of an accident/ unusual event, the prime consideration is to provide the appropriate initial response to assist those in jeopardy without placing additional personnel at an unnecessary risk.

The vast majority of worker injuries on hazardous waste sites are non-chemical in nature. The injuries tend to be sprains, rashes, and lacerations which must be treated promptly. Follow-up care is extremely important to assure that a minor injury or illness does not become aggravated by Site conditions. Employees shall be instructed to report all injuries and illnesses to the SHSO.

13.4.1 Worker Injury

If a person working in an impacted area is physically injured, Red Cross first-aid procedures shall be followed. Depending on the severity of the injury, emergency medical response may be sought. If the employee can be moved, he will be taken to the edge of the work area (on a stretcher, if needed) where impacted clothing can be removed, emergency first aid administered, and transportation to a local emergency medical facility awaited. Directions to the nearest hospital (below) are included as Attachment D-3.

Arnot Ogden Medical Center
600 Roe Ave Elmira, NY 14905
607-737-4100
15.0 miles, Estimated Travel Time is 30 minutes

If a worker can only be moved by emergency medical personnel, the SHSO will decide what PPE is required to be worn by emergency personnel.

If the injury to the worker is chemical in nature (e.g., overexposure), the following first-aid procedures are generally instituted as soon as possible:

- **EYE EXPOSURE**
  If impacted solid or liquid gets into the eyes, wash eyes immediately at the emergency eye-wash station using large amounts of water and lifting the lower and upper lids occasionally. Obtain medical attention immediately.

- **SKIN EXPOSURE**
  If impacted solid or liquid gets on the skin, take appropriate actions (i.e., do not use water if substance is water reactive). Obtain medical attention immediately if symptoms warrant.

- **INHALATION**
  If a person inhales large amounts of OV, move him to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.

- **INGESTION**
  If impacted solid or liquid is swallowed, medical attention shall be obtained immediately.

The SHSO shall inform the project manager and the CBS project coordinator of the injury/accident, and a written report detailing the accident, its causes, and consequences shall be submitted to the project manager and CBS project coordinator within two working days of the incident resolution.

13.4.2 Fires

In the event of a fire at the Site, the SHSO shall, at a minimum, take the following actions:

- Evacuate all unnecessary personnel from the area to an upwind location, if possible;
- Attempt, using properly protected and trained personnel, to extinguish fire using portable fire extinguishers or by smothering;
- Request emergency response assistance (ambulance, fire, hospital, poison control center) as needed for any injuries or exposures to hazardous chemicals; and
- Notify the project manager and CBS project coordinator of the incident.

13.5 SITE EMERGENCY

Procedures for emergency evacuation will be established for work areas even though the contaminants being handled and the procedures employed make this an extremely unlikely occurrence.

ATTACHMENT D-1

JOB SAFETY ANALYSIS

GENERAL SITE VISIT AND INSPECTION

Scope of Work: To identify potential energy saving projects and conservation measures. The focus of this site visit and inspection will include a condition assessment at a WWTF. This JSA does not address confined space entry operations or the inspection work that may need to be conducted in a permit required confined space, such activities require additional planning and training.

General Precautions: There is the potential of exposure to various physical hazards such as slips, trips, and falls particularly when walking on stairs and slopes or access to building roofs or elevated platforms, contact or struck-by hazards to the head due to overhead piping and structures, electrical hazards, work using a ladder, and biological hazards such as animal wild life, and insects such as spiders, hornets, bees, and wasps.

Personal protective equipment: Impact and compression resistant safety boots, eye protection, high visibility clothing (if working outdoors around heavy equipment or traffic) and hard hats (if overhead hazards exit). Leather work gloves are required when handling materials with a sharp edge or power tools. Hearing protection in designated areas greater than 85 decibels.

TASK	HAZARDS	CONTROLS
1. Mobilization to the Site	Driving Hazards	• Plan journey ahead of time • Travel well rested • Avoid traveling in poor weather (rain, severe storms etc.) when possible. • Avoid distracted driving such as cell phone use. • Never text and drive.
2. Arrival to the Site	Site specific hazards for new/visitor employees	• Conduct safety tail gate or briefing on site specific hazards and visitor safety requirements.
3. Building/Structure Access	Same level slip/trip/falls from uneven ground, wet surfaces, and obstructions.	• Ensure path to destination is clear. • Be aware of proximity to uneven surfaces/obstructions when walking. • Communicate to others around of moving around the work area. Wear protective footwear per PPE requirements of this JSA
	Same level slip/trip/falls from losing balance while carrying tools and equipment.	Ensure path to destination is clear. Be aware of proximity to uneven surfaces/obstructions when walking. Do not carry more items than is safe to do so which would upset balance while naturally standing and walking. Maintain a wide stance while standing.
	Fall hazard from stairwells, roofs, and platforms.	Ensure stairs are effectively guard railed with exposed edges above 4feet. On platforms or roofs, ensure permanent or portable guardrail systems, or personal fall restraint systems are implemented to guard against falls around the access/work area.
	Low Visibility	Head lamps, handheld spotlights or high powered flashlights shall be utilized by the entry crew to further assist with visibility if adequate light is not available to conduct work safely.

	2. Ladder Use	Ladder Damage	Inspect ladders prior to each use for damage. Remove from service all ladders observed in damaged or otherwise poor condition.
		Slip/trip/falls from uneven ground, wet surfaces, and obstructions.	Be aware of proximity to uneven surfaces/obstructions setting up a ladder for work. Ensure floor surface beneath ladder feet is solid and level.
		Slip/trip/falls from losing balance while on ladder.	Ensure path to destination is clear. Maintain three points of contact while on the ladder (two hands one foot or two feet one hand). Do not carry in hand items such as tools, use a lift line or other means to raise and lower equipment in such a way that three points of contact on the ladder are maintained.
		Other Ladder Tip Hazards	Be aware of proximity to uneven surfaces/obstructions when using ladder. While on ladder, do not lean torso laterally outside the boundary of the ladder rails. Secure the top of the ladder from tippage or slipping. On step ladders never step on the top step or any other top tier step as stated on the ladder warning labels. Do not secure tools and other items to ladders the ladder is not intended for.
		Overhead Contact Hazards (non-electrical)	Wear hardhats Be aware of proximity to overhead contact hazards.
		Electrical Hazards	Maintain a safe distance of at least 10 feet away from all overhead lines. Only ladders constructed of electrically safe material such as fiberglass shall be used when working in vicinity of overhead power lines or energized electrical equipment.
	3. Inspection Activities	Electrical Hazards	If authorized to do so, deenergize exposed electrical hazards and apply lock out/tag out, special training is required for authorized personnel. Avoid exposure to electrical hazards during work if able. Do not work on electrical equipment unless authorized, light bulb changes are permitted so long as staff is aware of the hazards in completing the task and the employee has exclusive control of the light switch.
		Sharps	Use leather work gloves with adequate cut resistance protection to handle materials and tools with sharp edges.
		Noise greater than 85 decibels	Wear hearing protection such as ear plugs

		Ergonomic hazards while lifting, twisting, and carrying materials during inspection walk through.	Use proper lifting technique; lift materials with your legs while maintaining a wide stance, keep the back straight. Do not lift too much at one time, any items generally greater than 50lbs should not be carried by one individual. Ensure path to destination is clear. Be aware of proximity to uneven surfaces/obstructions when walking. Do not carry more items than is safe to do so which would upset balance while naturally standing and walking. Maintain a wide stance while standing.
		Same level slip/trip/falls from uneven ground, wet surfaces, and obstructions.	Ensure path to destination is clear. Be aware of proximity to uneven surfaces/obstructions when walking. Communicate to others around of moving around the work area. Wear protective footwear per PPE requirements of this JSA
		Same level slip/trip/falls from losing balance while carrying tools and equipment.	Ensure path to destination is clear. Be aware of proximity to uneven surfaces/obstructions when walking. Do not carry more items than is safe to do so which would upset balance while naturally standing and walking. Maintain a wide stance while standing.
		Low Visibility	Head lamps, handheld spotlights or high powered flashlights shall be utilized by the entry crew to further assist with visibility if adequate light is not available to conduct work safely.
		Working at Heights Greater than 4 Feet	See Sections 1 and 2 of this JSA above for fall protection controls.
	4. Biological Hazards Associated with Inspection Work	Biological Hazards - Animal Life	Animal life may be encountered. Animal life such as small rodents, insects, and snakes are possible. These are not anticipated to pose a significant hazard, but caution should be followed if rodents are encountered, these animals may carry communicable diseases or parasites that could be contracted if direct contact is made. Insects such as spiders and snakes should also be avoided if observed during inspection. Wasp, hornet, or bee hives may be present in structures and buildings, any employee with known allergies to such insects should avoid working in areas with live hives until they are removed. If employees with known allergies carry an epi-pen, they may share with colleagues in how to use the device in the event of an emergency.

		Cold Stress	Hypothermia is a condition in which core temperature drops below the required temperature for normal metabolism and body functions which is defined as 35.0 °C (95.0 °F). Appropriate clothing helps to prevent hypothermia. Synthetic and wool fabrics are superior to cotton as they provide better insulation when wet and dry. Some synthetic fabrics, such as polypropylene and polyester, are used in clothing designed to wick perspiration away from the body, such as liner socks and moisture-wicking undergarments. Drink warm fluids and take frequent breaks in warming areas during cold weather.
		Heat Stress	Employees should be aware of the effects of heat stress, provided with adequate cool liquids such as water and beverages containing electrolytes, and instructed to observe each other for signs of heat stress during hot weather. Take frequent breaks in cooling areas during hot weather.
		Contact with Hazardous Materials	Activities within this JSA are controlled to avoid hazardous material exposure. However, access to areas which may contain be evaluated based on a newly recognized hazard that exists. Any non-authorized personnel must be escorted by an authorized employee in areas where the potential for contact with hazardous material is present.
	Required Training: Site specific orientation Knowledge and use of task specific PPE	**Required Personal Protective Equipment (PPE)** ***Level D*** – Impact and compression resistant safety boots or safety boots and safety glasses. ***Level D Modifications*** - Hard hats if overhead hazards exist. Leather work gloves are required when handling materials with a sharp edge. Hearing protection in designated areas greater than 85 decibels. ***Level C or B Upgrade considerations:*** A condition requiring this PPE level is not anticipated.	
	Air Monitoring Plan: Currently not applicable to this task.		
Other Information:	***Anticipated worker tools:*** Step or extension ladders, hand work tools, hand power tools.		
JSA Author:	Jeremy Wherren, Woodard & Curran		
Created:	May 14, 2013		
JSA Number:			

JOB SAFETY ANALYSIS

LOW-FLOW GROUNDWATER SAMPLING

Scope of Work: Sampling groundwater through a low-flow application using a peristaltic pump or a submersible pump such as a bladder pump.

General Precautions: If the site is a remote location, use the buddy system. If groundwater is known to be contaminated or potentially hazardous (i.e. low pH), wear the appropriate PPE including safety goggles, gloves, and work boots. A full face shield may be required for sites with very low or high pH levels in that a potential corrosive hazard may exist.

STEPS	HAZARDS	CONTROLS
1. Approach the well.	Poisonous plants	• Wear long pants, long sleeves, and shoes that cover the whole foot. • If direct contact with poison ivy, oak, or sumac is encountered, utilize scrub wash products or irrigate the contact area with water for 15 minutes to minimize allergic rash effect/remove the urushiol. If available, utilize commercially available products such as scrub washes and contact wipes to remove urushiol and reduce rash potential.
	Insects/ticks	• Inspect work areas upon arriving at the site to identify hazard(s). • Use insect repellant as necessary, with DEET (on skin or clothing) or permethrin (on clothing). Products containing permethrin can be used to treat boots, clothing and camping gear which can remain protective through several washings. Repellents containing 20% or more DEET (N, N-diethyl-m-toluamide) can be applied to the skin, and they can protect up to several hours. Always follow product instructions. • Conduct periodic body checks for ticks and bites to help prevent transmission of tick borne illnesses. • Wear appropriate PPE including leather gloves, and Tyvek suits or long sleeves, long pants and socks.

		Heat stress	• Employees should be aware of the effects of heat stress, provided with adequate cool liquids such as water and beverages containing electrolytes, and instructed to observe each other for signs of heat stress during hot weather. • Take frequent breaks in cooling areas during hot weather.
		Cold stress	• Hypothermia is a condition in which core temperature drops below the required temperature for normal metabolism and body functions which is defined as 35.0 °C (95.0 °F). Appropriate clothing helps to prevent hypothermia. Synthetic and wool fabrics are superior to cotton as they provide better insulation when wet and dry. Some synthetic fabrics, such as polypropylene and polyester, are used in clothing designed to wick perspiration away from the body, such as liner socks and moisture-wicking undergarments. • Drink warm fluids and take frequent breaks in warming areas during cold weather.
		Traffic	• The site owner/manager should be notified of work activities and locations. • Wear appropriate PPE including high visibility clothing such as a reflective vest. • Utilize truck flashers/strobes, cones, signs, flags or other traffic control devices as needed to divert traffic around working activities. • Where pedestrian traffic is an issue, set up a barricade surrounding the work area.
		Slip/trip	• All personnel should be constantly watching for trip hazards such as uneven terrain, holes, ditches, stretched wires or ropes, or any other materials or pieces of equipment in their path. • Significant below-grade hazards (e.g., holes or trenches) should be marked with

			flagging, fencing or other means to identify the obstacle. • Wear footwear appropriate for the terrain and work to be performed. • Muddy, snowy, and icy conditions will warrant a more cautious work attitude. Adjust work speed to fit the weather conditions.
		Carrying heavy equipment	• Use proper lifting techniques: bend your knees and lift with your legs, keeping the back straight and avoiding twisting positions.
	2. Open the well. • Use hand tools to open the flush mounted road box or stick up. • A lock/key or ratchet may be required to undo bolts that secure the box.	Scrapes/cuts/pinches	• Wear leather work gloves while opening and closing the well. • Use the proper tool for the job.
		Stinging Insects and Spiders • These types of insects commonly nest in well heads.	• Inspect work areas upon arriving at the site to identify hazard(s). • Use leather or rubber work gloves when opening the well to protect hands. • If a nest is present, evaluate methods of removal. Examples may include the use of aerosol pesticides such as Raid brand products. Caution should be used when applying these products. Physical removal of the nest may also be conducted if this can be done in a safe manner.
	3. Unplug the top of the well.	Exposure to contaminated air at the well annulus. • This is not common at high concentrations.	• Utilize a PID upon opening to establish a safe work condition below action levels established for the Site.
	4. Gauge the well using a water level meter (interface probe)	Exposure to contaminated water	• If groundwater is known to be highly contaminated or potentially hazardous (i.e. low pH), wear the appropriate PPE including safety goggles, gloves, work

			boots, and potentially Saranex barrier and/or face shield. • Wash any body part that contacts the material immediately and thoroughly.
	5. Cut tubing for use with the geo pump or bladder pump.	Cut hazard	• Wear leather work gloves during cutting activities. • Use scissors instead of blades to cut the tubing.
	6. Set up the pump • Connect tubing through monitoring equipment (DO, pH, temperature, YSI multimeter for groundwater parameters) and end tubing inside purge bucket.	Spilling contaminated material from tipping over the bucket	• Ensure that the purge bucket is placed out of the pathway and away from feet.
	7. Turn on the pump	Splash hazard from contaminated water	• If groundwater is known to be highly contaminated or potentially hazardous (i.e. low pH), wear the appropriate PPE including safety goggles, gloves, work boots, and potentially Saranex barrier and/or face shield. • Wash any body part that contacts the material immediately and thoroughly.
	8. Observe water quality parameters	See hazards from item 1.	• See controls from item 1
	9. Open the 3 way valve	Splash hazard from contaminated water	• If groundwater is known to be highly contaminated or potentially hazardous (i.e. low pH), wear the appropriate PPE including safety goggles, gloves, work boots, and potentially Saranex barrier and/or face shield. • Wash any body part that contacts the material immediately and thoroughly.
	10. Fill sampling containers	Exposure to preservatives in sampling jars (hydrochloric acid, nitric acid)	• Wear safety glasses or goggles and nitrile gloves to protect from exposure.
	11. Disconnect and pull up tubing	Residual exposure to contamination from wet tubing	• Continue to wear personal protective equipment even after sampling has been completed.

			• Dispose of tubing and other materials as according to the site plan.
		Back strain from bending	• Use proper body mechanics when bending down. Bend at the knees and lift with your legs, keeping the back straight as possible and avoiding twisting postures. • Carry items at your center of gravity, waist to chest level.
		Knee pain from kneeling on ground	• Utilize a knee pad. • Limit the amount of time in the kneeling or crouched position.
	12. Demobilize from well	See hazards from item 1.	• See controls from item 1.
	Required Training: • 40 hour HAZWOPER training and current 8 hour annual refresher if the site is designated as HAZWOPER regulated. • Managed field experience/job shadowing • Knowledge and use of task specific PPE	**Required Personal Protective Equipment (PPE):** • Safety goggles, gloves, and work boots are required. A face shield or Saranex barrier may be required. A high visibility vest or shirt is required when working in a traffic area.	
Other Information:			
JSA Author:	Daniel Clinton, Caitlyn DellaTorre		
Created:	8/20/12		
JSA Number:			

ATTACHMENT D-2

Genium Publishing Corporation
One Genium Plaza
Schenectady, NY 12304-4690 USA
(518) 377-8854

Material Safety Data Sheets Collection:

Sheet No. 7
Nitric Acid

Issued: 10/88 Revision: D, 9/92

Section 1. Material Identification

Nitric Acid (HNO_3) Description: A solution of nitrogen dioxide in water commercially available in many concentrations. Derived by oxidation of ammonia by catalytic process (heated platinum catalyst); or by direct synthesis, combining atmospheric nitrogen and oxygen in an electric arc (an expensive process, thus largely abandoned). HNO_3 is usually found in conjunction with nitrogen dioxide, which is considered more hazardous. Used in fertilizer production (ammonium nitrate), in photoengraving, steel etching, explosives (TNT, nitroglycerin, trinitrophenol); manufacture of metallic nitrates, sulfuric acid, aqua regia and oxalic acid, jewelry, various dyes and dyestuffs, pharmaceuticals; as a laboratory reagant, in metallurgy (*mainly* as a pickling agent) and the printing indusry.
Other Designations: CAS No. 7697-37-2, aqua fortis, aqua regia, azotic acid, engravers nitrate, hydrogen nitrate, red fuming nitric acid (RFNA), white fuming nitric acid (WFNA).
Manufacturer: Contact your supplier or distributor. Consult latest *Chemical Week Buyers' Guide*(73) for suppliers list.

Cautions: Nitric acid is a corrosive, strong oxidizer that causes irritation or severe burns to the skin, eyes, and respiratory tract. Exposures to high levels of the concentrated acid can be fatal. Increases the flammability of combustibles. Use extreme caution when handling HNO_3.

R	2	HMIS		NFPA	
I	4	H	3*	*Fuming* nitric acid	0 / 3 1 / ox
S	4	F	0		
K	0	R	1		
		PPE**			
R	2	HMIS			
I	4	H	3*	*> 40%* nitric acid	0 / 3 0 / ox
S	4	F	0		
K	0	R	1		
		PPE**			
R	2	HMIS			
I	3	H	3*	*≤ 40%* nitric acid	0 / 3 0 / –
S	3	F	0		
K	0	R	0		
		PPE**			

* Chronic effects ** See Sec. 8

Section 2. Ingredients and Occupational Exposure Limits

Nitric acid, various %. Commercially available in nearly all concentrations; most common are 56 and 68%. RFNA (85%), WFNA (97.5%).

1991 OSHA PELs
8-hr TWA: 2 ppm (5 mg/m³)
15-min STEL: 4 ppm (10 mg/m³)

1990 IDLH Level
100 ppm

1990 NIOSH REL
8-hr TWA: 2 ppm (5 mg/m³)
15-min STEL: 4 ppm (10 mg/m³)

1992-93 ACGIH TLVs
TWA: 2 ppm (5.2 mg/m³)
STEL: 4 ppm (10 mg/m³)

1990 DFG (Germany) MAK
2 ppm (5 mg/m³)
Category I: local irritants
Peak Exposure Limit: 2 ppm
5 min momentary value, 8 per shift

1985-86 Toxicity Data*
Man, unreported route, LD_{Lo}: 110 mg/kg; toxic effects not yet reviewed
Rat, oral, TD_{Lo}: 5275 g/kg administered from 1 to 21 days of pregnancy caused post-implantation mortality and specific developmental abnormalities of the musculoskeletal system.
Rat, inhalation, LC_{50}: 67 ppm (NO_2)/4 hr; toxic effects not yet reviewed

* See NIOSH, *RTECS* [QU5775000 (nitric acid), QU5900000 (RFNA), QU6000000 (WFNA)] , for additional reproductive and toxicity data.

Section 3. Physical Data

Boiling Point: 186.8 °F (86 °C)
Melting Point: -43.6 °F (-42 °C)
Vapor Pressure: 67% HNO_3 = 6.8 mm Hg at 68 °F (20 °C); 95 to 98% = 113 at 100.4 °F (38 °C)
Saturated Vapor Density (Air = 1.2 kg/m³): 1.212 kg/m³ or 0.0757 lb/ft³ (67 % HNO_3)
pH: 1

Molecular Weight: 63.02
Density: 1.50269 at 77/39.2 °F (25/4 °C)
Water Solubility: Soluble (releases heat)
Ionization Potential: 11.95 eV

Appearance and Odor: Transparent, clear to yellow, fuming liquid with an acrid, suffocating odor which darkens to a brownish color on aging and exposure to light. "Fuming" nitric acid is red-brown in color.

Section 4. Fire and Explosion Data

Flash Point: Noncombustible	Autoignition Temperature: Noncombustible	LEL: None reported	UEL: None reported

Extinguishing Media: For small fires (< 40% HNO_3), use dry chemical, carbon dioxide (CO_2), water spray, or regular foam. For large fires, use water spray, fog, or regular foam. For small fires (> 40% HNO_3), use water spray, dry chemical, or soda ash. For large fires, flood area with water (*do not* get inside HNO_3 containers). Apply water from as far a distance as possible.
Unusual Fire or Explosion Hazards: HNO_3 is noncombustible but is an oxidizer which increases fire involving combustibles and can initiate an explosion. It releases flammable hydrogen gas in contact with many metals.
Special Fire-fighting Procedures: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Structural firefighters' protective clothing is not effective for fires involving nitric acid. Acid-resistant clothing is needed. Apply cooling water to sides of containers until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use monitor nozzles or unmanned hose holders; if impossible, withdraw from area and let fire burn. *Do not* release runoff from fire control methods to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: Nitric acid decomposes in air and in contact with light and organic matter. Hazardous polymerization cannot occur.
Chemical Incompatibilities: Nitric acid reacts explosively with combustibles, organics or readily oxidizable materials such as wood, turpentine, metal powder and hydrogen sulfide, carbides, cyanides, and alkalies; causes spattering with strong bases; is corrosive to paper, cloth and most metals (except aluminum, gold, platinum, thorium, and tantalum. Will also attack some forms of plastics, rubber, and coatings. There are at least 150 chemicals and chemical combinations which are incompatible with nitric acid. HNO_3 reacts with water to produce heat and toxic corrosive fumes. Refer to *Genium* references 126 and 159 for further detail. **Conditions to Avoid:** Avoid exposure to moisture, heat, and incompatibles.
Hazardous Decomposition Products: Thermal oxidative decomposition of HNO_3 produces nitrogen peroxide and toxic, irritating nitrogen oxides.

Section 6. Health Hazards Data

Carcinogenicity: The IARC,(164) NTP,(169) and OSHA(164) do not list nitric acid as a carcinogen.
Summary of Risks: Nitric acid is very corrosive to the skin, eyes, digestive and respiratory tract or any tissue it comes in contact with. 58 to 68% (nitric acid) vapors are moderately irritating and can't be tolerated at high concentrations. 95% (nitric acid) vapors cause severe irritation at very low levels and the liquid causes 2nd and 3rd degree burns on short contact with skin or eyes. Vapor inhalation may cause pulmonary edema (fluid in lungs) leading to death. HNO_3 vapor or mist can slowly corrode teeth when chronically exposed. **Medical Conditions Aggravated by Long-Term Exposure:** Chronic respiratory diseases. **Target Organs:** Eyes, skin, respiratory tract, teeth.

Continue on next page

Genium Publishing Corporation
One Genium Plaza
Schenectady, NY 12304-4690 USA
(518) 377-8854

Material Safety Data Sheets Collection:

Sheet No. 30A
Hydrochloric Acid
Issued: 10/77 Revision: C, 9/92 Erratum: 5/93

Section 1. Material Identification

Hydrochloric Acid (HCl) Description: An aqueous solution of hydrogen chloride. Derived by dissolving hydrogen chloride gas in water at various concentrations. Hydrochloric acid is also formed as a byproduct from oxychlorination and/or oxyhydrochlorination of organic materials. Used in metal pickling and cleaning (boiler and heat exchange equipment scale removal), ore reduction, processing (corn syrup, hydrolyzing starch), dye and dye intermediate production, electroplating, leather tanning, in fertilizer, artificial silk, and paint pigment production, refining soaps and edible fats and oils, petroleum extraction, toilet bowl cleaners; as an alcohol denaturant, a chemical intermediate and solvent in organic synthesis, and in the photographic, textile, and rubber industries.

Other Designations: CAS No. 7647-01-0, Caswell No. 486, chlorohydric acid, Muriatic acid, spirits of salt.

Manufacturer: Contact your supplier or distributor. Consult latest *Chemical Week Buyers' Guide*(73) for a suppliers list.

Cautions: Hydrochloric acid is highly corrosive and causes serious skin and eye burns as well as acute and chronic respiratory problems.

R	1
I	4
S	4
K	0

NFPA

HMIS
H 2*
F 0
R 0
PPE†
* Chronic effects
† Sec. 8

Section 2. Ingredients and Occupational Exposure Limits

Hydrochloric acid; ~38% (commercial), 20% ("azeotrope"). Trace impurities include ammonia, arsenic, iron, sulfate, free Cl-, and heavy metals.

1991 OSHA PEL
Ceiling: 5 ppm (7 mg/m^3)

1990 IDLH Level
100 ppm

1990 NIOSH REL
Ceiling: 5 ppm (7 mg/m^3)

1992-93 ACGIH TLV
Ceiling: 5 ppm (7.5 mg/m^3)

1990 DFG (Germany) MAK
Ceiling: 5 ppm (7 mg/m^3)
Category 1: local irritants
Peak Exposure Limit: 10 ppm, 5 min momentary value/8 per shift

1985-86 Toxicity Data*
Human, inhalation, LC_{Lo}: 1300 ppm/30 min; toxic effects not yet reviewed
Rabbit, oral, LD_{50}: 900 mg/kg; toxic effects not yet reviewed
Rat, inhalation, TC_{Lo}: 450 mg/m^3/1 hr (1 day prior to pregnancy) produced fetotoxicity (except death) & specific developmental abnormalities (homeostasis).
Rabbit, eye: 100 mg rinse caused mild irritation.

*See NIOSH, *RTECS* (MW4025000), for additional irritation, reproductive, and toxicity data.

Section 3. Physical Data

Boiling Point: -120.64 °F (-84.8 °C)*
Vapor Pressure: 4 atm at 64 °F (17.8 °C)
Vapor Density (Air = 1): 1.257
Surface Tension: 23 at 244.68 (118.16 °C)
Molecular Weight: 36.46
Odor Threshold: 0.1 to 5 ppm
Ionization Potential: 12.74 eV

Freezing Point: 1.1 °F (-17.14 °C) for 10.81%, -51.16 °F (-46.2 °C) for 31.24%
Density: 1.194 at -14.8 °F (-26 °C)
Water Solubility: Soluble, 823 g/L at 32 °F (0 °C); 561 g/L at 140 °F (60 °C).
Other Solubilities: Soluble in alcohol, benzene, and ether; insoluble in hydrocarbons.
pH: 1N (0.1), 0.1N (1.1), 0.01N (2.02), 0.001N (3.02), 0.0001N (4.01)
Refraction Index (1N solution): 1.34168 at 64.4 °F (18 °C/D)

Appearance and Odor: Colorless liquid that fumes in air and has a strong pungent odor. Can be slightly yellow from traces of iron, chlorine, or organic matter. Forms a constant boiling azeotrope at 20 % HCl, 108.58 °C and 760 mm Hg.

* Decomposes at 3239.6 °F (1782 °C).

Section 4. Fire and Explosion Data

Flash Point: Noncombustible	**Autoignition Temperature:** None reported	**LEL:** None reported*	**UEL:** None reported*

Extinguishing Media: Use extinguishing agents suitable for surrounding fire.
Unusual Fire or Explosion Hazards: *Extreme heat or contact with many metals liberates hydrogen gas which has explosion limits of 4 to 75%.
Special Fire-fighting Procedures: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Structural firefighter's protective clothing is *ineffective* for fires involving hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out. *Do not* release runoff from fire control methods to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: Hydrochloric acid has high thermal stability (decomposes at 3239.6 °F/1782 °C). Hazardous polymerization does not occur unless exposed to aldehydes or epoxides.
Chemical Incompatibilities: Polymerizes on contact with aldehydes or epoxides; attacks most metals (except mercury, silver, gold, platinum, tantalum, and some alloys), some plastics, rubber, and coatings; reacts explosively with alcohols + hydrogen cyanide, potassium permanganate, tetraselenium tetranitride; ignites on contact with fluorine, hexalithium disilicide, metal acetylides or carbides (cesium acetylide, rubidium acetylide); and is incompatible with acetic anhydride, 2-amino ethanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, 1,1-difluoroethylene, ethylene diamine, ethylene imine, oleum, perchloric acid, ß-propiolacetone, propylene oxide, sodium hydroxide, silver perchlorate + carbon tetrachloride, sulfuric acid, uranium phosphide, acetate, calcium carbide, magnesium bromide, mercuric sulfate, and chlorine + dinitroaniline.
Conditions to Avoid: Avoid contact with incompatibles.
Hazardous Products of Decomposition: Thermal oxidative decomposition of HCl produces toxic chloride fumes and explosive hydrogen gas.

Section 6. Health Hazard Data

Carcinogenicity: The IARC,(164) NTP,(169) and OSHA(164) do not list HCl as a carcinogen.
Summary of Risks: HCl is a highly corrosive liquid and depending on concentration and duration of exposure, symptoms range from irritation to ulcerations and permanent injury. **Target Organs:** Eyes, skin, respiratory tract, and liver (in animals). **Primary Entry Routes:** Inhalation, skin and eye contact. **Medical Conditions Aggravated by Long-Term Exposure:** Respiratory disorders.

Continue on next page

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8854

Material Safety Data Sheets Collection:

Sheet No. 354
Methyl Alcohol

Issued: 11/77 Revision: D, 11/91

Section 1. Material Identification

Methyl alcohol (CH_3OH) Description: Derived from destructive distillation of wood, oxidation of hydrocarbons, or high-pressure catalytic synthesis from hydrogen and carbon dioxide or carbon monoxide. Used as a solvent in manufacturing industrial chemicals and chemical pharmaceuticals, a raw material for making formaldehyde and methyl esters, a softening agent for pyroxylin plastics, a dehydrator for natural gas, a feedstock for manufacturing synthetic proteins by continuous fermentation, an octane booster in gasoline, an extractant for animal and vegetable oils; in antifreeze for automotive radiators, air brakes, gasoline, and diesel oil; and in denaturing ethanol.

Other Designations: CAS No. 67-56-1, carbinol, Columbian spirits, methanol, methyl hydroxide, methylol, monohydroxymethane, pyroxylic spirit, wood alcohol, wood naphtha, wood spirit.

Manufacturer: Contact your supplier or distributor. Consult latest *Chemical Week Buyers' Guide*™ for a suppliers list.

R 1
I 2
S 1*
K 4
* Skin absorption

NFPA

HMIS
H 2
F 3
R 0
PPG†
† Sec. 8

Cautions: Methyl alcohol is moderately toxic by ingestion and mildly toxic by inhalation and skin absorption. It is flammable, volatile, and a dangerous fire hazard.

Section 2. Ingredients and Occupational Exposure Limits

Methyl alcohol, ca 100%

1990 OSHA PELs (Skin)
8-hr TWA: 200 ppm (260 mg/m³)
15-min STEL: 250 ppm (310 mg/m³)

1990 IDLH Level
25,000 ppm

1991-92 ACGIH TLVs (Skin)
TWA: 200 ppm (262 mg/m³)
STEL: 250 ppm (328 mg/m³)

1990 DFG (Germany) MAK
200 ppm (260 mg/m³)

1990 NIOSH RELs (Skin)
TWA: 200 ppm (260 mg/m³)
Ceiling: 250 ppm (325 mg/m³)

1985-86 Toxicity Data*
Human, inhalation, TC_{Lo}: 300 ppm caused eye (visual field change), CNS (headache), and pulmonary effects
Human, oral, LD_{Lo}: 428 mg/kg causes CNS (headache) and pulmonary (respiratory change) effects
Rat, oral, TD_{Lo}: 7500 mg/kg administered continuously to the female during the 17th to 19th day of gestation produced behavioral effects on newborns
Rat, inhalation, TC_{Lo}: 20,000 ppm/7 hr administered continuously to the female during the 1st to 22nd day of gestation produced specific developmental abnormalities

* See NIOSH, *RTECS* (PC1400000), for additional toxicity data.

Section 3. Physical Data

Boiling Point: 148 °F (64.5 °C)
Freezing Point: -144.04 °F (-97.8 °C)
Vapor Pressure: 29 mm Hg at 68 °F (20 °C)
Vapor Density (air = 1): 1.11
Viscosity: 0.00593 P at 68 °F (20 °C)

Molecular Weight: 32.05
Density: 0.7924 at 68 °F (20 °C)
Water Solubility: Soluble
Other Solubilities: Soluble in ethanol, ether, benzene, ketones, and most organic solvents

Appearance and Odor: Clear, colorless, volatile liquid with a slight alcohol odor when pure, a disagreeably pungent odor when crude, and a low 10-ppm odor threshold.

Section 4. Fire and Explosion Data

Flash Point: 54 °F (12 °C), CC	Autoignition Temperature: 878 °F (470 °C)	LEL: 6% v/v	UEL: 36.5% v/v

Extinguishing Media: For small fires, use dry chemical, carbon dioxide (CO_2), water spray, or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Do not scatter material with any more water than needed to extinguish fire.

Unusual Fire or Explosion Hazards: Methyl alcohol is a dangerous fire hazard when exposed to heat, flame, or oxidizers. It is explosive in its vapor form when exposed to heat or flame. Vapors may travel to an ignition source and flash back.

Special Fire-fighting Procedures: Since fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Also, wear full protective clothing. Structural firefighters' protective clothing is *ineffective* for fires involving methyl alcohol. If possible without risk, remove container from fire area. Apply cooling water to sides of fire-exposed container until fire is well out. Stay away from ends of tanks. Leave area immediately if you hear a rising sound from venting safety device or see any tank discoloration due to fire. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: Methyl alcohol is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

Chemical Incompatibilities: Methyl alcohol is incompatible with beryllium dihydride, metals (such as potassium or magnesium), oxidants (such as barium perchlorate, bromine, chlorine, hydrogen peroxide, and sodium hypochlorite), potassium tertbutoxide, carbon tetrachloride + metals; reacts explosively with chloroform + heat, and diethyl zinc; and reacts violently with alkyl aluminum salts, acetyl bromide, chloroform + sodium hydroxide, cyanuric chloride, and nitric acid.

Conditions to Avoid: Avoid vapor inhalation and contact with oxidizers and other incompatibles.

Hazardous Products of Decomposition: Thermal oxidative decomposition of methyl alcohol can produce carbon oxides (CO and CO_2), possible formaldehyde (HCHO) and acrid smoke, and irritating fumes.

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8854

Material Safety Data Sheets Collection:

Sheet No. 467
Automotive Gasoline, Lead-free

Issued: 10/81 Revision: A, 9/91

Section 1. Material Identification

Automotive Gasoline, Lead-free, Description: A mixture of volatile hydrocarbons composed mainly of branched-chain paraffins, cycloparaffins, olefins, naphthenes, and aromatics. In general, gasoline is produced from petroleum, shale oil, Athabasca tar sands, and coal. Motor gasolines are made chiefly by cracking processes, which convert heavier petroleum fractions into more volatile fractions by thermal or catalytic decomposition. Widely used as fuel in internal combustion engines of the spark-ignited, reciprocating type. Automotive gasoline has an octane number of approximately 90. A high content of aromatic hydrocarbons and a consequent high toxicity are also associated with a high octane rating. Some gasolines sold in the US contain a minor proportion of tetraethyllead, which is added in concentrations not exceeding 3 ml per gallon to prevent engine "knock." However, methyl-tert-butyl ether (MTBE) has almost completely replaced tetraethyllead.

Other Designations: CAS No. 8006-61-9, benzin, gasoline, gasolene, motor spirits, natural gasoline, petrol.

Manufacturer: Contact your supplier or distributor. Consult latest *Chemical Week Buyers' Guide*(73) for a suppliers list.

R 1
I 2
S 2*
K 4
* Skin absorption

NFPA

HMIS
H 2
F 3
R 1
PPG†
† Sec. 8

Cautions: Inhalation of automotive gasoline vapors can cause intense burning in throat and lungs, central nervous system (CNS) depression, and possible fatal pulmonary edema. Gasoline is a dangerous fire and explosion hazard when exposed to heat and flames.

Section 2. Ingredients and Occupational Exposure Limits

Automotive gasoline, lead-free*

1990 OSHA PELs
8-hr TWA: 300 ppm, 900 mg/m³
15-min STEL: 500 ppm, 1500 mg/m³

1990-91 ACGIH TLVs
TWA: 300 ppm, 890 mg/m³
STEL: 500 ppm, 1480 mg/m³

1990 NIOSH REL
None established

1985-86 Toxicity Data*
Man, inhalation, TC_{Lo}: 900 ppm/1 hr; toxic effects include sense organs and special senses (conjunctiva irritation), behavioral (hallucinations, distorted perceptions), lungs, thorax, or respiration (cough)
Human, eye: 140 ppm/8 hr; toxic effects include mild irritation
Rat, inhalation, LC_{50}: 300 g/m³/5 min

* A typical modern gasoline composition is 80% paraffins, 14% aromatics, and 6% olefins. The mean benzene content is approximately 1%. Other additives include sulfur, phosphorus, and MTBE.
† See NIOSH, *RTECS* (LX3300000), for additional toxicity data.

Section 3. Physical Data

Boiling Point: Initially, 102 °F (39 °C); after 10% distilled, 140 °F (60 °C); after 50% distilled, 230 °F (110 °C); after 90% distilled, 338 °F (170 °C); final boiling point, 399 °F (204 °C)

Vapor Density (air = 1): 3.0 to 4.0

Density/Specific Gravity: 0.72 to 0.76 at 60 °F (15.6 °C)

Water Solubility: Insoluble

Appearance and Odor: A clear (gasoline may be colored with dye), mobile liquid with a characteristic odor recognizable at about 10 ppm in air.

Section 4. Fire and Explosion Data

Flash Point: -45 °F (-43 °C)	Autoignition Temperature: 536 to 853 °F (280 to 456 °C)	LEL: 1.3% v/v	UEL: 6.0% v/v

Extinguishing Media: Use dry chemical, carbon dioxide, or alcohol foam as extinguishing media. Use of water may be ineffective to extinguish fire, but use water spray to knock down vapors and to cool fire-exposed drums and tanks to prevent pressure rupture. Do not use a solid stream of water since it may spread the fuel.

Unusual Fire or Explosion Hazards: Automobile gasoline is an OSHA Class IB flammable liquid and a dangerous fire and explosion hazard when exposed to heat and flames. Vapors can flow to an ignition source and flash back. Automobile gasoline can also react violently with oxidizing agents.

Special Fire-fighting Procedures: Isolate hazard area and deny entry. Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode, and full protective clothing. When the fire is extinguished, use nonsparking tools for cleanup. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: Automotive gasoline is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

Chemical Incompatibilities: Automotive gasoline can react with oxidizing materials such as peroxides, nitric acid, and perchlorates.

Conditions to Avoid: Avoid heat and ignition sources.

Hazardous Products of Decomposition: Thermal oxidative decomposition of automotive gasoline can produce oxides of carbon and partially oxidized hydrocarbons.

ATTACHMENT D-3

HEALTH AND SAFETY PLAN
TOWNLEY HILL ROAD DUMP SITE
CATLIN, CHEMUNG COUNTY, NEW YORK

Map and Directions to Nearest Health Facility Site

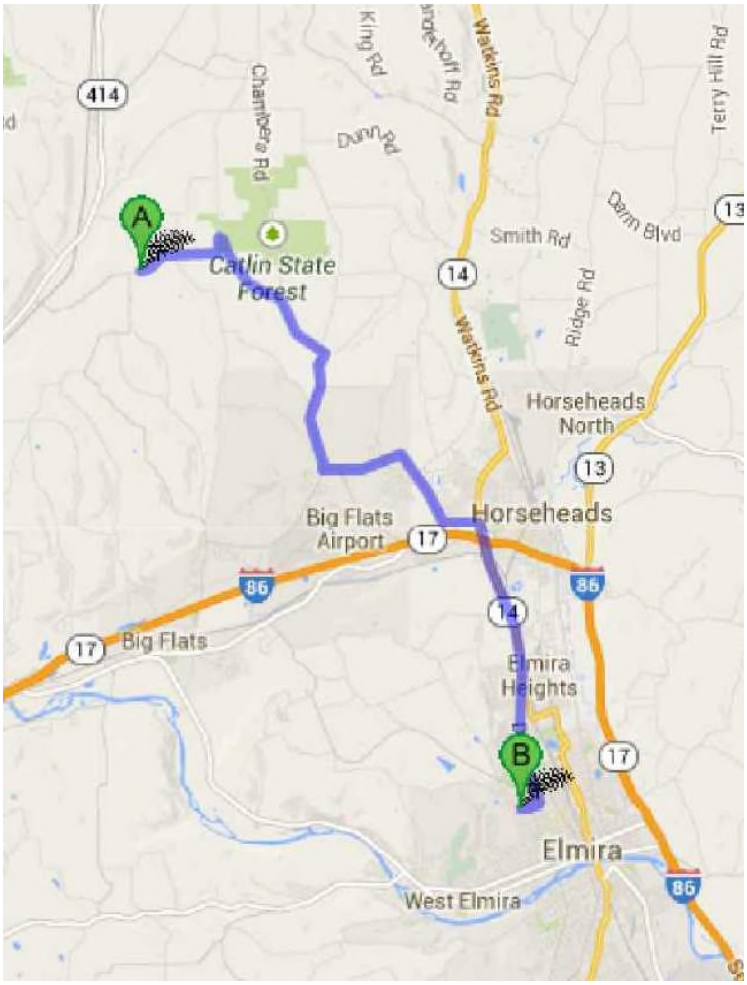
Hospital Name:	Arnot Ogden Medical Center
Hospital Location:	600 Roe Ave Elmira, NY 14905
Hospital Telephone:	607-737-4100
Total Distance:	15.0 miles
Total Estimated Travel Time:	32 minutes

Directions to the Hospital:

1. Head **northeast** on **Townley Hill Road** toward **Breed Hollow Road**
2. Continue onto **Sawdey Road**
3. Continue onto **Chambers Road/County Road 35**
4. Turn left onto **County Road 17/County Road 35/Sing Sing Road**
   Continue to follow Sing Sing Road
5. Turn left onto **West Broad Street**
6. Take the 1st right onto **Westinghouse Road**
7. Continue onto **NY-14 S/Corning Road**
   Continue to follow NY-14 S
8. Turn right onto **West McCanns Blvd.** go 0.2 mile
9. Turn left onto **Davis Street**
10. Take the 2nd right onto **Tompkins Street** go 0.2 mile
11. Turn left onto **Walnut Street**
12. Take the 3rd right onto **Roe Avenue;** destination will be on the right

Map Showing Route from the Site to the Hospital:

(Available from hospital web site.)



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 mcg/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 mcg/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 mcg/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 E

LOG OF BORING NO.: MW - 1

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/12/11
DATE COMPLETED: 5/12/11
GEOLOGIST: RJJ

NORTHING: 15341722.00
EASTING: 1110845.82
ELEVATION: 1667.76

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
-6							Locked Protective Casing Lid	
-4							Riser Protective Pipe	
-2							Concrete Well Pad	
0				Ground Surface			Fill Sand	1667.76
0	S-1 (1.6')	4 - 8 10 - 26		Medium dense to very dense, medium brown and gray, silty sand, some clay and rock fragments, dry to moist	BH 0.0 HS 1.9	4.5		
2	S-2 (1.6')	16 - 23 33 - 38		Weathered rock fragments present, mostly shale and siltstone	HS 0.4	4.5		
4	S-3 (2.0')	13 - 33 32 - 47		Rock Fragments increase with depth	HS 0.6	4.5		
6	S-4 (1.7')	49 - 43 50 - 50/2			BH 0.1 HS 0.8	4.5	Schedule 40 PVC Riser ID 2.0" (-3 - 67.71')	
8	S-5 (1.95')	7 - 21 33 - 50/3		Medium dense to very dense, medium brown and gray, silty sand, some clay and rock fragments, dry to moist	BH 0.1 HS 1.3	3.25		1659.76
10	S-6 (2.0')	16 - 19 28 - 28		Some rock fragments present, weathered siltstone and shale	BH 0.4 HS 1.0	3.25		
12	S-7 (1.7')	20 - 19 40 - 21		Top of Weathered Bedrock at 14.0'	BH 0.1 HS 1.0	NA	Bentonite Cement Grout (2'-56.5')	
14	S-8 (0.5')	26 - 50/1 -- --		Hard, dark grayish brown to reddish brown, siltstone, moderately weathered, dry.	BH 0.2 HS 1.0	NA		1653.76
16	S-9 (0.4')	11 - 50/1 -- --			HS 1.1 BH 0.2	NA		
18	C-1 (0.9')	0%		Moderately hard, medium gray siltstone, slightly weathered broken with iron staining from 18.6' to 18.9', horizontal brake and iron staining at 19.5' to 21.2'		NA		1649.76
20	C-2 (5.0')	40% POOR						1646.76
22				Moderately Hard, medium gray and reddish brown siltstone, same dark gray interbeded shale, fossiliferous, broken, iron staining in fractures				
24					BH 0.0			1642.76
26	C-3 (5.0')	73% FAIR		Moderately hard, medium gray and reddish brown, shale, slightly fossiliferous, some horizontal fractures.				

DRILLED BY: Randy Hoffman/Eric Benko of Eichelbergers
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 18')
NOTES: Core boring (18' - 39'), Air Rotary from 39 to 77.71' TD
SHEET: 1 of 3

DEPTH TO GROUNDWATER: 39.6'
DATE/TIME: 5/16/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 1

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/12/11
DATE COMPLETED: 5/12/11
GEOLOGIST: RJJ

NORTHING: 15341722.00
EASTING: 1110845.82
ELEVATION: 1667.76

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
	C-3 (5.0')	73% FAIR		Moderately hard, medium gray and reddish brown, shale, slightly fossiliferous, some horizontal fractures.	BH 0.0			
29								
31				Highly Broken with iron staining from 30.2' to 31'		NA		
	C-4 (5.0')	60% FAIR						
33				Iron stained fractures from 33.0' to 33.6'				
35				Iron Stained Fractures @ 35.0'			Bentonite Cement Grout (2'-56.5')	
37	C-5 (5.0')	82% Good		Recovery loss @ 36', soft with iron fractures at 37.3'				
39	No Core Air Rotary	No Core Air Rotary		*Air Rotary drilling begins from 39' to TD				
41					BH 0.1			
43				Moderately hard, medium to dark gray shale			Schedule 40 PVC Riser ID 2.0" (-3 - 67.71')	1624.76
45								
47				*Driller noticed a soft spot at 48',				
49				Moderately hard, medium gray, shale	BH 0.0			1618.76
51								
53				Moderately hard, medium gray, shale, traceds of reddish brown chips possibly iron stained rock fragments.				1614.76
55								
57							Bentonite Seal (56.5 - 62')	
59								

DRILLED BY: Randy Hoffman/Eric Benko of Eichelbergers
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 18')
NOTES: Core boring (18' - 39'), Air Rotary from 39 to 77.71' TD
SHEET: 2 of 3

DEPTH TO GROUNDWATER: 39.6'
DATE/TIME: 5/16/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 1

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/12/11
DATE COMPLETED: 5/12/11
GEOLOGIST: RJJ

NORTHING: 15341722.00
EASTING: 1110845.82
ELEVATION: 1667.76

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
62	No Core Air Rotary	No Core Air Rotary			BH 0.2	NA	Schedule 40 PVC Riser ID 2.0" (-3 - 67.71')	1605.76
64				Moderately hard to hard, medium gray shale, Moderately hard, dark gray siltstone			Fil Pro Coarse Sand #1 (62' - 77.71')	
66				Moderately hard, medium to dark gray, siltstone, Trace very fine grained sandstone				1601.76
68				*Pause for H20 Check @ 69'	BH 0.1		PVC Schedule 40 10 Slot Screen ID 2.0"	1598.76
70				Moderately hard, medium gray shale, trace of moderately hard, medium to dark gray siltstone.				
72								
74					BH 0.0			
76								1590.05
78				Bottom of borehole at 77.71' BGS. Monitoring Well MW-1 installed with a screen set from 67.71' to 77.71'				
80								
82								
84								
86								
88								
90								
92								

DRILLED BY: Randy Hoffman/Eric Benko of Eichelbergers
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 18')
NOTES: Core boring (18' - 39'), Air Rotary from 39 to 77.71' TD
SHEET: 3 of 3

DEPTH TO GROUNDWATER: 39.6'
DATE/TIME: 5/16/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 2

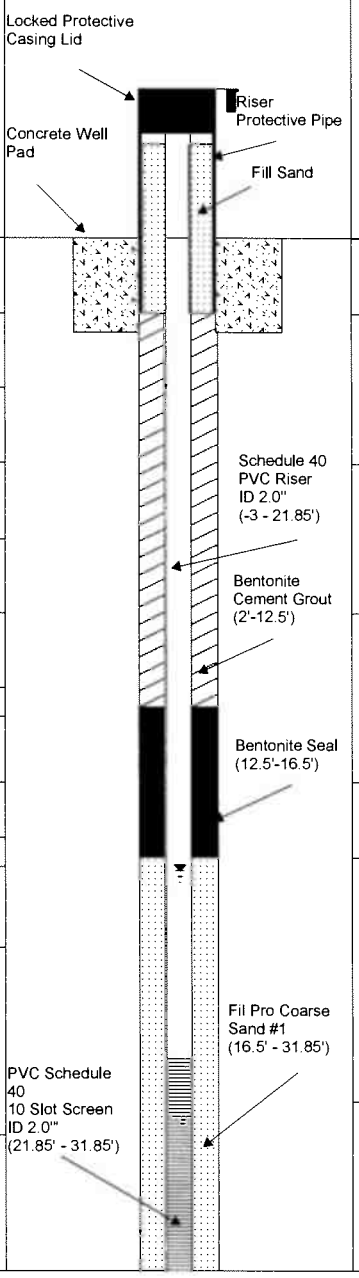
PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/5/11
DATE COMPLETED: 5/5/11
GEOLOGIST: RJJ

NORTHING: 15341666.10
EASTING: 1110345.21
ELEVATION: 1609.74

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	Elevation (ft., MSL)
0				Ground Surface			1609.74
0	S-1 (0.8')	3 - 3 3 - 12		Soft, medium brown, sandy silt, trace rock fragments, damp.	BH 0.0 HS 1.2	0.5	1607.74
2	S-2 (1.25')	12 - 28 18 - 50/4		Dense, medium brown to gray, sandy silt, trace clay, trace rock fragments	BH 0.1 HS 1.5	4.5	
4	S-3 (1.9')	4 - 17 17 - 25			BH 0.1 HS 1.6	4.5	1603.74
6	S-4 (1.3')	22 - 24 32 - 47		Very dense, medium brown, sandy silt, trace rock fragments (reddish brown weathered shale), damp to dry	BH 0.0 HS 1.3	2.5	
8	S-5 (1.5')	13 - 21 31 - 36			BH 0.1 HS 1.1	3.5	
10	S-6 (2.0')	25 - 19 22 - 34		Very dense, medium brown, sandy silt, some rock fragments, dry	BH 0.1 HS 1.2	4.5	1599.74
12	S-7 (0.4')	50/5 - --			0.0/0.8	--	
14	S-8 (2.0')	8 - 19 17 - 14			BH 0.0 HS 1.0	4.0	1595.24
16	S-9 (1.0')	8 - 19 50/2 - --		Dense, medium brown, sandy silt, dry to moist, some reddish brown weathered rock fragments	BH 0.1 HS 0.6	--	
16	S-10 (0.2')	50/1 - --			BH 0.1	--	1593.24
18	C-1 (2.6')	74% FAIR		*Top of Bedrock 16.3' Moderately to hard, medium gray to dark reddish gray, silty shale, fossiliferous	BH 0.2	--	
20	C-2 (4.5')	60% FAIR		@19.8' returns to surface were lost. *@ 19.8 to 20.2' rock heavily broken and iron stained. @ 20.7 to 21.2' and 22.4' to 23.15' heavily fractured with iron staining	BH 0.0	--	1586.74
24	C-3 (4.65')	52% FAIR			BH 0.1	--	



DRILLED BY: Eric Benko of Eichelbergers
DEPTH TO GROUNDWATER: 16.85'
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 16.3') DATE/TIME: 5/16/11
NOTES: Core barrel from (16.3'-29') Hole reamed with 6" Air Rotary
SHEET: 1 of 2
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 2

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/5/11
DATE COMPLETED: 5/5/11
GEOLOGIST: RJJ

NORTHING: 15341666.10
EASTING: 1110345.21
ELEVATION: 1609.74

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
29	C-3 (4.65')	52% FAIR		Moderately hard medium gray - dark gray shale, trace siltstone	BH 0.1	--	Fil Pro Coarse Sand #1 (16.5' - 31.85')	
31	Air Rotary Drilled	Air Rotary Drilled		@23.9 to 25.45' heavily broken clay filled fractures with iron staining. Very fossiliferous @26.3' to 26.6' horizontal fractures with iron staining @ 27.7' to 28.3' angular clay filled fractures	BH 0.1	--	PVC Schedule 40 10 Slot Screen ID 2.0" (21.85' - 31.85')	1577.89
33				Bottom of borehole at 31.85' BGS. Monitoring Well MW-2 installed with a screen set from 21.85' to 31.85'.				
35								
37								
39								
41								
43								
45								
47								
49								
51								
53								
55								
57								
59								

DRILLED BY: Eric Benko of Eichelbergers
DEPTH TO GROUNDWATER: 16.85'
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 16.3') DATE/TIME: 5/16/11
NOTES: Core barrel from (16.3'-29') Hole reamed with 6" Air Rotary
SHEET: 2 of 2
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 3

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/18/11
DATE COMPLETED: 5/18/11
GEOLOGIST: RJJ

NORTHING: 15341264.78
EASTING: 1110357.27
ELEVATION: 1636.57

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
-6							Locked Protective Casing Lid	
-4							Riser Protective Pipe	
-2							Concrete Well Pad; Fill Sand	
0				Ground Surface				1636.57
0				Loose, medium brown and tan, sandy silt, trace rock fragments, dry				
2								
4					BH 0.1			
6							Schedule 40 PVC Riser ID 2.0" (-3 - 105.85')	
8								
10				Loose, medium brown, some medium gray, clayey silt, dry to moist, trace of moderately hard, medium gray, occasionally redish gray, shale fragments			Bentonite Cement Grout (2'-91')	1627.57
12								
14	Air Rotary Drilled	Air Rotary Drilled			BH 0.2	NA		
16								
18				Loose, medium brown, silty sand, dry, some moderately hard, medium gray to reddish gray, shale				1618.57
20								
22					BH 0.2			
24								1611.57
26				Loose, medium brown and gray, silty sand, dry, trace clay, some rock fragments	BH 0.1			

DRILLED BY: Randy Hoffman of Eichelbergers
DRILLING METHOD: 8" Air Rotary down to 47', 6" Air Rotary to 115.85
NOTES:
SHEET: 1 of 4

DEPTH TO GROUNDWATER: 83.0'
DATE/TIME: 5/19/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 3

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/18/11
DATE COMPLETED: 5/18/11
GEOLOGIST: RJJ

NORTHING: 15341264.78
EASTING: 1110357.27
ELEVATION: 1636.57

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
29				Loose, medium brown and gray, silty sand, dry, trace clay, some rock fragments	BH 0.1			
31								1604.57
33				Loose, medium brown, silty sand, dry, some moderately hard, medium to light gray, siltstone fragments				
35					BH 0.3			
37								
39							Schedule 40 PVC Riser ID 2.0" (-3 - 105.85')	1596.57
41				Loose, medium brown to tan, silty sand, trace clay				
43				Trace moderaetly hard, medium gray siltstone.	BH 0.4	NA		
45				Top of bedrock at 47'				
47	Air Rotary Drilled	Air Rotary Drilled						1589.57
49				Moderately hard, reddish gray, shale, some moderately hard medium gray siltstone. trace of silts				
51					BH 1.7		Cement Bentonite Grout (2' - 91')	
53								1582.57
55				Moderately hard to hard, reddish gray to olive gray, shale	BH 1.1			
57								1579.57
59				Moderately hard, light to medium gray, shale	BH 0.2			

DRILLED BY: Randy Hoffman of Eichelbergers
DRILLING METHOD: 8" Air Rotary down to 47', 6" Air Rotary to 115.85
NOTES:
SHEET: 2 of 4

DEPTH TO GROUNDWATER: 83.0'
DATE/TIME: 5/19/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 3

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/18/11
DATE COMPLETED: 5/18/11
GEOLOGIST: RJJ

NORTHING: 15341264.78
EASTING: 1110357.27
ELEVATION: 1636.57

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
62				Moderately hard, light to medium gray, shale	BH 0.2		Schedule 40 PVC Riser ID 2.0" (-3 - 105.85')	
64					BH 2.3			
66								1569.57
68				Moderately hard to hard, brown to brownish gray, siltstone, traces of very fine grained sandstone				
70					BH 2.0			
72								
74								1561.57
76				Moderately hard, light to medium gray, siltstone.		NA		
78	Air Rotary Drilled	Air Rotary Drilled			BH 2.1		Cement Bentonite Grout (2' - 91')	
80								1556.57
82				Moderately hard, medium gray, occasionally olive gray, shale, fossiliferous				
84					BH 0.4			
86				Moderately hard, medium to dark gray, shale				1551.57
88					BH 0.7			
90								
92					BH 0.4		Bentonite Seal (91' - 99')	

DRILLED BY: Randy Hoffman of Eichelbergers
DRILLING METHOD: 8" Air Rotary down to 47', 6" Air Rotary to 115.85
NOTES:
SHEET: 3 of 4

DEPTH TO GROUNDWATER: 83.0'
DATE/TIME: 5/19/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 3

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/18/11
DATE COMPLETED: 5/18/11
GEOLOGIST: RJJ

NORTHING: 15341264.78
EASTING: 1110357.27
ELEVATION: 1636.57

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
95				Moderately hard, medium to dark gray, shale	BH 0.4		Bentonite Seal (91' - 99')	1541.57
97				Moderately hard, reddish gray to medium gray, shale	BH 0.1			
99							Schedule 40 PVC Riser ID 2.0" (-3 - 105.85')	1536.57
101				Moderately hard, in parts moderately soft, medium to dark gray, shale				
103	Air Rotary Drilled	Air Rotary Drilled			BH 0.4	NA		
105				Moderately hard, medium to dark gray, shale, iron staining present on cuttings,			Fil-Pro Coarse Sand #1 (99' - 115.85')	1531.57
107				@106' driller encountered soft spot	BH 0.7			1528.57
109				Moderately hard, in parts moderately soft, medium to dark gray, shale, trace ironstaining on cuttings.			PVC Schedule 40 10 Slot Screen ID 2.0"	
111					BH 0.7			
113				Moderately hard, medium to dark gray shale, platey cuttings.				
115								1520.72
117				Bottom of borehole at 115.85' BGS. Monitoring Well MW-3 installed with a screen set from 105.85' to 115.85'.				
119								
121								
123								
125								

DRILLED BY: Randy Hoffman of Eichelbergers
DRILLING METHOD: 8" Air Rotary down to 47', 6" Air Rotary to 115.85
NOTES:
SHEET: 4 of 4

DEPTH TO GROUNDWATER: 83.0'
DATE/TIME: 5/19/11
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 4

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/9/11
DATE COMPLETED: 5/10/11
GEOLOGIST: RJJ

NORTHING: 15341213.36
EASTING: 1110801.77
ELEVATION: 1601.40

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
-6							Locked Protective Casing Lid	
-4							Riser Protective Pipe	
-2							Concrete Well Pad; Fill Sand	
0				Ground Surface				1601.40
2	S-1 (1.0')	3 - 4 6 - 8		Loose to medium dense, medium brown and gray, silty sand, trace clay, trace rock fragments, dry to damp	BH 0.6 HS 1.6	3.25		
	S-2 (2.0')	8 - 11 16 - 22			BH 0.1 HS 1.0	4.5		1597.40
4	S-3 (2.0')	13 - 12 21 - 36		Dense, medium brown and gray, silty sand, trace clay, trace reddish brown rock fragments, dry to damp	BH 0.0 HS 1.5	4.5		
6	S-4 (1.8')	27 - 22 22 - 21			BH 0.0 HS 2.2	4.5	Schedule 40 PVC Riser ID 2.0" (-3 - 45.98')	
8	S-5 (0.0')	31 - 23 28 - 43			BH 0.0 HS --	--		1591.40
10	S-6 (2.0')	10 - 12 16 -31		Medium dense, medium to dark brown, silty sand, some reddish brown rock fragments, moist to dry	BH 0.0 HS 1.7	4.5		
12	S-7 (2.0')	20 - 28 31 - 27		Very dense, medium brown, silty sand, moist within the first foot, rock fragments present in sample	BH 0.1 HS 1.9	4.5	Bentonite Cement Grout (2'-35')	1588.40
14	S-8 (2.0')	5 - 12 15 - 21			BH 0.1 HS 1.9	4.5		1585.40
16	S-9 (2.0')	22 - 18 19 - 22		Medium dense to dense, medium brown, sandy silt, some rock fragments fossiliferous shale pieces, reddish brown, very brittle, dry to damp.	BH 0.0 HS 1.3	4.25		
18	S-10 (1.6')	22 - 33 33 - 40		Very dense, medium gray, silty clay, wet, Moderately hard, medium gray siltistone fragments present.	BH 0.1 HS 2.0	3.5		1582.40
20	S-11 (0.6')	50/3 - -- -- - --			BH 0.1 HS 2.1	--		
22	S-12 (0.7')	13 - 21 47 - 36			BH 0.1 HS 1.4	--		
24	S-13 (0.6')	28 -31 25 - 50/3			BH 0.0 HS 2.1	3.5		1576.40
26	S-14 (1.0')	12 - 11		Very dense, medium gray clay silt, damp, some siltstone fragments	BH 0.2	4.0		

DRILLED BY: Eric Benko of Eichelbergers
DEPTH TO GROUNDWATER: 15.0'
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 47.5')
DATE/TIME: 5/17/11
NOTES: Core Bore from 47.5 to 55.98
SHEET: 1 of 2
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 4

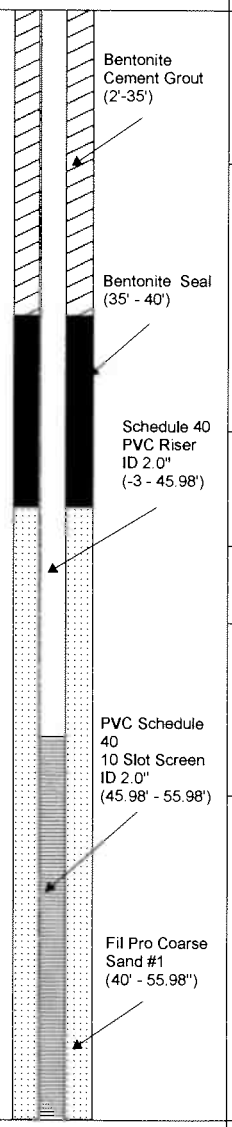
PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/9/11
DATE COMPLETED: 5/10/11
GEOLOGIST: RJJ

NORTHING: 15341213.36
EASTING: 1110801.77
ELEVATION: 1601.40

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
	S-14 (1.0')	10 - 18		Very dense, medium gray clay silt, damp, some siltstone fragments	HS 1.4	4.0		
29	S-15 (2.0')	7 - 12 11 - 40		@ 28' medium dense, very stiff, medium gray, silty clay, track rock fragments, damp	BH 0.0 HS 1.1	4.0		
31	S-16 (1.9')	8 - 10 49 - 28		Very dense, Medium gray some brown, silty clay, damp to dry, some angular rock fragments.	BH 0.1 HS 1.6	4.5		1570.40
33	S-17 (0.6')	50/4 - -- -- - --			BH 0.1 HS 1.1	4.5		
35	S-18 (2.0')	13 - 27 31 - 40			BH 0.0 HS 1.5	4.5		
37	S-19 (0.5')	50/5 - -- -- - --			BH 0.1 HS 1.5	4.5		1563.40
39	S-20 (2.0')	13 - 24 22 - 50/4		Dense, medium brown, some gray, silty sand, trace clay, dry, trace rock fragments	BH O.2 HS 2.5	4.5		
41	S-21 (0.7')	25 - 50/1 -- - --		Very dense, medium brown, silty sand, dry, angular rock fragments present	BH 0.1 HS 2.7	4.5		1560.40
43	S-22 (1.6')	22 - 46 34 - 50/3		Very dense, medium brown and gray, silty sand, dry, some angular rock fragments,	BH 0.1 HS 1.6	4.5		1558.40
45	S-23 (0.9')	31 - 50/5 -- - --		Moderately hard to hard, reddish brown shale, fragments present	BH 0.2 HS 0.4	4.25		
47	S-24 (0.6')	24 - 50/1 -- - --			--	--		1553.90
	C-1 (1.1')	88% GOOD		Top of Bedrock 47.5'	BH 0.1	--		
49				Moderately hard, reddish brown, shale, fossiliferous, brittle in parts,				
51	C-2 (5.1')	50% POOR/ FAIR		Moderately hard to hard in parts, dark gray, shale, fossiliferous, lower part of C-2 heavily fractured with iron staining. @ 52.2' to 53.2' heavily fractured rock with iron staining.	BH 0.1	--		
53								
55	Air Rotary	Air Rotary			Air Rotary	Air Rotary		1545.42
57				Bottom of borehole at 55.98' BGS. Monitoring Well MW-4 installed with a screen set from 45.98' to 55.98'.				
59								



DRILLED BY: Eric Benko of Eichelbergers
DEPTH TO GROUNDWATER: 15.0'
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 47.5') DATE/TIME: 5/17/11
NOTES: Core Bore from 47.5 to 55.98
SHEET: 2 of 2
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 4

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/9/11
DATE COMPLETED: 5/10/11
GEOLOGIST: RJJ

NORTHING: 15341213.36
EASTING: 1110801.77
ELEVATION: 1601.40

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
-6							Locked Protective Casing Lid	
-4							Riser Protective Pipe	
-2							Concrete Well Pad	
0				Ground Surface			Fill Sand	1601.40
0	S-1 (1.0')	3 - 4 6 - 8		Loose to medium dense, medium brown and gray, silty sand, trace clay, trace rock fragments, dry to damp	BH 0.6 HS 1.6	3.25		
2	S-2 (2.0')	8 - 11 16 - 22			BH 0.1 HS 1.0	4.5		1597.40
4	S-3 (2.0')	13 - 12 21 - 36		Dense, medium brown and gray, silty sand, trace clay, trace reddish brown rock fragments, dry to damp	BH 0.0 HS 1.5	4.5		
6	S-4 (1.8')	27 - 22 22 - 21			BH 0.0 HS 2.2	4.5	Schedule 40 PVC Riser ID 2.0" (-3 - 45.98')	
8	S-5 (0.0')	31 - 23 28 - 43			BH 0.0 HS --	--		1591.40
10	S-6 (2.0')	10 - 12 16 -31		Medium dense, medium to dark brown, silty sand, some reddish brown rock fragments, moist to dry	BH 0.0 HS 1.7	4.5		
12	S-7 (2.0')	20 - 28 31 - 27		Very dense, medium brown, silty sand, moist within the first foot, rock fragments present in sample	BH 0.1 HS 1.9	4.5	Bentonite Cement Grout (2'-35')	1588.40
14	S-8 (2.0')	5 - 12 15 - 21			BH 0.1 HS 1.9	4.5		
16	S-9 (2.0')	22 - 18 19 - 22		Medium dense to dense, medium brown, sandy silt, some rock fragments fossiliferous shale pieces, reddish brown, very brittle, dry to damp.	BH 0.0 HS 1.3	4.25		1585.40
18	S-10 (1.6')	22 - 33 33 - 40		Very dense, medium gray, silty clay, wet, Moderately hard, medium gray siltistone fragments present.	BH 0.1 HS 2.0	3.5		
20	S-11 (0.6')	50/3 - -- -- - --			BH 0.1 HS 2.1	--		1582.40
22	S-12 (0.7')	13 - 21 47 - 36			BH 0.1 HS 1.4	--		
24	S-13 (0.6')	28 -31 25 - 50/3			BH 0.0 HS 2.1	3.5		1576.40
26	S-14 (1.0')	12 - 11		Very dense, medium gray clay silt, damp, some siltstone fragments	BH 0.2	4.0		

DRILLED BY: Eric Benko of Eichelbergers
DEPTH TO GROUNDWATER: 15.0'
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 47.5')
DATE/TIME: 5/17/11
NOTES: Core Bore from 47.5 to 55.98
SHEET: 1 of 2
REVIEWED BY:
FILE:

LOG OF BORING NO.: MW - 4

PROJECT NO.: 01304
SITE: Townley Hill Road
CLIENT: CBS

DATE STARTED: 5/9/11
DATE COMPLETED: 5/10/11
GEOLOGIST: RJJ

NORTHING: 15341213.36
EASTING: 1110801.77
ELEVATION: 1601.40

CUMMINGS RITER CONSULTANTS, INC.
10 Duff Road, Suite 500
Pittsburgh, PA 15235

Depth (FT)	Sample No. Sample/Core Recovery (FT)	SPTBlows(6") RQD (%)	Profile	DESCRIPTION	Headspace & Borehole Readings ppm	Penetrometer (Tons/SQ. Ft)	WELL INSTALLATION DETAIL	Elevation (ft., MSL)
	S-14 (1.0')	10 - 18		Very dense, medium gray clay silt, damp, some siltstone fragments	HS 1.4	4.0		
29	S-15 (2.0')	7 - 12 11 - 40		@ 28' medium dense, very stiff, medium gray, silty clay, track rock fragments, damp	BH 0.0 HS 1.1	4.0	Bentonite Cement Grout (2'-35')	
31	S-16 (1.9')	8 - 10 49 - 28		Very dense, Medium gray some brown, silty clay, damp to dry, some angular rock fragments.	BH 0.1 HS 1.6	4.5		1570.40
33	S-17 (0.6')	50/4 - -- -- - --			BH 0.1 HS 1.1	4.5		
35	S-18 (2.0')	13 - 27 31 - 40			BH 0.0 HS 1.5	4.5	Bentonite Seal (35' - 40')	
37	S-19 (0.5')	50/5 - -- -- - --			BH 0.1 HS 1.5	4.5		1563.40
39	S-20 (2.0')	13 - 24 22 - 50/4		Dense, medium brown, some gray, silty sand, trace clay, dry, trace rock fragments	BH O.2 HS 2.5	4.5	Schedule 40 PVC Riser ID 2.0" (-3 - 45.98')	
41	S-21 (0.7')	25 - 50/1 -- - --		Very dense, medium brown, silty sand, dry, angular rock fragments present	BH 0.1 HS 2.7	4.5		1560.40
43	S-22 (1.6')	22 - 46 34 - 50/3		Very dense, medium brown and gray, silty sand, dry, some angular rock fragments,	BH 0.1 HS 1.6	4.5		1558.40
45	S-23 (0.9')	31 - 50/5 -- - --		Moderately hard to hard, reddish brown shale, fragments present	BH 0.2 HS 0.4	4.25	PVC Schedule 40 10 Slot Screen ID 2.0" (45.98' - 55.98')	
47	S-24 (0.6')	24 - 50/1 -- - --			--	--		1553.90
	C-1 (1.1')	88% GOOD		Top of Bedrock 47.5'	BH 0.1	--		
49				Moderately hard, reddish brown, shale, fossiliferous, brittle in parts,				
51	C-2 (5.1')	50% POOR/ FAIR		Moderately hard to hard in parts, dark gray, shale, fossiliferous, lower part of C-2 heavily fractured with iron staining. @ 52.2' to 53.2' heavily fractured rock with iron staining.	BH 0.1	--	Fil Pro Coarse Sand #1 (40' - 55.98")	
53	Air Rotary	Air Rotary			Air Rotary	Air Rotary		
55								1545.42
57				Bottom of borehole at 55.98' BGS. Monitoring Well MW-4 installed with a screen set from 45.98' to 55.98'.				
59								

DRILLED BY: Eric Benko of Eichelbergers
DRILLING METHOD: 4 1/4" I.D. HSA's w continuous split spoon from (0' - 47.5')
NOTES: Core Bore from 47.5 to 55.98
SHEET: 2 of 2

DEPTH TO GROUNDWATER: 15.0'
DATE/TIME: 5/17/11
REVIEWED BY:
FILE:

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-1

PROJECT NAME Township Hill Road
PROJECT NO. 01309
BORING NO. MW-1 (seq 1)
DATE OF INSTALLATION 5/10/11
FIELD ENG./GEO RJJ
CHECKED BY
DATE OF DEVELOPMENT NA
DATE 5/10/11
DATE

BOREHOLE DRILLING

DRILLING METHOD 3 4¼ HSA's / continuous split spoon, NQ Wireline Coring Reamed w/ 6" air hammer to 40'
DRILLING FLUID(S) USED
FLUID — FROM — TO —
FLUID — FROM — TO —

TYPE OF BIT conns, bead / split spoon.
CASING SIZE(S) USED: 6" Air hammer for Reaming.
SIZE — FROM — TO —
SIZE — FROM — TO —

WELL DESCRIPTION

Type Ground Water Monitoring well.
Diameter of Screened Section 2" ID
Perforation Type:
Slots ☒ Screen ☐
Average Size of Openings 10 slot
Screen Manufacturer

Riser Pipe Material PVC Schedule 40
Riser Pipe Diameters:
O.D. 2 3/8" I.D. 2"
Length of Pipe Sections 10'
Joining Method Threaded w/ o Ring seal

PROTECTION SYSTEM

Riser Protective Pipe Length
Protective Pipe O.D.

Other Protection

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)
Top of Protective Pipe	
Top of Riser Pipe	
Bottom of Protective Pipe	
Borehole Fill Materials:	
Grout/Slurry Never Grouted	Top surface. Bottom 22'
Bentonite 2 buckets Pel Plug.	Top 22' Bottom 27'
Fine Sand	Top — Bottom —
Coarse Sand 4 bags fil Pro #01	Top 27' Bottom 39'
Screened Section	Top 29' Bottom 39'
Piezometer/Well Tip	flush 39'
Bottom of Borehole	39'
GWL After Installation	

Was the piezometer/well developed after installation? Yes ☒ No ☐
Was a sensitivity test performed? Yes ☐ No ☒
Remarks:

well was never grouted, and PVC Riser/screen was pulled due to water yield issues.

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-1 (Reinstall)

PROJECT NAME Townsley Hill Road
PROJECT NO. 61304 FIELD ENG./GEO RJJ DATE 5/12/11
BORING NO. MW-1 CHECKED BY DATE 5/13/11
DATE OF INSTALLATION 5/12/11 - 5/13/11 DATE OF DEVELOPMENT 5/16/11

BOREHOLE DRILLING

DRILLING METHOD Air Rotary 8" hammer to 39'
DRILLING FLUID(S) USED 6" Hammer to ~~77.71'~~
FLUID _____ FROM _____ TO _____
FLUID _____ FROM _____ TO _____

TYPE OF BIT 8" Hammer bit to 39'
CASING SIZE(S) USED: 6" Hammer bit to ~~77.71'~~
SIZE ID 6 1/8 OD 6 5/8 FROM 0 TO 40
SIZE _____ FROM _____ TO _____

WELL DESCRIPTION

Type Ground Water Monitoring Well
Diameter of Screened Section 2.0"
Perforation Type:
Slots ☒ Screen ☐
Average Size of Openings 10 slot
Screen Manufacturer Monoflex

Riser Pipe Material PVC schedule 40
Riser Pipe Diameters:
O.D. 2 3/8" I.D. 2.0"
Length of Pipe Sections 10'
Joining Method Threaded flush Joint.

PROTECTION SYSTEM

Riser Protective Pipe Length 6'
Protective Pipe O.D. 6 5/8"

Other Protection _____

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)
Top of Protective Pipe	4' stick up
Top of Riser Pipe	3' stick up
Bottom of Protective Pipe	-2'
Borehole Fill Materials:	
Grout/Slurry 6% High Type II (94#) 9 bags	Top surface Bottom 56.5'
Bentonite Pel Plug 3/8 bucket Hole plug chips 1 bucket	Top 56.5' Bottom 60'
Fine Sand	Top — Bottom —
Coarse Sand #1 Fil Pro 50 lb bags 4	Top 60' Bottom 77.71'
Screened Section	Top 67.71' Bottom 77.71'
Piezometer/Well Tip	77.71 (flush)
Bottom of Borehole	77.71'
GWL After Installation	

Was the piezometer/well developed after installation? Yes ☒ No ☐
Was a sensitivity test performed? Yes ☐ No ☑

Remarks: #1 Fil Pro IIII Pel plug pellets 1 Hole Plug chips 1 Grout IIII IIII

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-2

PROJECT NAME Township Hall Road
PROJECT NO. 01304 — FIELD ENG./GEO RJS — DATE 5/10/11
BORING NO. MW-2 — CHECKED BY — DATE
DATE OF INSTALLATION 5/10/11 — DATE OF DEVELOPMENT 5/16/11

BOREHOLE DRILLING

DRILLING METHOD 4¼ HSA's / NQ Wireline / 2" Splitspoon	TYPE OF BIT Cutting Head / 3¼" 4¼" HSA's / 5⅞" 2" Split Spoon
DRILLING FLUID(S) USED 6" Air Rotary to Ream.	CASING SIZE(S) USED: 6" A/R Hammer to Ream.
FLUID — FROM — TO —	SIZE — FROM — TO —
FLUID — FROM — TO —	SIZE — FROM — TO —

WELL DESCRIPTION

Type Groundwater Monitoring Well	Riser Pipe Material PVC schedule 40
Diameter of Screened Section 2.0"	Riser Pipe Diameters:
Perforation Type:	O.D. 2⅜" I.D. 2.0"
Slots ☒ Screen ☐	Length of Pipe Sections 10'
Average Size of Openings .10" slot	Joining Method threaded flush joint
Screen Manufacturer Monoflex	

PROTECTION SYSTEM

Riser Protective Pipe Length 6'	Other Protection
Protective Pipe O.D. 6⅝"	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)
Top of Protective Pipe	4' stick up
Top of Riser Pipe	3' stick up
Bottom of Protective Pipe	2' in ground
Borehole Fill Materials:	
Grout/Slurry 4 bags Lehigh Type II	Top 2 Bottom 12.5
Bentonite 2 buckets	Top 12.5' Bottom 16.5
Fine Sand	Top — Bottom —
Coarse Sand #01 50lb bags Fil Pro 4 bags	Top 16.5' Bottom 31.85'
Screened Section	Top 21.85' Bottom 31.85'
Piezometer/Well Tip	
Bottom of Borehole	31.85'
GWL After Installation	17.6'

Was the piezometer/well developed after installation? Yes ☒ No ☐
Was a sensitivity test performed? Yes ☐ No ☒
Remarks: Pel Plug 11 — Type II for 1111 — Fil Pro 01 1111

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-3

PROJECT NAME Townsley Hill Road
PROJECT NO. 01304
BORING NO. MW-3
DATE OF INSTALLATION 5/10/11
FIELD ENG./GEO RJS DATE 5/10/11
CHECKED BY DATE
DATE OF DEVELOPMENT NA

BOREHOLE DRILLING

DRILLING METHOD 4¼ HSA's / cont split spoon, NQ wireline
DRILLING FLUID(S) USED Reamed w/ 6" Air Hammer (Grits)
FLUID FROM TO
FLUID FROM TO

TYPE OF BIT 4¼ HSA's / coring Head / split spoon
CASING SIZE(S) USED: 6" Air Hammer to Ream.
SIZE FROM TO
SIZE FROM TO

WELL DESCRIPTION

Type Monitoring Well
Diameter of Screened Section 2.0"
Perforation Type:
Slots ☒ Screen ☐
Average Size of Openings .10 slot
Screen Manufacturer Monoflex

Riser Pipe Material PVC Schedule 40
Riser Pipe Diameters:
O.D. 2⅜" I.D. 2.0"
Length of Pipe Sections 10'
Joining Method Threaded flush Joint.

PROTECTION SYSTEM

Riser Protective Pipe Length 6'
Protective Pipe O.D. 6¼"

Other Protection

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)
Top of Protective Pipe	
Top of Riser Pipe	
Bottom of Protective Pipe	
Borehole Fill Materials:	
Grout/Slurry (Never Grouted)	Top to surface Bottom 54
Bentonite 2 buckets bentonite Pel Plug	Top 54' Bottom 57'
Fine Sand	Top — Bottom 57'
Coarse Sand 4 bags filpro #01	Top 57' Bottom 69'
Screened Section	Top 59' Bottom 69'
Piezometer/Well Tip	flush 69'
Bottom of Borehole	69'
GWL After Installation	

Was the piezometer/well developed after installation? Yes ☒ No ☐
Was a sensitivity test performed? Yes ☐ No ☒
Remarks: coarse sand #01 filpro 1111

* Well never grouted PVC Riser/screen was pulled and MW-3 was redrilled due to water yield issues.

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-3 Redrill

PROJECT NAME Townsley Hill Road
PROJECT NO. 01304
BORING NO. MW-3 (Redrill)
DATE OF INSTALLATION 5/18/11 & 5/19/11

FIELD ENG./GEO RSJ — DATE 5/19/11
CHECKED BY — DATE
DATE OF DEVELOPMENT 5/19/11

BOREHOLE DRILLING

DRILLING METHOD Air Rotary 8" Air Hammer to 47'. 6" Air Hammer to 113'	TYPE OF BIT 8" Air Hammer 47' 6" Air Hammer 113'
DRILLING FLUID(S) USED	CASING SIZE(S) USED:
FLUID — FROM — TO	SIZE ID 6 1/8 OD 6 5/8 FROM 0 TO 40
FLUID — FROM — TO	SIZE — FROM — TO

WELL DESCRIPTION

Type Ground Water Monitoring Well.	Riser Pipe Material PVC Schedule 40
Diameter of Screened Section 2 3/8" OD 2.0" ID	Riser Pipe Diameters:
Perforation Type:	O.D. 2 3/8" I.D. 2.0"
Slots ☒ Screen ☐	Length of Pipe Sections 10'
Average Size of Openings .10" slot	Joining Method Threaded Flush Joint
Screen Manufacturer Monoflex	

PROTECTION SYSTEM

Riser Protective Pipe Length 6'	Other Protection
Protective Pipe O.D. 6 5/8"	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (FT)
Top of Protective Pipe	4.5' stick up
Top of Riser Pipe	3' stick up
Bottom of Protective Pipe	2' in ground
Borehole Fill Materials:	
Grout/Slurry Portland Type II 12 bags	Top Surface Bottom 91
Bentonite 2 buckets Pel Plug.	Top 91 Bottom 99
Fine Sand	Top ~~—~~ Bottom ~~—~~
Coarse Sand Type I Fil Pro 4.5 bags	Top 99' Bottom 115.85'
Screened Section	Top 105 Bottom 115.85'
Piezometer/Well Tip	115.85' flush
Bottom of Borehole	115.85'
GWL After Installation	

Was the piezometer/well developed after installation? Yes ☒ No ☐

Was a sensitivity test performed? Yes ☐ No ☒

Remarks: Sand Coarse Type I 1111/2 Portland Type II 11111111

CUMMINGS RITER CONSULTANTS, INC.

WELL INSTALLATION FORM
WELL NO. MW-4

PROJECT NAME	Townley Hill Road		
PROJECT NO.	01304	FIELD ENG./GEO	RSJ	DATE	5/11/11
BORING NO.	MW-4	CHECKED BY		DATE	
DATE OF INSTALLATION	5/11/11	DATE OF DEVELOPMENT	5/17/11		

BOREHOLE DRILLING

DRILLING METHOD: split spoon/NQ wireline Core/4¼ HSA

DRILLING FLUID(S) USED: 6" Air Hammer to Ream (Air Rotary)

FLUID: H_2O FROM 47.5 TO 53.2

FLUID: FROM TO

TYPE OF BIT: NQ wireline; 2" split spoon, 6" Air hammer to Ream

CASING SIZE(S) USED: Temp Casing

SIZE: ID 6⅛ OD 6⅝ FROM 0 TO 40 — 21.2' long per section

SIZE: FROM TO

WELL DESCRIPTION

Type: Ground Water Monitoring Well

Diameter of Screened Section: 2.0"

Perforation Type:

Slots ☒ Screen ☐

Average Size of Openings: 10 slot

Screen Manufacturer: Monoflex

Riser Pipe Material: PVC schedule 40

Riser Pipe Diameters:

O.D. 2⅜" I.D. 2.0"

Length of Pipe Sections: 10'

Joining Method: threaded flush joint

PROTECTION SYSTEM

Riser Protective Pipe Length: 6'

Protective Pipe O.D.: 6⅝"

Other Protection:

ITEM		DISTANCE ABOVE/BELOW GROUND SURFACE (FT)		
Top of Protective Pipe		4' stick up		
Top of Riser Pipe		3' stick up		
Bottom of Protective Pipe		2' in ground		
Borehole Fill Materials:				
Grout/Slurry	Lehigh cement Type II 7	Top Surface	Bottom	35'
Bentonite	2 bucket Per Plug ⅜	Top 35	Bottom	40'
Fine Sand		Top —	Bottom	—
Coarse Sand	Fil Pro 50lb bags 6	Top 40'	Bottom	55.98'
Screened Section		Top 45.98	Bottom	55.98'
Piezometer/Well Tip		55.98'		
Bottom of Borehole		55.98'		
GWL After Installation		14.9'		

Was the piezometer/well developed after installation? Yes ☒ No ☐

Was a sensitivity test performed? Yes ☐ No ☒

Remarks: Filpro #coarse 01 sand ~~||||~~ | Type II ~~||||~~ ||

APPENDIX F

CUMMINGS RITER CONSULTANTS, INC.

WATER SAMPLE COLLECTION REPORT

PROJECT ____________________ SAMPLE ID ____________________

PROJECT NO. ____________________ WELL NO. ____________________

SAMPLE DATE ______ / ______ / ______ SAMPLED BY ____________________

SAMPLE TIME (START/END) ______ / ______ SAMPLE SEQUENCE NO. ____________

SAMPLE COLLECTION EQUIPMENT ____

DEPTH TO WATER PRIOR TO PURGING/SAMPLING (FT) ______ / ______

RECHARGE TIME ____________________ MEASURED FROM ☐ TOC ☐ TOR ☐ GS

FIELD MEASUREMENTS		
pH	Standard Units	
Specific Conductance	µS/cm	
Water Temperature	°C	
Dissolved Oxygen	ppm	
Redox	mV	
Turbidity	NTU	

METER CALIBRATION PERFORMED? N ☐ Y ☐ DATE ____________

WATER APPEARANCE, IMMISCIBLE PHASES OR ODORS: ____________________

SAMPLING FLOW RATE: ____

SAMPLE TYPES COLLECTED

PARAMETER	VOLUME	# CONTAINERS	FIELD FILTERED?		PRESERVED?	
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐

NUMBER OF CONTAINERS ____________ FILTRATION METHOD ____________________

LABORATORY ____________ DELIVERED VIA ____________ DATE ______

WEATHER CONDITIONS ____

COMMENTS ____

F21/corp

CUMMINGS RITER CONSULTANTS, INC.

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

SITE: _____ **TUBING DIAMETER:** _____ inches

PROJECT NO.: _____ **DEPTH TO WATER:** _____ ft TOR

SAMPLING DEVICE: _____ **DEPTH TO PUMP:** _____ ft TOR

DATE: ____/____/____ **FEET OF WATER IN LINE:** _____ feet

WELL I.D.: _____ **VOLUME OF WATER IN LINE:** _____ gallons

(0.005 gal/ft for 3/8" tubing, 0.0023 gal/ft for ¼" tubing)

ELAPSED TIME (min)	DEPTH TO WATER (ft TOR)	pH (s.u.)	SPECIFIC CONDUCTANCE (µS/cm)	TEMPER-ATURE (°C)	DISSOLVED OXYGEN (ppm)	TURBIDITY (NTU)	REDOX (mV)

PURGE START TIME:_____ **PURGE END TIME:** _____ **TOTAL VOLUME PURGED:** ~_____**gal**

APPROXIMATE PURGE RATE: _____**ml/min** **PURGED/SAMPLED BY:** _____

WEATHER CONDITIONS: _____

COMMENTS: _____

_____

APPENDIX G

Report of Site Inspection
Townley Hill Road Dump Site
Catlin, Chemung County, New York

Inspector:		**Weather**	
Date:		**Conditions:**	

Check "Yes" for any observed site condition requiring attention.
Provide details on attached sheet(s).

SITE CONDITIONS							
1.	**General**						
	a. Evidence of incompatible Site use or access?	**Yes**		**No**		**Note No.**	
	b. Site cleanliness?	**Yes**		**No**		**Note No.**	
2.	**Site Drainage Structures**						
	a. Blocked or obstructed ditches or culverts?	**Yes**		**No**		**Note No.**	
	b. Excessive scour or erosion in riprap outlets?	**Yes**		**No**		**Note No.**	
	c. Excessive sediment accumulated in traps?	**Yes**		**No**		**Note No.**	
	d. Standing water?	**Yes**		**No**		**Note No.**	
3.	**Vegetation**						
	a. Barren areas or sparse vegetation?	**Yes**		**No**		**Note No.**	
	b. Overgrown vegetation affecting inspection or access to monitoring wells?	**Yes**		**No**		**Note No.**	
	c. Trees that threaten Engineering Controls?	**Yes**		**No**		**Note No.**	
4.	**Site Access (Road)**						
	a. Vegetation affecting Site access?	**Yes**		**No**		**Note No.**	
	b. Excessive Rutting of aggregate?	**Yes**		**No**		**Note No.**	
	c. Access road functional?	**Yes**		**No**		**Note No.**	
ENGINEERING CONTROLS							
5.	**Soil Cover**						
	a. Intrusion by burrowing animals?	**Yes**		**No**		**Note No.**	
	b. Excess soil (sheet or rill) erosion?	**Yes**		**No**		**Note No.**	
	c. Differential settlement or rainwater ponding?	**Yes**		**No**		**Note No.**	
	d. Indications of slope failure?	**Yes**		**No**		**Note No.**	
6.	**Fencing**						
	a. Breached or downed fencing?	**Yes**		**No**		**Note No.**	
	b. Breached or broken gates?	**Yes**		**No**		**Note No.**	
	c. Gates, posts, or footers out of plumb?	**Yes**		**No**		**Note No.**	
	d. Missing "No Trespassing" signs?	**Yes**		**No**		**Note No.**	

ATTACHMENTS					
Notes?	Yes		No		
Maps?	Yes		No		
Photos?	Yes		No		
Signature and date					

APPENDIX H

APPENDIX B
SAMPLING AND ANALYSIS PLAN
VOLUME II - QUALITY ASSURANCE PROJECT PLAN

1.0 INTRODUCTION

On behalf of Viacom Inc. (Viacom), successor in interest to CBS Corporation and Westinghouse Electric Corporation, Cummings/Riter Consultants, Inc. (Cummings/Riter) has prepared this Sampling and Analysis Plan (SAP) to support remedial investigation activities to be conducted at a former waste disposal site located in the town of Catlin, Chemung County, New York known as the Townley Hill Road Dump Site (the Site) (see Figure 1 of the Work Plan). In 1997, the New York State Department of Environmental Conservation (NYSDEC) conducted a focused remedial investigation at the Site. In September 1998, NYSDEC issued a focused Remedial Investigation report that recommended a comprehensive remedial investigation/feasibility study (RI/FS) be conducted at the Site to investigate potential impacts to soil, sediment, and groundwater.

The SAP consists of two plans: the Field Sampling Plan (FSP), which is presented in Appendix A, and this Quality Assurance Project Plan (QAPP). This QAPP is to be used in conjunction with the FSP to support activities related to the performance of the RI/FS. This SAP has been prepared in general accordance with the U.S. Environmental Protection Agency's (USEPA) *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (EPA 540/G-89/004, October 1988).

The objective of this QAPP is to describe procedures for sample transportation, analysis, validation, and reporting. These procedures are to be followed during field activities conducted in support of the RI/FS conducted at the Site.

The Site is an inactive hazardous waste landfill where disposal activities reportedly operated in the 1950s and 1960s under a permit issued by the Chemung County Department of Health. The landfill was reportedly closed in 1967 by the Chemung County Department of Health. The Site background and description are summarized in Section 2.0 of the RI/FS Work Plan.

2.0 PROJECT DESCRIPTION

A detailed description of the Site is provided in the Work Plan.

2.1 CONSTITUENTS OF INTEREST

As described in the Work Plan, numerous samples of various types have been obtained from the Site area by NYSDEC and others between 1983 and the present. Some of these samples detected elevated levels of cadmium, lead, and certain semivolatile organic compounds (SVOCs).

For the RI, soil samples collected from the test pits, groundwater, surface water, and sediment samples will be analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), SVOCs, and pesticides/polychlorinated biphenyls (PCBs) and Target Analyte List (TAL) inorganic parameters, plus fluoride. Aqueous samples collected for TAL analysis will be analyzed for the total fraction only. Analyses will be conducted using NYSDEC Analytical Services Protocol (ASP) Contract Laboratory Program (CLP) methods.

Soils collected in the vicinity of the former drum disposal area will be analyzed for cadmium and lead. Additionally, 10 percent of the soil samples collected in the vicinity of the former drum disposal area will be analyzed for the full TCL/TAL list, plus fluoride. Surface and subsurface soil samples collected from the test pits will be analyzed for TCL VOCs, SVOCs, PCBs, and TAL metals (plus fluoride). These analyses will similarly be conducted using NYSDEC ASP-CLP methods. Samples of waste collected from the test pits will be analyzed for Resource Conservation Recovery Act (RCRA) characteristics, including ignitability, corrosivity, reactivity, and toxic characteristic leaching procedures (TCLP) parameters using USEPA SW-846 methods.

Table B-1 presents a summary of the RI sampling program. Additionally, Table B-2 presents the sampling requirements for samples collected during the performance of the RI.

2.2 SCOPE OF WORK

The RI includes the collection of environmental data to support the evaluation of appropriate remedial alternatives for the Site. The field activities related to data collection during the RI phase are as follows:

- Surface geophysical surveying,
- Excavation of test trenches and test pits,
- Soil and waste sampling,
- Drilling and monitoring well installation,
- Water level measurement,
- Surface water and sediment sampling, and
- Groundwater sampling.

The sample analytical results will be used to characterize and delineate the extent of potential impacts to Site media. The project field collection procedures, analytical program, validation procedures, and reporting format are based on obtaining this information in a timely and effective manner.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

This section provides a description of the RI/FS project organization and the responsibilities associated with each of the positions in this organization.

3.1 NYSDEC PROJECT MANAGER

Mr. Vivek Nattanmai is the Project Manager for NYSDEC. He will coordinate NYSDEC activities during the RI/FS. Mr. Nattanmai will be the point of contact for NYSDEC.

3.2 VIACOM PROJECT COORDINATOR

Mr. Leo M. Brausch, project consultant, will serve as the Project Coordinator for Viacom. Mr. Brausch will be the primary contact between Viacom and NYSDEC and will monitor the project performance, schedule, and budget.

3.3 OVERALL PROJECT MANAGEMENT

Cummings/Riter of Pittsburgh, Pennsylvania will provide the overall project management for this work. They will be assisted by Fagan Engineers, PC (Fagan) of Elmira, New York who will provide support in completion of field activities.

3.4 PROJECT MANAGER

Mr. William Baughman, P.G., will serve as the Cummings/Riter Project Manager. Mr. Baughman will be the primary contact between Cummings/Riter and Viacom. He will be responsible for interfacing with agency technical representatives (as necessary) and for review of agency submittals including the RI and FS reports. He will also be responsible for all Cummings/Riter technical, financial, and scheduling matters.

3.5 PROJECT SUPERVISOR

Mr. Matthew Valentine, P.G., will serve as the Cummings/Riter Project Supervisor. Mr. Valentine will direct the field sampling crews, interface with both the drilling and laboratory subcontractors, and be responsible for preparation of agency submittals.

3.6 QUALITY ASSURANCE OFFICER AND HEALTH AND SAFETY COORDINATOR

Mr. Kenneth Bird, C.I.H., will serve as the project Quality Assurance (QA) Officer and the Health and Safety Coordinator. He is responsible for reviewing the standard operating procedures and modifications to the Health and Safety Plan (HASP), as needed, based on field monitoring results. Mr. Bird will review field and laboratory data for compliance of the QA objectives (precision, accuracy, comparability, and completeness); and report any deficiencies to project management.

3.7 SITE SAFETY OFFICER

[To be determined.] The Site Safety Officer will be responsible for the implementation of the HASP and documenting any health and/or safety issues that arise during the completion of the RI/FS tasks.

3.8 PROJECT/FIELD TEAM MEMBERS

The field investigation will be completed as a collaborative effort using personnel from both Cummings/Riter and Fagan. Cummings/Riter will provide the on-site field team supervisor and oversight of drilling and well installation activities. Fagan personnel will assist in field investigation activities associated with soil sampling, test pit excavation, surface water and sediment sampling, and surveying.

3.9 OTHER CONTRACTORS

Other contractors who are being proposed for the work covered in the Work Plan include:

- Drilling and well installation services – [To be determined]; and
- Analytical services – Severn-Trent Laboratories (STL) of Harmarville, Pennsylvania.

The driller and analytical laboratory will be contracted directly by Viacom.

An analytical laboratory project manager will be identified and will be responsible for execution of the analytical testing program for the project. The name of the laboratory project manager will be provided prior to sample collection. They will be responsible for ensuring that their laboratory internal QA procedures are followed. They will be the point of contact for the Project Supervisor and project QA Officer.

A local earthwork contractor who is experienced in hazardous waste site investigation and remediation will be retained to perform the test pit excavations in the disposal area.

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

4.1 DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) related to the RI sampling program for the Site are:

- The data will be gathered or developed in accordance with procedures appropriate for characterization and delineation of suspected Site contaminants.

- The data will be of known or acceptable precision, accuracy, and completeness, within the limits of the methods.

In developing the DQOs, a series of planning steps were conducted based upon USEPA guidance (*Data Quality Objectives Process for Superfund,* September 1993) and the Consent Order to ensure that the type, quantity, and quality of environmental data are appropriate for their intended use.

4.2 QUALITY ASSURANCE OBJECTIVES

The following section addresses the QA objectives for precision and accuracy, completeness, representativeness, and comparability.

4.2.1 Completeness

Completeness is measured by the number of samples actually collected compared to the number of samples required for characterization, or the amount of valid data obtained compared to the amount of data that were expected under normal conditions. For this project, Viacom has defined "the number of samples required for characterization" and "the amount of data that were expected under normal conditions" as the total number of samples planned for each parameter. Based on the number and types of samples proposed, the completeness criteria for both the field and the laboratory will be 90 percent. Field completeness will be assessed by comparing the number of samples collected to the total number of samples planned. Laboratory completeness will be assessed by comparing the number of samples that have valid and complete analyses to the total number of samples planned.

4.2.2 Representativeness

Representativeness is the degree to which sample data represent a characteristic of a population, parameter variation at a sampling point, or an environmental condition. The sampling program described in the FSP was designed to collect groundwater samples that adequately reflect current conditions at the Site for RI/FS purposes.

Representativeness is also enhanced when all samples from a particular medium are collected using the same technique. Soil, surface water, sediment, and groundwater samples will be collected and water levels will be measured in accordance with the procedures in the FSP.

Representativeness is also achieved by ensuring that sampling equipment is properly decontaminated between sampling locations. Field equipment for sampling will be decontaminated between samples, unless the equipment is dedicated, to ensure that samples collected at subsequent locations are not subjected to cross-contamination.

4.2.3 Comparability

Comparability expresses the confidence with which one data set can be compared to another. To ensure that sample results are comparable to previous and future sample results, Cummings/Riter will institute several measures. Sample collection procedures will be required to follow the methods described in the FSP while laboratory analytical procedures will follow standard methods using defined ASP-CLP procedures.

4.2.4 Precision and Accuracy

Precision and accuracy are indicators of data quality. Generally, precision is a measure of the variability of a group of measurements compared to their mean value, and is determined by analyzing field duplicate samples. Accuracy is a measure of the bias in a measurement system. Analytical accuracy is assessed by analyzing spiked samples, while sampling accuracy is assessed by analyzing field and trip blank samples. Precision and accuracy objectives for laboratory and field sample analysis are described below, along with the type of samples to be collected for these determinations.

For parameters to be analyzed during the RI, the criteria for precision and accuracy are defined by the ASP-CLP Statement of Work (SOW). Quantitation limits (QL) for the TCL/TAL parameters are provided in Attachment B-1.

Four types of field quality control (QC) samples will be collected to determine precision and accuracy, i.e., field blank, field duplicate, trip blank, and matrix spike/matrix spike duplicate (MS/MSD) samples. Prior to installing the dedicated well pumps, one field equipment blank sample will be analyzed for each matrix type (groundwater) and for every batch of samples or every 20 samples analyzed, whichever is more frequent. Field blank samples will be analyzed to check for procedural contamination and ambient conditions at the Site that may result in sample contamination. Subsequent to installation in monitoring wells, field blanks will not be collected from dedicated equipment.

One duplicate groundwater sample will be collected for each 20 samples submitted for laboratory analysis. Duplicate samples will be analyzed to check sampling and analytical precision. An advisory limit of ±20 percent relative percent difference will be used for duplicate sample results that are greater than five times the QL (Attachment B-1). An advisory limit of ±QL will be used for duplicate sample results that are less than five times the QL.

For every cooler that contains water samples for VOC analysis, one trip blank sample will also be shipped and analyzed for VOCs. The trip blank sample accompanies the other samples to discern if any of the samples could have become contaminated during shipping and handling.

MS/MSD samples will be collected once for every 20 samples for VOCs in groundwater. MS/MSD samples are used to determine analytical accuracy. Percent recovery values for these samples will be compared to acceptance criteria in the ASP-CLP SOW.

Field measurements will be made for pH, specific conductance, and temperature. Water levels in monitoring wells will also be measured. Field measurement, calibration, and maintenance procedures are described in the FSP. Accuracy and precision criteria for

field measurements are shown in Table B-3. Field instruments will be calibrated and verified against standards of known concentration to determine accuracy. Precision will be based on the standard deviation of a set of replicate measurements.

The accuracy of pH measurements will be assessed by performing two pH measurements on three standard buffer solutions. Each measurement must be within ±0.2 pH units of the standard. Precision is defined as within 0.3 pH units of the mean. Between measuring each replicate, the electrode will be withdrawn and rinsed with distilled water. This calibration will be performed at least at the beginning and end of each sampling event.

The accuracy of specific conductance measurements will be assessed by performing measurements on the calibration standards. Each measurement must be 15 percent of the standard. Calibration will be checked at the beginning and end of each sampling event.

Temperature will be measured using a thermocouple on the pH meter. Accuracy is considered ±10 percent of the standard value.

Static water levels in monitoring wells will be measured using an electronic water sounder accurate to 0.01 foot. The sounder will be calibrated with a steel tape before it is shipped to the Site.

5.0 CUSTODY PROCEDURES

Sample possession and handling will be traced from collection to the final disposition of the sample. "Custody" is maintained if a sample is:

- In the actual possession of an authorized person,
- In view of an authorized person after being in his possession,
- Locked or sealed up after being in possession of an authorized person, and
- In a secure storage room or similar area.

The following sections describe sample custody procedures for the field, laboratory, and project files.

5.1 FIELD SAMPLE CUSTODY PROCEDURES

Field chain-of-custody is necessary to maintain and document sample possession prior to and during shipping. The principal documents used to identify samples and document possession are chain-of-custody records (Attachment B-2).

Sample custody will begin when samples are collected. Each sample will be labeled with the following information: unique sample identification number, sample location, date and time of collection, and analyses to be performed. Specific procedures for sample identification and numbering are presented in the FSP. The labeled sample will be placed into an iced cooler in the possession of a sampler. A temperature check container will be included in each shipment.

Sampling personnel are responsible for initiating the chain-of-custody record and maintaining custody of samples until they are relinquished to another custodian or to the shipper. A line item on the field chain-of-custody record will be immediately filled out and initialed by the sampling personnel. When all line items are completed, or when the samples are prepared for final packaging before shipment, the sampling personnel will sign, date, and write the time on the form. Each individual who handles a sample and who subsequently assumes responsibility for the sample will sign the chain-of-custody form.

Sample containers will be packaged appropriately to prevent breakage during shipment and placed in a cooler. Chain-of-custody forms and any other required sample documentation will be enclosed in a waterproof plastic bag and enclosed in the cooler or hand-delivered to the laboratory courier. Each cooler will be securely taped shut with strapping tape. Custody seals will then be placed on the front and back of each cooler to detect unauthorized tampering with the samples before receipt by the laboratory. Field chain-of-custody procedures end when the laboratory receives the samples.

5.2 LABORATORY SAMPLE CUSTODY PROCEDURES

After receiving samples shipped from the Site, the project laboratory will maintain a custody record throughout sample preparation and analysis. Laboratory custody procedures for project samples undergoing analyses are specified in the ASP-CLP SOW.

The project samples will be stored at the laboratory for a period of time related to the type and nature of the samples. For example, maximum laboratory holding times for VOCs are six weeks. When the storage times have expired, the laboratory will dispose of the samples in accordance with applicable regulations.

5.3 PROJECT FILES

Viacom will be responsible for maintaining original documents in a designated secured area. Copies of field chain-of-custody forms and laboratory reports will be maintained in the Cummings/Riter project file located in Pittsburgh, Pennsylvania. Upon completion of the project, the records will be submitted to Viacom. The final project file will be maintained by Viacom, for the duration specified in the Order, in their offices in Pittsburgh, Pennsylvania. This file will consist of reports, correspondence, field notes, photographs, logbooks, field calibration data, field analytical data, laboratory data, data usability summary reports, data validation reports (if required), and data assessment reports.

6.0 SAMPLING PROCEDURES

Sample collection procedures and sample locations are described in the FSP. Viacom will notify NYSDEC at least 14 days in advance of sample collection activities.

7.0 CALIBRATION PROCEDURES AND FREQUENCY

Both laboratory and field equipment must be calibrated on a regular basis to ensure the accuracy of analyses. The following sections outline the procedures and frequency for equipment calibration for this project.

7.1 LABORATORY EQUIPMENT

The project laboratory will conduct chemical analyses on samples collected at the Site. The laboratory is required to follow equipment calibration procedures specified in the ASP-CLP SOW or the appropriate analytical methods specified in Table B-1. The ASP-CLP SOW provides the procedures and frequencies for initial and continuing calibrations and for evaluating calibration data.

7.2 FIELD EQUIPMENT

Field measurements will be made during groundwater sampling. Field measurements during groundwater sampling include pH, specific conductance, dissolved oxygen, oxygen-reduction potential, turbidity, temperature, and water level. Table B-4 lists the minimum calibration frequency for the measured field parameters. Calibration procedures for the field instruments are specified in the Standard Operating Procedures (SOPs) in Attachment A-1 of the FSP.

For most instruments, calibrations will be performed each sampling day. If the results of a calibration do not meet field QC acceptance criteria for accuracy, the instrument response will be adjusted to agree with the calibration standard, using the calibration procedures in the SOP. If acceptable calibration cannot be obtained, the associated data will be flagged "J" to indicate the data are estimated.

Calibration standards used by Cummings/Riter on this project will be either directly traceable to the National Institute of Standards and Technology or commercially prepared standards of certified accuracy. Lot numbers of commercially prepared standards will be recorded.

8.0 ANALYTICAL PROCEDURES

Analytical procedures are selected to meet the often conflicting requirements of sensitivity (low detection limit), specificity (correct chemical identification), and speed (interval between sampling and availability of results). A combination of field and laboratory analytical procedures will be followed during the RI at the Site.

The project laboratory (STL) will perform the analytical testing. Analytical methods include appropriate ASP-CLP procedures for organics and for inorganics. Samples of waste collected from the test pits will be analyzed for RCRA characteristics using USEPA SW-846 methods. Chemical analyses of groundwater samples will be conducted by the laboratory for parameters listed in Table B-1. Specific method quantitation limits are provided in Attachment B-1.

Field analyses for groundwater samples will include pH, specific conductance, dissolved oxygen, oxygen/reduction potential, turbidity, and temperature plus the water level in wells. Field parameters will be measured with standard commercial equipment. Specific methods are included with the SOPs in Attachment A-1 of the FSP.

9.0 INTERNAL QUALITY CONTROL CHECKS

An internal QC system is a set of routine internal procedures for assuring that the data output of a measurement system meets prescribed criteria for data quality. Inherent and implied in this control function is a parallel function of measuring and defining the quality of the data output. A well-designed internal QC program is capable of controlling and measuring the quality of the data in terms of precision and bias. Precision reflects the influence of the inherent variability in any measurement system. Bias represents a consistent error in the measurement system.

For samples collected at the Site, Viacom will use the internal QC measures described in the following sections to ensure a high degree of precision and accuracy.

9.1 FIELD QUALITY CONTROL CHECKS

As a check on field sampling QA/QC, trip blanks, field blanks, equipment rinsate samples, and field duplicates will be sent to the laboratory at specified frequencies. The frequencies at which these samples will be collected and the number of such samples are discussed in the following subsections.

Field QC checks also include regular and continuing calibration of measuring equipment. This equipment includes multi-parameter water quality meters for groundwater.

9.1.1 Trip Blanks

A trip blank for liquid samples is a sample bottle filled by the laboratory with analyte-free reagent water, handled like a sample but not opened, and returned to the laboratory for analysis. Trip blanks are analyzed for VOCs only and are used to determine if VOCs are introduced during sample handling and shipment. One trip blank will be included with each shipping cooler of VOC samples sent to the laboratory.

9.1.2 Equipment Rinsate and Field Blanks

Equipment rinsate samples are defined as analyte-free deionized water poured into or pumped through the sampling device, transferred to the sample bottle, then transported to the laboratory for analysis. These samples help determine whether sampling equipment

was sufficiently decontaminated so as to prevent cross-contamination between samples. When dedicated sampling equipment is used, field blanks will be collected. Field blanks are collected by pouring analyte free water directly into clean sample bottles. This field blank is preserved and analyzed in the same manner as other samples. Equipment rinsate blanks will be collected if sampling equipment is decontaminated and moved between well locations. The equipment rinsate blanks will be analyzed for the same parameters as the sampled media. Both equipment rinsate and field blanks will be collected at a frequency of one for every 20 samples collected.

9.1.3 Field Duplicate Samples

A field duplicate is defined as two or more samples collected independently at a sampling location during a single act of sampling. Procedures for collecting field duplicate samples are described in Section 5.0 of the FSP.

Field duplicates will be indistinguishable by the laboratory from other samples. Therefore, one complete sample set will be identified with a "coded" or false identifier in the same format as other identifiers used for this sample matrix. Both the coded and the true identifiers will be recorded in the field notebook. On the chain-of-custody forms, the coded identifier will be used. These coded field duplicates are used to assess the representativeness of the sampling procedure as well as laboratory precision. One field duplicate sample will be collected for every 20 samples collected.

9.2 LABORATORY QUALITY CONTROL CHECKS

QC data are necessary to determine precision and accuracy of the analyses and to demonstrate the absence of interferences and contamination of glassware and reagents. The ASP-CLP methods to be followed for this project include the use of laboratory blanks, matrix spikes, initial and continuing calibrations and similar measures.

10.0 DATA REDUCTION, VALIDATION, AND REPORTING

The data reduction, validation, and reporting process includes the steps between the instrument or visual reading and the final complete report. Data reduction includes calculations for unit conversions, dilutions and similar factors and preparation of the initial report. To validate the data, someone other than the analyst reviews the data reduction procedures to determine the acceptability of the data and any necessary qualifiers. Reporting includes transcribing these validated data into the final report and interpreting them. Reduction and validation differ among analytical methods, but the reporting process is common to all data.

10.1 DATA REDUCTION

The project laboratory conducting analyses on environmental samples collected during the RI will be required to follow data reduction procedures specified in the ASP-CLP SOW and the methods identified in Table B-1.

Field parameters to be measured include the pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity of groundwater and surface water samples and groundwater elevations. The field parameters will be measured by direct observation or by direct reading instruments. Results will be recorded directly on data sheets and no data reduction is required.

10.2 DATA USABILITY

This section outlines data usability procedures for both laboratory and field measurements.

10.2.1 Laboratory Measurements

A data usability evaluation will be performed on the analytical data in accordance with the procedures listed in the NYSDEC document, *Guidance for the Development of Data Usability Summary Reports*. If unusable data are present, third-party data validation may be conducted in accordance with applicable USEPA guidance, including Region II modifications, if any.

10.2.2 Field Measurements

Field data will be generated by qualified field personnel and immediately entered on the proper form or in a general field logbook. These data will be regularly reviewed for completeness, consistency, and proper procedures (such as calibration) by the Project Supervisor. If discrepancies are found, the appropriate corrective action, usually a remeasurement, will be taken promptly.

Calibration results will be checked to verify that initial and continuing calibrations meet the QC acceptance criteria for accuracy in Table B-3 and to determine that recalibration and reanalysis of samples occurred when these criteria were not met. Results of duplicate samples will be checked to verify that QC acceptance criteria for precision were met. Field blank results will also be reviewed as a check on equipment decontamination procedures and false positive results.

10.3 REPORTING

For all ASP-CLP analyses, the required laboratory data deliverable package will include the NYSDEC "Category B" package. CLP-like deliverables will be requested for the waste analyses using USEPA SW-846 methods. Field parameters for groundwater samples (pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity, and depth to groundwater) will be recorded on sample collection forms.

Data generated in the field will be initially stored in a project file maintained by the Project Supervisor. As soon as possible, the file will be transferred to Cummings/Riter's Pittsburgh office and grouped with off-site laboratory reports and other data into the main project file. This file will be organized to allow ready identification and retrieval of desired information.

Quantitative information can be entered into databases. Databases will be printed out, checked against the original data sheets and corrected before use. Cummings/Riter will then use existing programs (and any necessary modifications) to produce data appendices. Any modified programs used to manipulate data will be tested before use with an actual or known data set. Completed data appendices will be checked against the original data sheets.

11.0 PERFORMANCE AND SYSTEMS AUDITS

Laboratory and fieldwork conducted as part of the Townley Hill Road RI/FS project may be subject to performance and systems audits. Performance audits check the operation of a specific study component such as a sampling method or an analytical procedure. Systems audits are broader and include a thorough evaluation of both laboratory and field quality assurance methods, such as data validation procedures, corrective action procedures, or sample custody procedures. Audits may be internal (conducted by QA personnel within the organization being audited) or external (conducted by NYSDEC or another outside agency).

Audits are randomly scheduled by QA personnel and are generally not announced beforehand. If QA personnel find what seems to be a systematic problem with a particular component of the sampling and analysis program, they will normally perform a series of audits on related activities to identify and correct the problem. Audit results are incorporated into the project reporting system, normally in the monthly report.

11.1 LABORATORY AUDITS

At the request of NYSDEC, Viacom will conduct an independent audit of the project laboratory to verify analytical capability and compliance with the SAP. The audit will be conducted sometime during the time the laboratory is analyzing samples. The project laboratory participates in the state Environmental Laboratory Accreditation Program (ELAP) and is a NYSDEC-accredited ASP-CLP laboratory.

11.2 FIELD AUDITS

Internal performance and systems audits of field activities at the Site will be coordinated by the project QA Officer. A field audit will be conducted at the request of NYSDEC to verify that the project sampling procedures are being correctly followed.

A checklist will be prepared based on information contained in the QAPP, FSP, and the HASP. Using the checklist, auditors will evaluate whether field personnel are operating in compliance with procedures specified in these plans, including:

- Initial and continuing equipment calibration,
- Field measurements,
- Sample collection,
- Sample labeling, handling, and custody,
- Data collection and recordkeeping,
- Equipment and personnel decontamination, and
- Health and safety monitoring.

Audit reports will be submitted to NYSDEC within 15 days of completion of the audit. The report will summarize the audit findings, including series deficiencies that adversely reflect the data. Any corrective action taken will also be included in the report.

12.0 PREVENTATIVE MAINTENANCE

Preventative maintenance (PM) includes inspecting, repairing, and adjusting equipment and instruments before deficiencies have a significant effect on performance. These techniques are a necessary part of the procedures for carrying out a particular operation with a particular type of equipment.

12.1 LABORATORY EQUIPMENT

The project laboratory will follow necessary PM actions detailed in its internal SOPs as well as PM required by the analytical methods. These include 1) the tuning and calibration (both initial and continuing) of machines, 2) the use of internal standards, and 3) related activities such as corrective action. Details of these requirements are included in the methods and the laboratory QAPP.

12.2 FIELD EQUIPMENT

Viacom and its consultants will perform regular PM of field equipment. Field monitoring equipment will be maintained and calibrated in accordance with the manufacturers recommended schedules and procedures. Field personnel will maintain records of service, calibration, and use. Instrument problems encountered in the field will be detailed in the field daily log and dealt with on site, if possible.

The primary PM technique for field analyses is the preliminary calibration of the equipment. This typically includes a battery check, zero adjustment, and a linearity (or high end) adjustment. Some special items, such as keeping the pH electrode tip wet and refilling it with electrolyte, are required for specific equipment. Failure to calibrate or maintain calibration during an analysis requires corrective action, as discussed in Section 14.2.

To minimize down time in the field, Cummings/Riter maintains an inventory of backup instruments and commonly stocks spare parts for field equipment. Spare parts and backup equipment can be shipped to any field site within 24 hours of request. Typical

spare parts for these instruments include D-cell batteries, replacement probes, and maintenance kit (including O-rings and gaskets) included with the instrument. Cummings/Riter also maintains agreements with instrument rental companies to ensure availability of backup instruments.

13.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS

The QA objectives described in Section 4.0 are the goals Viacom believes are necessary to satisfactorily complete RI field investigations at the Site. This section discusses the means for assessing whether objectives have been met. The assessment is a part of the data handling process in Section 10.0.

13.1 LABORATORY RESULTS

The precision of laboratory results will be determined primarily by calculating the relative percent difference (RPD) for duplicate samples. These will include field duplicates, laboratory duplicates, and MS/MSD samples. The laboratory will determine the accuracy of results by calculating percent recovery values for MS/MSD samples. In addition, the laboratory will use laboratory blanks, calibration standards, and internal standards to establish analytical accuracy, as detailed in the methods. Completeness of laboratory results will be determined by comparing the number of validated, usable results to the number of samples planned.

13.2 FIELD RESULTS

The precision of field results will be determined by the use of replicate measures. Accuracy of field results will be determined by evaluating instrument response to suitable standards, such as purchased standard solutions for pH. Completeness for field data will be determined by comparing the number of acceptable measurements with the number specified in the FSP.

13.3 CALCULATIONS

The primary statistic used for estimating precision is RPD for duplicate measurements. RPD is calculated as follows:

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

where X_1 and X_2 are the results of duplicate measurements and $|X_1-X_2|$ is the absolute value of the difference in the two measurements.

If there are three or more replicates, the percent relative standard deviation (% RSD) will be calculated as a measure of precision:

$$\%RSD = (SD / \overline{X}) \times 100$$

where $\overline{X}$ is the average of the data points (X_1, X_2, . . . X_n) and SD is the standard deviation of the individual measurements.

Accuracy can be estimated by calculating the percent difference (%D) between an instrument response and a known standard:

$$\%D = (S - X) / S \times 100$$

where S is the concentration of a known standard and X is the measured instrument response. This determination of accuracy can be used for both laboratory and field measurements.

Alternatively, accuracy can be measured as percent recovery (%R) from the analytical results of surrogate or analyte compounds spiked into a sample:

$$\%R = (M - N) / S \times 100$$

where M is the measured analyte concentration in the spiked sample, N is the concentration of the analyte in the original sample, and S is the analyte concentration spiked into the original sample. This measurement of accuracy is most appropriate for laboratory results.

Percent completeness (%C) is a measure of 1) the number of samples actually collected compared to the number of samples required for characterization and 2) the amount of valid data obtained compared to the amount of data expected under normal conditions. In

most cases, the "number of samples required for characterization" and the "amount of data expected under normal conditions" is the same as the number of samples planned, N. Thus, percent completeness can be defined as:

$$\%C = V / N \times 100$$

where V is the number of valid results and N is the total number of samples planned.

Percent completeness can also be measured as the percent of samples planned that were actually collected:

$$\%C = C / N \times 100$$

where C is the number of samples collected and N is the total number of samples planned.

14.0 CORRECTIVE ACTION

Corrective action will be initiated whenever statistical measures indicate exceedance of a control unit. These situations may be identified during performance or system audits or by the analysts/samplers themselves. Corrective action may take place in the laboratory or in the field.

14.1 LABORATORY CORRECTIVE ACTION

If QC audits identify a noncompliance, the problem will be reported to the USEPA. Frequently, problems with analyses result from matrix effects, which make results questionable (estimates, qualified as "J") or unusable (rejected, qualified as "R"). The laboratory and the project QA Officer will jointly determine the acceptability of data and the appropriate corrective action. Corrective actions may include:

- Reanalyzing samples if holding time criteria permit,
- Resampling and analyzing the samples,
- Evaluating and amending sampling and analytical procedures, and
- Accepting data and acknowledging a level of uncertainty.

14.2 FIELD CORRECTIVE ACTION

Field analyses will be conducted for groundwater and surface water samples. Corrective actions for problems with field analyses will usually be resolved within Cummings/Riter, with occasional input from NYSDEC and/or Viacom. A typical instance would be a pH meter that fails the battery check. The operator will put in a new battery or recharge it and resume calibration. A total failure of an instrument can usually be resolved by sending another instrument to the site by overnight carrier and repeating the analyses the next day.

During the field investigations, any problems that affect the collection of samples and monitoring data will be documented and recorded in a field log by the person who identified the problem. Serious problems that affect the overall project objectives will be brought to the attention of the Project Manager. The Project Manager will notify the Viacom Project Coordinator. The Project Manager, Project Supervisor, or their designees are responsible for identifying the causes of the problems and developing a solution.

REFERENCES

New York State Department of Environmental Conservation, 1998, "Focused Remedial Investigation Report, Townley Hill Road Dump Site," September.

USEPA, 1988, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, EPA ID No. 540/G-89/004, October.

TABLE B-1

SUMMARY OF SAMPLING PROGRAM

SAMPLE MATRIX	PARAMETERS[a]	SAMPLES	FIELD DUPLICATES	MS/MSD SAMPLES	EQUIPMENT RINSATE BLANKS[b]	TRIP BLANKS[c]
Soil (Geoprobe® borings)	Cadmium Lead	80[d]	4[d]	4[d]	4[d]	--
	Full TCL/TAL Fluoride	4	--[e]	--[e]	--[e]	--
Soil – Test Pits	Full TCL/TAL Fluoride	30	2	2	1	--
Waste	RCRA Characteristics	3	--	--	--	--
Surface Water	Full TCL/TAL Fluoride	8	1	1	1	1
Sediment	Full TCL/TAL Fluoride	8	1	1	1	--
Groundwater	Full TCL/TAL Fluoride	8	2	2	2	2

(a) Parameters include: Full TCL/TAL includes VOCs, SVOCs, pesticides/PCBs, and TAL inorganics.
RCRA characteristics include ignitability, corrosivity, and reactivity, and toxicity characteristic leaching procedure (TCLP) VOCs, SVOCs, PCB/pesticides, and metals.

(b) Equipment rinsate blanks will not be collected if disposable sampling tools are used.

(c) One trip blank will be shipped with each container submitted to the laboratory for VOC analyses. The total number of trip blanks in the table is an estimate.

(d) Samples to be analyzed sequentially. Actual number of analyses will depend on results, with a maximum of 80 samples. The numbers of actual QC samples will be prorated according to the actual number of field samples.

(e) Samples to be analyzed in same Sample Delivery Group as soils from test pits.

TABLE B-2

SAMPLE CONTAINERS, VOLUMES, PRESERVATIVES, AND HOLDING TIMES

PARAMETER	CONTAINER	CONTAINER VOLUME	NO. OF CONTAINERS	PRESERVATIVES	HOLDING TIME [1]
SOILS/WASTE:					
Cadmium Lead	glass	4 oz	1	Ice	6 months
TCL SVOCs	glass	4 oz [2]	1	Ice	10 days to extraction; 40 days analysis from extraction
TCL Pesticides/PCBs	glass	4 oz[2]	1	Ice	10 days to extraction; 40 days analysis from extraction
Herbicides	glass	4 oz [2]	1	Ice	14 days to extraction; 40 days analysis from extraction
TAL Inorganics	glass	4 oz[2]	1	Ice	6 months except for CN at 12 days and Hg at 26 days
Fluoride	glass	4 oz[2]	1	Ice	28 days
RCRA Hazard Analysis	glass	4 oz	2	Ice	14 days for reactivity
TCLP VOCs	glass	4 oz	1	None	14 days to TCLP extract; 14 days to analysis
TCLP SVOCs	glass	16 oz [3]	1	None	14 days to TCLP extract; 7 days to extraction and 40 days for analysis from extraction
TCLP Pesticides/Herbicides	glass	16 oz [3]	1	None	14 days to TCLP extract; 7 days to extraction and 40 days for analysis from extraction
TCLP Inorganics	glass	16 oz [3]	1	None	14 days to TCLP extract; 6 months for analysis; except Hg at 26 days

TABLE B-2
(Continued)

PARAMETER	CONTAINER	CONTAINER VOLUME	NO. OF CONTAINERS	PRESERVATIVES	HOLDING TIME [1]
AQUEOUS:					
TCL VOCs	glass	40 ml septa	3	HCl	10 days
TCL SVOCs	glass	1000 ml	3	Ice	5 days to extract; 40 days for analysis from extraction
TCL Pesticides/PCBs	glass	1000 ml	3	Ice	5 days to extract; 40 days for analysis from extraction
Herbicides	glass	1000 ml	3	Ice	7 days to extract; 40 days for analysis from extraction
TAL Inorganics (metals)	plastic	1000 ml	1	HNO_3	6 months except for Hg 26 days
Cyanide	plastic	500 ml	1	NaOH	12 days
Fluoride	plastic	250 ml	1	Ice	28 days

(1) Holding time is calculated from the Verified Time of Sample Receipt (VTSR) at the laboratory. CLP samples must be received by the laboratory within 48 hours of sample collection.
(2) Volumes can be combined into two 8-oz glass containers.
(3) All analyses can be performed from one 16-oz glass container. The following analyses do not require CLP methodology: Fluoride, Herbicides, TCLP, RCRA characteristics. The holding times listed are method-specific holding times.

TABLE B-3

FIELD QC ACCEPTANCE CRITERIA FOR ACCURACY AND PRECISION

PARAMETER	ACCURACY[a]	PRECISION
pH	±0.2 pH unit	±0.3 pH unit
Specific Conductance	±5 percent	±10 percent
Temperature	±1°C	NS[b]
Dissolved Oxygen	NS	±5 percent
Turbidity	NS	>7 NTUs: ±5 percent <7 NTUs: ±10 percent

a. Accuracy measured against a standard of known concentration.
b. NS = Not Specified.

TABLE B-4

CALIBRATION FREQUENCY FOR FIELD PARAMETERS

PARAMETER	CALIBRATION STANDARDS	CALIBRATION FREQUENCY[a]	CONTINUING CALIBRATION
Ph	Ph 4, Ph 7, & Ph 10	Daily	None
Specific Conductance	100 + 1000 umhos/cm	Daily	None
Water Level	Measured Steel Tape	Once During Project	None
Organic Vapors	100 ppm Isobutylene Gas	Daily	None

a. Where applicable, instruments will be checked against calibration standards at the beginning of each sampling day (before any field measurements) of the sampling event.

ATTACHMENT B-1

QUANTITATION LIMITS

USEPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

ORGANICS ANALYSIS

Multi-Media, Multi-Concentration

OLM04.2
May 1999

Exhibit C - Target Compound List and Contract Required Quantitation Limits

Table of Contents

1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Volatiles	CAS Number	Quantitation Limits Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg	On Column (ng)
	1. Dichlorodifluoromethane	*75-71-8*	*10*	*10*	*1200*	*(50)*
	2. Chloromethane	74-87-3	10	10	1200	(50)
	3. Vinyl Chloride	75-01-4	10	10	1200	(50)
	4. Bromomethane	74-83-9	10	10	1200	(50)
	5. Chloroethane	75-00-3	10	10	1200	(50)
	6. Trichlorofluoromethane	*75-69-4*	*10*	*10*	*1200*	*(50)*
	7. 1,1-Dichloroethene	75-35-4	10	10	1200	(50)
	8. 1,1,2-Trichloro-1,2,2-trifluoroethane	*76-13-1*	*10*	*10*	*1200*	*(50)*
	9. Acetone	67-64-1	10	10	1200	(50)
	10. Carbon Disulfide	75-15-0	10	10	1200	(50)
	11. Methyl Acetate	*79-20-9*	*10*	*10*	*1200*	*(50)*
	12. Methylene Chloride	75-09-2	10	10	1200	(50)
	13. trans-1,2-Dichloroethene	*156-60-5*	10	10	1200	(50)
	14. Methyl tert-Butyl Ether	*1634-04-4*	*10*	*10*	*1200*	*(50)*
	15. 1,1-Dichloroethane	75-34-3	10	10	1200	(50)
	16. cis-1,2-Dichloroethene	*156-59-2*	10	10	1200	(50)
	17. 2-Butanone	78-93-3	10	10	1200	(50)
	18. Chloroform	67-66-3	10	10	1200	(50)
	19. 1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
	20. Cyclohexane	*110-82-7*	*10*	*10*	*1200*	*(50)*
	21. Carbon Tetrachloride	56-23-5	10	10	1200	(50)
	22. Benzene	71-43-2	10	10	1200	(50)
	23. 1,2-Dichloroethane	107-06-2	10	10	1200	(50)
	24. Trichloroethene	79-01-6	10	10	1200	(50)
	25. Methylcyclohexane	*108-87-2*	*10*	*10*	*1200*	*(50)*
	26. 1,2-Dichloropropane	78-87-5	10	10	1200	(50)
	27. Bromodichloromethane	75-27-4	10	10	1200	(50)
	28. cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
	29. 4-Methyl-2-pentanone	108-10-1	10	10	1200	(50)
	30. Toluene	108-88-3	10	10	1200	(50)
	31. trans-1,3-Dichloropropene	10061-02-6	10	10	1200	(50)
	32. 1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
	33. Tetrachloroethene	127-18-4	10	10	1200	(5O)
	34. 2-Hexanone	591-78-6	10	10	1200	(50)
	35. Dibromochloromethane	124-48-1	10	10	1200	(50)

1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

	Volatiles	CAS Number	Quantitation Limits Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg	On Column (ng)
	36. 1,2-Dibromoethane	*106-93-4*	*10*	*10*	*1200*	*(50)*
	37. Chlorobenzene	108-90-7	10	10	1200	(50)
	38. Ethylbenzene	100-41-4	10	10	1200	(50)
	39. Xylenes (total)	1330-20-7	10	10	1200	(50)
	40. Styrene	100-42-5	10	10	1200	(50)
	41. Bromoform	75-25-2	10	10	1200	(50)
	42. Isopropylbenzene	*98-82-8*	*10*	*10*	*1200*	*(50)*
	43. 1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200	(50)
	44. 1,3-Dichlorobenzene	*541-73-1*	*10*	*10*	*1200*	*(50)*
	45. 1,4-Dichlorobenzene	*106-46-7*	*10*	*10*	*1200*	*(50)*
	46. 1,2-Dichlorobenzene	*95-50-1*	*10*	*10*	*1200*	*(50)*
	47. 1,2-Dibromo-3-chloropropane	*96-12-8*	*10*	*10*	*1200*	*(50)*
	48. 1,2,4-Trichlorobenzene	*120-82-1*	*10*	*10*	*1200*	*(50)*

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Semivolatiles	CAS Number	Quantitation Limits Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg	On Column (ng)
	49. Benzaldehyde	*100-52-7*	*10*	*330*	*10000*	*(20)*
	50. Phenol	108-95-2	10	330	10000	(20)
	51. bis-(2-Chloroethyl) ether	111-44-4	10	330	10000	(20)
	52. 2-Chlorophenol	95-57-8	10	330	10000	(20)
	53. 2-Methylphenol	95-48-7	10	330	10000	(20)
	54. 2,2'-oxybis(1-Chloropropane)[1]	108-60-1	10	330	10000	(20)
	55. Acetophenone	*98-86-2*	*10*	*330*	*10000*	*(20)*
	56. 4-Methylphenol	106-44-5	10	330	10000	(20)
	57. N-Nitroso-di-n propylamine	621-64-7	10	330	10000	(20)
	58. Hexachloroethane	67-72-1	10	330	10000	(20)
	59. Nitrobenzene	98-95-3	10	330	10000	(20)
	60. Isophorone	78-59-1	10	330	10000	(20)
	61. 2-Nitrophenol	88-75-5	10	330	10000	(20)
	62. 2,4-Dimethylphenol	105-67-9	10	330	10000	(20)
	63. bis(2-Chloroethoxy) methane	111-91-1	10	330	10000	(20)
	64. 2,4-Dichlorophenol	120-83-2	10	330	10000	(20)
	65. Naphthalene	91-20-3	10	330	10000	(20)
	66. 4-Chloroaniline	106-47-8	10	330	10000	(20)
	67. Hexachlorobutadiene	87-68-3	10	330	10000	(20)
	68. Caprolactam	*105-60-2*	*10*	*330*	*10000*	*(20)*
	69. 4-Chloro-3-methylphenol	59-50-7	10	330	10000	(20)
	70. 2-Methylnaphthalene	91-57-6	10	330	10000	(20)
	71. Hexachlorocyclo-pentadiene	77-47-4	10	330	10000	(20)
	72. 2,4,6-Trichlorophenol	88-06-2	10	330	10000	(20)
	73. 2,4,5-Trichlorophenol	95-95-4	25	830	25000	(50)

[1] Previously known by the name bis(2-Chloroisopropyl)ether.

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

	Semivolatiles	CAS Number	Quantitation Limit Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg	On Column (ng)
74.	*1,1'-Biphenyl*	*92-52-4*	*10*	*330*	*10000*	*(20)*
75.	2-Chloronaphthalene	91-58-7	10	330	10000	(20)
76.	2-Nitroaniline	88-74-4	25	830	25000	(50)
77.	Dimethylphthalate	131-11-3	10	330	10000	(20)
78.	2,6-Dinitrotoluene	606-20-2	10	330	10000	(20)
79.	Acenaphthylene	208-96-8	10	330	10000	(20)
80.	3-Nitroaniline	99-09-2	25	830	25000	(50)
81.	Acenaphthene	83-32-9	10	330	10000	(20)
82.	2,4-Dinitrophenol	51-28-5	25	830	25000	(50)
83.	4-Nitrophenol	100-02-7	25	830	25000	(50)
84.	Dibenzofuran	132-64-9	10	330	10000	(20)
85.	2,4-Dinitrotoluene	121-14-2	10	330	10000	(20)
86.	Diethylphthalate	84-66-2	10	330	10000	(20)
87.	Fluorene	86-73-7	10	330	10000	(20)
88.	4-Chlorophenyl-phenyl ether	7005-72-3	10	330	10000	(20)
89.	4-Nitroaniline	100-01-6	25	830	25000	(50)
90.	4,6-Dinitro-2-methylphenol	534-52-1	25	830	25000	(50)
91.	N-Nitroso diphenylamine	86-30-6	10	330	10000	(20)
92.	4-Bromophenyl-phenylether	101-55-3	10	330	10000	(20)
93.	Hexachlorobenzene	118-74-1	10	330	10000	(20)
94.	*Atrazine*	*1912-24-9*	*10*	*330*	*10000*	*(20)*
95.	Pentachlorophenol	87-86-5	25	830	25000	(50)
96.	Phenanthrene	85-01-8	10	330	10000	(20)
97.	Anthracene	120-12-7	10	330	10000	(20)
98.	Carbazole	86-74-8	10	330	10000	(20)
99.	Di-n-butylphthalate	84-74-2	10	330	10000	(20)
100.	Fluoranthene	206-44-0	10	330	10000	(20)
101.	Pyrene	129-00-0	10	330	10000	(20)
102.	Butylbenzylphthalate	85-68-7	10	330	10000	(20)
103.	3,3'-Dichlorobenzidine	91-94-1	10	330	10000	(20)
104.	Benzo(a)anthracene	56-55-3	10	330	10000	(20)
105.	Chrysene	218-01-9	10	330	10000	(20)

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

	Semivolatiles	CAS Number	Quantitation Limits Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg	On Column (ng)
106.	bis(2-Ethylhexyl) phthalate	117-81-7	10	330	10000	(20)
107.	Di-n-octylphthalate	117-84-0	10	330	10000	(20)
108.	Benzo(b)fluoranthene	205-99-2	10	330	10000	(20)
109.	Benzo(k)fluoranthene	207-08-9	10	330	10000	(20)
110.	Benzo(a)pyrene	50-32-8	10	330	10000	(20)
111.	Indeno(1,2,3-cd)-pyrene	193-39-5	10	330	10000	(20)
112.	Dibenzo(a,h)-anthracene	53-70-3	10	330	10000	(20)
113.	Benzo(g,h,i)perylene	191-24-2	10	330	10000	(20)

3.0 PESTICIDES/AROCLORS TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[2]

	Pesticides/Aroclors	CAS Number	Quantitation Limits Water µg/L	Soil µg/Kg	On Column (pg)
114.	alpha-BHC	319-84-6	0.050	1.7	5
115.	beta-BHC	319-85-7	0.050	1.7	5
116.	delta-BHC	319-86-8	0.050	1.7	5
117.	gamma-BHC (Lindane)	58-89-9	0.050	1.7	5
118.	Heptachlor	76-44-8	0.050	1.7	5
119.	Aldrin	309-00-2	0.050	1.7	5
120.	Heptachlor epoxide[3]	*1024-57-3*	0.050	1.7	5
121.	Endosu1fan I	959-98-8	0.050	1.7	5
122.	Dieldrin	60-57-1	0.10	3.3	10
123.	4,4'-DDE	72-55-9	0.10	3.3	10
124.	Endrin	72-20-8	0.10	3.3	10
125.	Endosulfan II	33213-65-9	0.10	3.3	10
126.	4,4'-DDD	72-54-8	0.10	3.3	10
127.	Endosulfan sulfate	1031-07-8	0.10	3.3	10
128.	4,4'-DDT	50-29-3	0.10	3.3	10
129.	Methoxychlor	72-43-5	0.50	17	50
130.	Endrin ketone	53494-70-5	0.10	3.3	10
131.	Endrin aldehyde	7421-93-4	0.10	3.3	10
132.	alpha-Chlordane	5103-71-9	0.050	1.7	5
133.	gamma-Chlordane	5103-74-2	0.050	1.7	5
134.	Toxaphene	8001-35-2	5.0	170	500
135.	Aroclor-1016	12674-11-2	1.0	33	100
136.	Aroclor-1221	11104-28-2	2.0	67	200
137.	Aroclor-1232	11141-16-5	1.0	33	100
138.	Aroclor-1242	53469-21-9	1.0	33	100
139.	Aroclor-1248	12672-29-6	1.0	33	100
140.	Aroclor-1254	11097-69-1	1.0	33	100
141.	Aroclor-1260	11096-82-5	1.0	33	100

[2]There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of pesticides/Aroclors.

[3]Only the exo-epoxy isomer (isomer B) of heptachlor epoxide is reported on the data reporting forms (Exhibit B).

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limit

Parameter		Contract Required Quantitation Level (µg/L)
1.	Aluminum	200
2.	Antimony	60
3.	Arsenic	10
4.	Barium	200
5.	Beryllium	5
6.	Cadmium	5
7.	Calcium	5000
8.	Chromium	10
9.	Cobalt	50
10.	Copper	25
11.	Iron	100
12.	Lead	3
13.	Magnesium	5000
14.	Manganese	15
15.	Mercury	0.2
16.	Nickel	40
17.	Potassium	5000
18.	Selenium	5
19.	Silver	10
20.	Sodium	5000
21.	Thallium	10
22.	Vanadium	50
23.	Zinc	20
24.	Cyanide	10
	Fluoride	100

ATTACHMENT B-2

BLANK FIELD FORMS

CUMMINGS RITER CONSULTANTS, INC.

Date ______________________

Day of Week ______________________

No. ______________________

Sheet __________ of __________

FIELD ACTIVITY REPORT

Project Name:	Project No.
Field Activity:	
CRC Personnel On Site:	
Description on Daily Activities and Events:	

Pay Quantities:	Project Changes/Unusual Observations:

Weather Conditions: *a.m.* *p.m.*	Health & Safety PPE:	Air Monitoring Results:

Contractor(s):	
Field Representative:	Date:

F57/Corp/Forms

CUMMINGS RITER CONSULTANTS, INC.

TEST PIT LOG

PROJECT NAME _____ PROJECT NO. _____ PAGE ____ OF _____

FIELD ENG./GEO. _____ DATE _____ TEST PIT NO. _____

ELEVATION _____

COORD. (N) _____ DEPTH TO GWL. _____ DATE/TIME _____

(E) _____ DEPTH TO GWL. _____ DATE/TIME _____

DEPTH ( )	SAMPLE NO. AND TYPE	SOIL PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS

NOTES:

CUMMINGS RITER CONSULTANTS, INC.

SOIL SAMPLE
FIELD COLLECTION REPORT

Project Name		Project No.	
Date Collected	/ /	Time Collected	
Collected By	Cummings/Riter Consultants		

SAMPLE(S) LOCATION SKETCH (use reverse if necessary)

Sample I.D. No.	Depth of Sample	Soil Description (Color, Composition, Staining, Odor, Field Measurements[1])

Sampling Method

Composite Sample? Y ☐ N ☐ Composite Sample I.D. No.

Describe Compositing

SAMPLE TYPES COLLECTED

Type[2]	Volume	Per Sample?		Per Composite?	
		Y ☐	N ☐	Y ☐	N ☐
		Y ☐	N ☐	Y ☐	N ☐
		Y ☐	N ☐	Y ☐	N ☐
		Y ☐	N ☐	Y ☐	N ☐

Number of Containers

Date Received by Lab / / Laboratory

Weather Conditions

Remarks

1. Organic vapor analysis, pocket penetrometer, etc.
2. Metals, VOA, organics, etc.

CUMMINGS RITER CONSULTANTS, INC.

WATER SAMPLE COLLECTION REPORT

PROJECT ____________________ SAMPLE ID ____________________

PROJECT NO. ____________________ WELL NO. ____________________

SAMPLE DATE _______ / _______ / _______ SAMPLED BY ____________________

SAMPLE TIME (START/END) _______ / _______ SAMPLE SEQUENCE NO. ____________

SAMPLE COLLECTION EQUIPMENT ____

DEPTH TO WATER PRIOR TO PURGING/SAMPLING (FT) _______________ / _______________

RECHARGE TIME ____________________ MEASURED FROM ☐ TOC ☐ TOR ☐ GS

FIELD MEASUREMENTS		
pH	Standard Units	
Specific Conductance	µS/cm	
Water Temperature	°C	
Dissolved Oxygen	ppm	
Redox	mV	
Turbidity	NTU	

METER CALIBRATION PERFORMED? N ☐ Y ☐ DATE ____________

WATER APPEARANCE, IMMISCIBLE PHASES OR ODORS: ____________________

SAMPLING FLOW RATE: ____

SAMPLE TYPES COLLECTED

PARAMETER	VOLUME	# CONTAINERS	FIELD FILTERED?		PRESERVED?	
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐
			Y ☐	N ☐	Y ☐ _____	N ☐

NUMBER OF CONTAINERS ____________ FILTRATION METHOD ____________________

LABORATORY ____________ DELIVERED VIA ____________ DATE ________

WEATHER CONDITIONS ____

COMMENTS ____

CUMMINGS RITER CONSULTANTS, INC.

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

SITE: _____ **TUBING DIAMETER:** _____ inches

PROJECT NO.: _____ **DEPTH TO WATER:** _____ ft TOR

SAMPLING DEVICE: _____ **DEPTH TO PUMP:** _____ ft TOR

DATE: ____/____/____ **FEET OF WATER IN LINE:** _____ feet

WELL I.D.: _____ **VOLUME OF WATER IN LINE:** _____ gallons

(0.005 gal/ft for 3/8" tubing, 0.0023 gal/ft for ¼" tubing)

ELAPSED TIME (min)	DEPTH TO WATER (ft TOR)	pH (s.u.)	SPECIFIC CONDUCTANCE (µS/cm)	TEMPER-ATURE (°C)	DISSOLVED OXYGEN (ppm)	TURBIDITY (NTU)	REDOX (mV)

PURGE START TIME:_____ **PURGE END TIME:** _____ **TOTAL VOLUME PURGED:** ~_____ **gal**

APPROXIMATE PURGE RATE: _____ **ml/min** **PURGED/SAMPLED BY:** _____

WEATHER CONDITIONS: _____

COMMENTS: _____

_____

CUMMINGS RITER CONSULTANTS, INC.

Chain of Custody Record

Page _____ of _____

Lab Quote #_____

Project Name: _____	**Results To:** _____	**Invoice To:** _____
Project Location: _____	Company: _____	Company: _____
Project Number: _____	Address: _____	Address: _____
	_____	_____
Sampled By: (print)	Phone: _____	Phone: _____

Lab ID	Sample Identification	Date	Time	Grab	Composite	Sample Matrix	No. of Bottles	Analysis										Preservatives				Remarks
																		HCL	HNO3	H2SO4	NaOH	

Turnaround Time Required: Normal ____ Rush ____	**1. Relinquished By: (signature)**	**Date**	**Time**	**1. Received By: (signature)**
Sample Disposal: Return to Client ____ Disposal by Lab ____	**2. Relinquished By: (signature)**	**Date**	**Time**	**2. Received By: (signature)**
Known Hazard (flammable/toxic): Yes (comment below) ____ No ____	**3. Relinquished By: (signature)**	**Date**	**Time**	**3. Received By: (signature)**

Special Instructions/Comments:

Sample Condition Upon Receipt:

CUMMINGS RITER CONSULTANTS, INC.

EQUIPMENT CALIBRATION LOG

PROJECT NAME: _____

PROJECT NUMBER: _____

DATE: _____ Performed By: _____

INSTRUMENT TYPE: _____

INSTRUMENT MODEL NUMBER: _____

INSTRUMENT SERIAL NUMBER: _____

DESCRIPTION OF CALIBRATION PROCEDURE:

STANDARD pH OR CONCENTRATION	**INSTRUMENT READING**

REMARKS: _____