Sterling Environmental Engineering, P.C.

NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
SITE #C420029

REMEDIAL WORK PLAN

Prepared for:

Northeast Treaters of New York, LLC
796 Schoharie Turnpike
Athens, New York 12015

Prepared by:

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Latham, New York 12110

June 1, 2015

"Serving our clients and the environment since 1993"

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REMEDIAL WORK PLAN

CERTIFICATION

I, Mark Millspaugh, certify that I am a New York State registered professional engineer and that this Remedial Work Plan was prepared in accordance with all applicable statues and regulations and is in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities will be performed in accordance with the DER-approved work plan and any DER-approved modifications.

Mark P. Millspaugh, P.E.
NY PE 059182

Professional Seal:

LIST OF ACRONYMS

Acronym	Definition
ACGIH	American Conference of Governmental Industrial Hygienists
As	Arsenic
Amsl	Above Mean Sea Level
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing and Materials
AWII	Atlantic Wood Industries, Inc.
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
Bgs	Below Grade Surface
CAMP	Community Air Monitoring Plan
CCA	Chromated Copper Arsenate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
Cr	Chromium
DCP	Dust Control Plan
DER-10	Division of Environmental Remediation/Technical Guidance for Site Investigation and Remediation
EWP	Excavation Work Plan
IDLH	Immediately Dangerous to Life or Health
IRM	Interim Remedial Measure
HASP	Health and Safety Plan
LDR	Land Disposal Restrictions
MCL	Maximum Contaminant Levels
NIOSH	National Institute for Occupational Safety and Health
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PBS	Petroleum Bulk Storage
PEL	Permissible Exposure Limits
PPM	Parts Per Million
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design

LIST OF ACRONYMS
(Continued)

Acronym	Definition
REL	Recommended Exposure Limit
RI	Remedial Investigation
ROD	Record of Decision
SCGs	Standards, Criteria and Guidance
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
TBC	To be considered
TCLP	Toxicity Characteristic Leaching Procedure
TLV	Threshold Limit Value
TWA	Time-Weighted Average
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
UTS	Universal Treatment Standards

1.0 INTRODUCTION AND PURPOSE

This Remedial Work Plan has been prepared by Sterling Environmental Engineering, P.C. (STERLING) on behalf of Northeast Treaters of New York, LLC (hereinafter "Northeast Treaters") for Brownfield Cleanup Program (BCP) Site #C420029 (hereinafter "the Site"). The Site is limited to the easternmost portion of the Northeast Treaters property located at 796 Schoharie Turnpike in the Town of Athens, Greene County, New York. The location of the Northeast Treaters Property is presented on Figure 1. Figure 2 presents an aerial view of the facility and the boundaries of the Site.

Investigations conducted at the Site indicate the presence of chromium and arsenic contamination in onsite soil. This Remedial Work Plan provides a summary of Site conditions, an alternatives analysis to address Site contamination, and detailed plans and specifications for the preferred remedial alternative.

1.1 Project Description

Northeast Treaters operates a pressure treated wood manufacturing facility located on approximately 13 acres on the north side of the Schoharie Turnpike in the Town of Athens, New York. The facility was originally constructed in the mid-1970s. Northeast Treaters seeks to modernize the existing plant in order to remain competitive, energy-efficient and current with environmental, health and safety standards. The key elements associated with the proposed facility modernization include:

- In-place capping of a 30 ft. x 57 ft. (1,710 square feet) northern section of the existing drip pad with a protective cover;
- Construction of a new 88 ft. x 200 ft. (17,600 square feet) drip pad over the remaining portion of the existing drip pad;
- Construction of a new 88 ft. x 200 ft. (17,600 square feet) building (Process Building) over the entire new drip pad;
- Installing modern and efficient pressure treating equipment over a containment structure;
- Consolidating existing bulk storage activities in the Process Building, inside an improved secondary containment structure;
- Construction of a new 31.5 ft. x 50 ft. (1,575 square feet) office to replace the existing offices;
- Limited Site grading in the immediate vicinity of the Process Building;
- Paving the area beyond the processing building;
- Storm water drainage improvements; and
- Implementing a plan to manage stormwater during the construction process.

In order to implement the proposed upgrade, the owner must construct spread footers with frost walls and piers for the new processing building which require removal of a portion of the existing concrete drip pad.

1.2 Facility Background

The Northeast Treaters facility originally operated as a saw mill owned by Atlantic Wood Industries, Inc. (AWII). Operation as a pressure treating wood manufacturing facility began in 1979. For a period of time, the facility utilized chromated copper arsenate (CCA) to pressure treat wood products. In 2003 the facility switched to Micronized Copper Azole, a non-hazardous preservative. The existing facility consists of three (3) main buildings: the Lumber Stacking Building, the Process Building and the Maintenance Building. Wood is treated in the Process Building in an 80 foot long by 6 foot diameter treatment cylinder. The cylinder is filled with a solution and a pressure is then created to force the solution into the wood. After treatment under pressure, a vacuum in the cylinder extracts excess solution

from the wood. Once removed from the cylinder, the wood is then stacked on the drip pad in the Process Building.

The drip pad, as well as the concrete floor under the treatment cylinder, drains to a large concrete sump. The entire drip pad is contained within the processing building. Sumps, located at each end of the treatment cylinder, collect excess solution from the treatment process cylinder and from the drip pad for recycling back into the wood treatment process. The sumps are constructed of concrete and are approximately 8 ft. x 8 ft. x 3 ft. deep.

The facility generates hazardous wastes consisting primarily of dry wastes (floor sweepings, etc.) generated from cleaning activities and filter bags used to filter particulates from the material in the solution recycle sump. Even though the facility uses a non-hazardous preservative, under the Federal and New York State hazardous waste regulations, floor sweepings, filter bags, etc. are managed as hazardous waste, as defined by 6 NYCRR §371.1(d)(2)(ii), because they came into contact with the drip pad and sumps, which were in place when the facility used CCA. These hazardous wastes are temporarily stored in a designated area in the Process Building prior to shipment for offsite disposal.

The Process Building also houses four (4) aboveground tanks, consisting of three (3) 18,000 gallon working tanks and one (1) additional 4,800 gallon tank. These tanks are used to store non-hazardous products used in the pressure treating process. The facility is also equipped with several petroleum bulk storage (PBS) tanks. One (1) of the facility's PBS tanks is located within the boundaries of the Site and this tank will be taken temporarily out-of-service in conformance with 6 NYCRR §598.10 and §613.9 during this modernization project. The chemical and petroleum tanks will then be relocated to the Process Building in a single aboveground bulk storage facility.

1.3 Site Description

The Site is limited to the easternmost portion of the Northeast Treaters property in the area of the Process Building; the Site totals approximately 1.68 acres (see Figure 2).

1.3.1 Land Use

A zoning map, a summary table of permitted uses, and lot requirements established by the Town of Athens zoning code is provided as Appendix A. The Site is zoned and currently used as an industrial property (i.e., the LI-2 District). Upon completion of remedial activities, the Site will continue to be used for manufacturing of treated wood products and so will remain industrial.

The general remedial program provisions set forth at 6 NYCRR §375-1.8(f)(9) authorize the New York State Department of Environmental Conservation (NYSDEC) to consider land use in selecting site remedies provided there is "reasonable certainty associated with such use" and identify a host of factors that may be considered in making such an assessment. The BCP regulations at 6 NYCRR §375-3.8(a)(2) specifically provide that the selection of a remedy at a BCP site "will take into account the current, intended, and reasonably anticipated future land uses of the site and its surroundings." In distinguishing among sites for purposes of establishing cleanup requirements, NYSDEC considers the "primary" use of the site. For example, a site may be classified as "industrial" if "the primary purpose" of the site is "manufacturing, production, fabrication or assembly processes and ancillary services" (6 NYCRR §375-1.8(g)(2)(iv)).

In the present case, the sole use at the Site currently is industrial. Going forward, the entire BCP application is premised on the applicant constructing a new manufacturing plant, with an anticipated

useful life of approximately 30 years. The construction of the plant is being financed with long term debt secured by the entire Site. The intended future use of the Site as an industrial wood treatment facility aligns with the visions of the July 2007 Greene County Comprehensive Economic Development Plan to expand the Athens Industrial Park.

While the Athens Zoning Code allows some uses (either as of right or with site plan approval or a special use permit) in the LI-2 District that are not strictly industrial, none of those uses are anticipated by Northeast Treaters for the Site. In order to conduct some less restrictive use (residential or commercial), the applicant would need to eliminate all or a portion of the manufacturing activity and subdivide out the vacant parcel. The subdivided parcel would have to meet the requirements for frontage, road access, onsite water and septic. Based upon a review of the subdivision requirements and applicable codes, counsel for Northeast Treaters has concluded that the possibility of permitting a residential or commercial use at the Site is remote.

1.3.2 Site Topography

The Site is generally flat, at an elevation of approximately 140 feet above mean sea level (amsl). The surrounding topography located one-half (½) mile to the north, south, and west of the Site is relatively flat and is at an elevation between 130 - 150 feet amsl. The area located one-half (½) mile to the east of the Site is at an elevation of approximately 200 feet amsl and slopes west towards the Site.

1.3.3 Surface Water, Wetlands, and Floodplains

The nearest surface water, a tributary to Murderers Creek, is located approximately 1,000 feet to the north of the Site. Murderers Creek, a regulated Class C waterbody, is located approximately 1.6 miles to the north of the Site and flows towards Sleepy Hollow Lake, which is located approximately 1.6 miles to the east of the Site.

Federal and State regulated wetlands (Wetland No. HN-108) are located near the northwestern portion of the Northeast Treaters' property, approximately 500 feet northwest of the Site.

The Site is not located in a designated floodway or within one-half (½) mile of a 100-year floodplain.

1.3.4 Geology and Hydrogeology

The mobility of Site-related contaminants is dependent on the geological and hydrogeological conditions at the Site. These conditions are taken into consideration when developing and evaluating remedial alternatives.

The Site is located in the glaciated area that transitions from the Hudson-Mohawk Lowlands to the Alleghany Uplands physiographic provinces, approximately 2.3 miles west of the Hudson River. Information on soil maps from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey (provided as Appendix B) indicate the Site consists of Covington and Madalin soils to the west and Kingsbury and Rhinebeck soils to the east. These soils are derived from glaciolacustrine (glacial lake) deposits, generally consist of clay and silt, and are described as poorly drained with varying transmissivities, according to the soil survey.

As discussed in Section 2.2.1, soil borings were drilled at 43 sample locations from November 17 to 20, 2014 for the purpose of collecting samples for laboratory analysis. Forty-three of these borings penetrated through the fill into the underlying glaciolacustrine unit. Four (4) of these borings penetrated through the

glaciolacustrine unit into the underlying . Soils penetrated during drilling activities are consistent with the geologically mapped units described above on the Surficial Geologic Map of New York State, Hudson-Mohawk Sheet. Information from the soil borings drilled at the Site indicates that the sequence of materials beneath the Site (i.e., stratigraphy), in descending order is as follows:

- A layer of approximately 3 to 4 feet of fill material overlies the natural glaciolacustrine unit at the Site. Fill material is comprised of gray to light gray sand and gravel with pebbles and cobbles. The fill appears to have been placed to level the area for development and construction of buildings. The natural surface beneath the fill slopes gently to the west, based on review of the topographic map of the area (Figure 1). The fill is thicker in very limited areas of the Site where the underlying glaciolacustrine material was excavated to install the existing wood treatment cylinder and associated sump system. Greater thicknesses of fill are not expected, other than at these locations, based on the known development history of the property.

- Glaciolacustrine deposits typically are comprised of fine-grained material (silt and clay) deposited in a glacial lake. The permeability of glaciolacustrine deposits normally is very low because of they are comprised of fine grained sediments. The glaciolacustrine unit encountered in the soil borings drilled at the Site is described as light gray to light brown clay with some silt.

- Glacial till was encountered at depths ranging from nine (9) to 12.5 feet below grade beneath the glaciolacustrine unit; glacial till was not encountered in some soil borings which exceeded 12.5 feet below grade surface (bgs). Glacial till is comprised of a heterogeneous mixture of sand, gravel, silt, and clay with the matrix consisting primarily of silt and clay. The glaciolacustrine unit encountered in the soil borings drilled at the Site is described as fine-grained, neutral gray soil.

- Bedrock beneath the Site consists primarily of the middle Ordovician age Austin Glen Formation, comprised of interbedded graywacke and shale according to the New York State Geologic Bedrock Map. The depth to bedrock in the vicinity of the Site ranges from approximately 22 to 84 feet bgs as indicated by logs of water wells at the facility. Water Well Completion Reports are provided as Appendix C and information obtained from these reports is summarized in the table below. Lithologic descriptions from the well logs indicate that bedrock consists of black and gray shale and some sandstone. Borings drilled at the Site for the remedial investigation reached a maximum depth of 15 feet and did not encounter bedrock.

A geologic cross section of the Site is provided as Figure 5.

Past studies of the Site indicate that the glacial till and glaciolacustrine units at the Site act as confining units that restrict the vertical movement of groundwater. To confirm this conclusion, four monitoring wells (identified as MW-1 to MW-4) were installed as part of the RI to determine the presence or absence of groundwater at the Site. A well location map is provided as Figure 6.

Piezometric measurements obtained from MW-1 through MW-4 during the RI (provided in Table 3a) range between 0.4 feet below ground surface (bgs) to no observed groundwater. Moreover, water levels recorded during the installation of facility water wells (below) indicate piezometric levels within the boundaries of the Site are between ten (10) and 19.33 feet bgs. These data indicate water that infiltrates the paved area or at the margins of the paved area (e.g. MW-1) migrates downward and perches on top of the natural glaciolacustrine material, and that perched water occurs in isolated locations, or is not present in the fill.

NYSDEC Well No.	G1806	G2560	G2542	G2547
Latitude	N 42° 17.341'	N42° 17.18	N42° 17.20	N43° 17.23
Longitude	W73° 50.153	W73° 50.30	W73° 50.42	W73° 50.41
Install Date	8/19/2004	9/20/2007	8/15/2007	9/4/2007
Well Depth (feet)	802	265	83	210
Top of Rock (feet)	55	22	83	84
Depth to Water (feet)	19.33	10	2	4
Stabilized Q (gpm)	2	2 - 3	15	20
Max D.D. (feet)	300	260	7.6	NA
Test Duration (hrs.)	4	2	6	8
Test Method	Pump	Bailer	Pump	Pump
Drilling Company	Hanson Well Drilling & Pump Co., Inc.	L.H. Heimburge Well Drilling	L.H. Heimburge Well Drilling	L.H. Heimburge Well Drilling

Information obtained from the NYSDEC Environmental Assessment Form (EAF) Mapper indicates the Site is not located over, or immediately adjoining, a primary, principal, or sole source aquifer. No sand or gravel water-bearing units were encountered in the soil borings drilled at the Site.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Previous Investigations

Historical sampling locations investigated prior to 2014 are shown on Figure 3 and the respective analytical data are summarized in Tables 1a and 1b. Sample locations recently sampled by STERLING during and after 2014 are provided on Figure 4 and the respective analytical data are summarized in Tables 2a through 2j.

The facility has been subject to several environmental studies by the NYSDEC, the United States Environmental Protection Agency (USEPA) and the former Site owner. These studies include: (a) a 1989 "corrective action prior to loss of interim status" (CAPT LOIS) inspection prepared by A.T. Kearney under contract with USEPA; (b) a 1993 preliminary Resource Conservation and Recovery Act (RCRA) facility assessment prepared by TRC under contract with USEPA; (c) a report entitled *Modified Phase I Environmental Site Assessment and Compliance Audit* dated December 1995 prepared by Groundwater Technology, Inc. at the request of AWII for Northeast Treaters (hereinafter "Phase I Site Assessment"); (d) a 1997 report prepared by KU Resources entitled *Report of Findings CCA Solution Recycle Sump (SWMU 3) Integrity Evaluation*; and (e) a 1999 report prepared by KU Resources entitled *Report of Findings Sampling Visit Work Plan Implementation* (hereinafter "KU Resources Report").

The Phase I Site Assessment, prepared utilizing American Society for Testing and Materials: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E 1527), provides a summary of environmental conditions and includes the results of surficial soil sampling at various locations across the Northeast Treaters property, as well as the installation of borings to a depth

of 13 to 22 feet. Samples were analyzed for total copper, total chromium, total arsenic, toxicity characteristic leaching procedure (TCLP) copper, TCLP chromium and TCLP arsenic.

Surface soils on the Northeast Treaters property were found to be impacted to varying degrees. The Phase I Site Assessment concluded that "In the opinion of Groundwater Technology, based upon our extensive knowledge of environmental conditions at wood preservation facilities, the results of the analyses performed should not be considered to be of environmental concern."

The Phase I Site Assessment also notes a spill of approximately three (3) pounds of arsenic pentoxide occurred on May 2, 1990. The approximate spill area is located between the Treating Building and the Fixation Building and identified on Figure 3. A valve on the treatment tank was left open and CCA solution was released onto the ground. The cleanup was completed under NYSDEC oversight. By letter dated August 21, 1990, the NYSDEC determined that remedial activities associated with the spill could be discontinued and the spill closed.

Investigations of the Site were conducted in 1997 and 1999 as a follow-up to the 1989 CAPT LOIS report. The first investigation focused on the area around the south sump while the second evaluated the south sump, the north sump, the drip pad and the former underground tank. The investigations, which are summarized in the KU Resources Report, provide a description of the sampling and reported analytical results. The sampling conducted by KU Resources focused on:

- CCA Solution Recycle Sump (south sump)
- Treating Cylinder Pit (north sump)
- Drip Pad
- Former Underground Tank

Background sampling was also performed. The KU Resources Report states that the drip pad is "compliant with RCRA Subpart W". The sampling results were interpreted to indicate no evidence of continuing releases. However, certain locations on the Northeast Treaters property were observed with concentrations consistent with incidental drippage through routine handling of treated lumber and CCA. The report further concludes that the observed CCA in soil is not mobile due to the substantial thickness of natural, low permeability clay unit beneath the gravel fill at the surface. NYSDEC's review of the 1999 investigation and report is summarized by the NYSDEC in a June 13, 2000 letter which allows for the remediation of impacted soils in the vicinity of the drip pad to be addressed upon drip pad closure and when the soils become accessible. The letter concludes that at the time of transmittal, "the RCRA Facility Assessment [indicated] that there are no other known releases from the Northeast Treaters facility that require RCRA corrective action."

On June 23, 2014, STERLING conducted focused sampling of the existing concrete drip pad and subsurface soils associated with the Site. The findings of this sampling investigation was summarized in the *Sampling for Chromium and Arsenic in Drip Pad Concrete and Subsoils* report and incorporated into the *Drip Pad Work Plan*, September 3, 2014. The primary purpose of this sampling event was to properly characterize the concrete debris from the drip pad and subsurface soils. A total of 12 concrete samples and 20 soil samples were collected, at various depths, at four (4) sample locations. Concrete and soil samples were analyzed for total metals and TCLP metals via USEPA Method 6010C. Samples were only analyzed for the hazardous components of CCA, arsenic and chromium.

2.2 Remedial Investigation and Supplemental Sampling Investigations

The initial RI was performed by STERLING from November 17, 2014 through November 20, 2014, in accordance with the RI Work Plan dated October 30, 2014, to further delineate the lateral extent of impacted surface soil. During the initial RI, samples were collected within the footprint of the drip pad, around the perimeter of the drip pad, and around the perimeter of the Site.

Additionally, supplemental sampling was performed by STERLING on January 22, 2015, in accordance with the sampling procedures and methodology described in the October 30, 2014 RI Work Plan to provide further definition of Site conditions. During supplemental sampling, additional samples were collected around the perimeter of the Site to define the areal extent of impacted surface soils.

Supplemental RI sampling was performed by STERLING on April 15, 2015 and April 20, 2015 in accordance with the Supplemental RI Work Plan dated April 13, 2015 and revised April 30, 2015 to provide further definition of onsite and offsite conditions. During supplemental RI sampling, groundwater sampling was conducted and additional samples were collected around the perimeter of the Site, on the adjacent property located to the east of the Site, and within the facility's stormwater management system to define the areal extent of impacted surface soils and to investigate the migration potential of Site-related contaminants.

Laboratory analytical reports associated with these sampling events are provided in Appendix D.

2.2.1 Investigation of Site Geology

During the initial RI, 84 soil samples were collected from 43 sample locations from the grade surface down to approximately 15 feet bgs to evaluate the magnitude and extent of impacted soils. During the supplemental sampling investigation, an additional six (6) surface soil samples were collected from the grade surface down to approximately one (1) foot bgs from six (6) sample locations located near the perimeter of the Site. Soil cores were obtained by SJB Services, Inc. utilizing direct-push Geoprobe® sampling methodology.

During these sampling efforts, the composition of fill material and underlying soils was observed to be relatively uniform across the Site. Fill material was observed to be at a depth of approximately three (3) feet bgs under the footprint of the drip pad and approximately four (4) feet bgs at nearly all other sample locations. Native clay soil was observed below fill material at all sample locations. Till material was observed below native clay at four (4) sample locations at depths between approximately nine (9) and 12.5 feet bgs. The till is primarily comprised of a low permeability mixture of silt and clay.

2.2.2 Full Parameter Sampling

Consistent with DER-10, the initial RI investigation included sampling for all parameters identified in 6 NYCRR §375-6.8 ("full parameter samples"). Full parameter sample analytical results are summarized in Table 2a.

With the following exceptions, the primary contaminants identified above unrestricted use soil cleanup objectives (SCOs) set forth at 6 NYCRR §375-6.8 were arsenic and chromium, consistent with the past use of CCA at the Site. Several polycyclic aromatic hydrocarbons (PAHs) were detected at one (1) sample location, DPP-08ES, below unrestricted use SCOs. SVOCs: Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, and Chrysene were detected in sample DPP-08ES above unrestricted use SCOs but below commercial use SCOs. Sample location DPP-08ES is within 15 feet of

three (3) 100 gallon propane tanks utilized by the facility for heating purposes. It is suspected that the detection of these parameters may be attributed to *de minimis* losses from delivery vehicles. The detection of these parameters will be addressed by the remedial strategy implemented to remedy chromium and arsenic contamination at the Site as this sample also produced detections of total chromium and total arsenic above unrestricted use SCOs.

Full parameter samples also indicate the presence of barium, copper, manganese, nickel, and zinc above unrestricted use SCOs at the Site in addition to arsenic and chromium. These metals are naturally occurring metals commonly found in the environment. Of these metals, only chromium and arsenic were identified as contaminants of potential concern based on their detection frequency, concentration and the history of the Site. In particular, available information about the Site indicates that arsenic and chromium are most likely to be found at the Site given the past use of CCA in wood treatment operations. Moreover, the detection of these metals will be addressed by the remedial strategy implemented to remedy chromium and arsenic. Based on these factors, arsenic and chromium have been identified as contaminants of concern (COC) at the Site for purposes of developing this Remedial Work Plan.

2.2.3 Drip Pad and Drip Pad Perimeter Sampling

Sample analytical results collected during the RI and within the footprint of the drip pad are summarized in Table 2b and Figure 7. Sample analytical results collected during the RI and around the perimeter of the drip pad are summarized in Table 2c and Figure 8.

With the exception of samples collected in the vicinity of the facility's treatment cylinder (i.e. sample locations SUMP-01, C-2, C-3, C-6, C-10, C-12, C-14 and DPP-07), chromium and arsenic contamination on the Site is limited almost entirely to fill material. With the exception of DPP-07, chromium and arsenic concentrations met unrestricted use SCOs in all clay samples obtained below onsite fill material and beyond the perimeter of the drip pad.

Analytical data associated with the SUMP-01 sample location, located north of and adjacent to the northern sump, indicate the presence of total arsenic above unrestricted use SCOs at a depth of approximately six (6) feet bgs and within clay material. Concentrations of arsenic did not exceed unrestricted use SCOs in soil samples collected at or below a depth of approximately ten (10) feet bgs at the SUMP-01 sample location.

Historic analytical data associated with the C-6 sample location, located at the location of the northern sump, indicate the presence of total arsenic above unrestricted use SCOs at a depth of approximately 13.5 feet bgs and within fill material. Concentrations of arsenic did not exceed unrestricted use SCOs in soil samples collected at or below a depth of approximately 14 feet bgs at any sample location.

2.2.4 Site Perimeter and Offsite Sampling

Sample analytical results collected during the RI and around the perimeter of Site are summarized in Table 2d and Figure 9. Sample analytical results collected during the RI and on the adjacent property to the east of the Site are summarized in Table 2e and Figure 10.

Detected concentrations of arsenic at Site perimeter sample locations ranged between 3.8 ppm to 44.4 ppm. Detected concentrations of chromium at Site perimeter samples ranged between non-detect to 51.4 ppm. Samples obtained from Site perimeter samples SP-04, SP-05, SP-11, SP-12, SP-22, SP-23, SP-24, SP-25 and SP-26 met unrestricted use SCOs for chromium and arsenic. These sample data suggest that

Site-related contamination is bound onsite to the west and the south by the aforementioned sample locations.

Detected concentrations of arsenic at sample locations approximately 300 feet beyond the perimeter of the Site ranged between 7.1 ppm to 12 ppm. Detected concentrations of chromium at sample locations approximately 300 feet beyond the perimeter of the Site ranged between 20 to 29 ppm. Samples obtained from offsite samples OSS-15, OSS-16, OSS-17, OSS-18 and OSS-19 met unrestricted use SCOs for chromium and arsenic. These sample data suggest that Site-related contamination is bound to the north and east by the aforementioned sample locations.

2.2.5 Groundwater Sampling

Water samples collected on October 31, 1995 from the facility's original plant well (provided as Table 1b) indicated that concentrations of chromium, copper and arsenic met respective NYSDEC Class GA water quality standards.

No groundwater was detected in fill material during the soil boring activities conducted as part of the initial RI in November 2014. Monitoring wells MW-1 through MW-4 were installed at the Site on April 15, 2015. Water level measurements were taken during Supplemental RI Sampling and a summary of water level measurements are provided in Table 3a. As discussed in Section 1.3.4, water level measurement data suggest water that infiltrates the paved area or at the margins of the paved area (e.g. MW-1) migrates downward and perches on top of the natural glaciolacustrine material.

Of the four (4) monitoring wells, only MW-1 had a sufficient volume of water for sampling. One groundwater sample was collected from MW-1 on April 15, 2015. The groundwater sample was analyzed for total arsenic, chromium and hexavalent chromium and dissolved arsenic, chromium and hexavalent chromium. A summary of groundwater analytical results is provided as Table 3b. The data indicate that concentrations of total metals and dissolved metals are below NYSDEC Class GA water quality standards.

Groundwater data indicate that Site contaminants have not impacted the perched groundwater in fill material at well MW-1 and that perched water occurs sporadically or is absent in the fill. Field observations and data obtained during investigations conducted at the Site suggest that metal contamination detected in onsite fill material does not pose a risk of impacting deeper sources of groundwater due to the depth of groundwater, the very low permeability of the natural soil beneath impacted fill, and the relative immobility of metals in the subsurface environment.

2.2.6 Catch Basin and Stormwater Sampling

Sediment and surface samples collected from CB-1, the stormwater catch basin located near the northwestern corner of the Site, indicate the presence of arsenic above unrestricted use SCOs at this location. Although CB-1 was filled with sediment and soil and no stormwater flow was observed in this catch basin, stormwater flow was observed in the receiving catch basins which are identified as CB-7 and CB-8 on Figure 11. Sediment samples collected from CB-7 and CB-8 indicate the presence of arsenic and chromium above unrestricted use SCOs.

The facility's stormwater system conveys stormwater to a detention pond located at the westernmost portion of the Northeast Treaters property. The facility's stormwater management system is regulated by a NYSDEC State Pollutant Discharge Elimination System (SPDES) Multi-Sector General Permit (permit ID number NYR00B991). The SPDES program is designed to eliminate the pollution of New York

waters and to maintain the highest quality of water possible. Compliance with the SPDES program is consistent with:

- Protection of public health;
- Public enjoyment of resources;
- Protection and propagation of fish and wildlife; and
- Industrial development of the State.

Stormwater monitoring data collected under the SPDES permit is summarized in Table 3c. These data demonstrate that concentrations of chromium and arsenic in effluent samples collected from the facility's detention pond are well below the SPDES benchmark monitoring standards. No additional investigation of the facility's stormwater management system was performed or is warranted because the SPDES program is protective of public health and fish and wildlife resources. Further investigation of the facility's stormwater management system under the Brownfield Cleanup Program would be redundant as the stormwater management system is already regulated by, and in compliance with, applicable SPDES program requirements.

2.3 Contaminant Mobility

Contaminant mobility at the Site is extremely limited. Most of the impacted fill material is below the footprint of the existing drip pad and or under an impervious surface consisting of concrete and/or asphalt pavement. The only unpaved portion of the Site is the strip of land along the northern and eastern perimeter of the Site. The extensive existing pavement and building footprint significantly limits the potential for further mobilizing arsenic and chromium at the Site.

More generally, metals have a high affinity to fine grained soil and typically adhere to the soil and become immobile in the environment. Due to the presence of fine grained, low permeability native soils, metal contamination detected in onsite fill material is not mobile and has not had an impact on groundwater.

Water Well Completion Reports provided for the facility's bedrock water supply wells indicate the presence of an upward hydraulic gradient based on water level depth measurements between two (2) and four (4) feet bgs. An upward hydraulic gradient, in conjunction with the low permeability of the overburden, the relative immobility of heavy metals in the environment, and the results of the water sample collected from MW-1, supports the conclusion that heavy metals detected in fill material have not adversely affected groundwater quality.

As noted above, the Site is not located over, or immediately adjoining, a primary, principal, or sole source aquifer, and no sand or gravel water-bearing units were encountered in the soil borings drilled at the Site during investigative activities. Based upon the documented history, previous investigations and field observations, Site conditions do not pose a risk that groundwater is impacted.

Currently, the potential exists for Site contaminants to migrate by wind-blown dust and/or by snow management where impacted fill material is exposed. The supplemental RI sampling at perimeter and offsite sample locations showed levels of arsenic above the unrestricted use SCO at the adjacent property to the east of the Site. The presence of arsenic above the unrestricted use SCO at these locations is believed to be due to the migration of wind-blown dust from the prior unpaved portion of the Site. In addition, it is suspected that arsenic may be concentrated at the perimeter locations as a result of past snow plowing activities at unpaved portions of the Site. The preferred remedial measure will eliminate these migration pathways.

2.4 Exposure Analysis

The human health risk associated with Site COCs depends upon the potential for a person to be exposed to soil or groundwater containing these metals. Exposure can only occur when a mechanism, or exposure pathway, exists. Potential exposure pathways are summarized in Table 4, and are further evaluated below.

Five (5) water supply wells are present on the Northeast Treaters property. Analytical data suggest that groundwater has not been impacted and Site geology indicates that the potential for groundwater contamination is negligible. Bottled water is used by the facility for drinking and other potable water purposes. Moreover, a summary of groundwater analytical results for groundwater samples collected during the supplemental RI is provided as Table 3b. The data indicate that concentrations of total arsenic and chromium and dissolved arsenic and chromium are below NYSDEC Class GA water quality standards.

Residential dwellings and day care facilities are not permitted on the Site by the Town of Athens' Zoning Code. However, analytical data indicate that chromium and arsenic are present offsite on the adjacent property located to the east of the Northeast Treaters facility. The eastern adjacent property is currently zoned rural residential and consists of 24-acres with a residence. The residence is located in the southeast corner of the parcel, at the furthest point from the Site. Most of the property, including the portion adjoining the Site, is covered by forest, significantly limiting access to surface and subsurface soils. Moreover, off-site samples reported in Table 2e and Figure 10 show that arsenic and chromium levels are below the unrestricted SCOs approximately 300 feet from Site and more than 800 feet from the residence. Under these circumstances, the potential for exposure to those residing in the house on the adjoining property is minimal.

Although Northeast Treaters believes the risk associated with exposure to soils in the offsite area immediately adjacent to the northeastern perimeter of the Site is minimal, the company is currently in the process of purchasing the eastern adjacent property. Acquiring the property will give Northeaster Treaters complete control over this Site and the opportunity to expand its storage yard. This control will allow Northeast Treaters to restrict access to the offsite areas of impact and facilitate implementation of remedial measures, including the installation of engineering controls and the placement of an Environmental Easement over the small portion of land located offsite that shows arsenic levels above the unrestricted SCOs.

Onsite workers conducting excavations are potentially exposed to soil containing Site-related contaminants above unrestricted SCOs if they contact the impacted fill material below the paved surface. For these reasons, onsite fill and offsite surface soil located on the eastern adjacent property is considered in the screening and evaluation of remedial alternatives, and the preferred remedial measure will eliminate exposure to the impacted onsite fill and offsite surface soils by onsite workers and trespassers.

2.5 Analytical Data Variability

Uncertainty for soil arsenic analytical data occurs as the result of the inherent uncertainties of the analytical method and the composition of the soil. For instance, the calibration verification recoveries need to be within 10% of the actual value, the laboratory control sample must be within 30%, and the matrix spike must be within 25%. Valid and acceptable analytical data may have an uncertainty of plus or minus 25% because of these inherent analytical uncertainties. The uncertainty of analytical data can increase when factoring in the effects of the heterogeneity of soil samples.

Due to analytical data variability, a detected arsenic concentration in soil equivalent to the unrestricted use SCO of 13 ppm has a range of error of 3.25 ppm (i.e., 9.75 ppm to 16.25 ppm). Similarly, a detected arsenic value of 16 ppm has a range of error of 4 ppm such that the actual value may be between 12 and 20 ppm.

3.0 REMEDIAL ACTION OBJECTIVES

The regulatory goal specified in 6 NYCRR §375 is to return the Site to predisposal conditions, to the extent feasible. In this case, the remedial action will focus upon the identified COCs, chromium and arsenic.

Under the BCP program, the remedial action objectives developed for the Site must reflect results of the RI and applicable regulatory requirements and guidance, resulting in the establishment of Site specific cleanup objectives. Remedial objectives are selected that will be protective of human health and the environment.

3.1 Remedial Goals

Given the consistency of the fill material and their depth (3 to 4 feet bgs), the consistency of the natural clay layer, and the absence of any groundwater impact, the remedial action objectives for the Site are as follows:

1) Minimize exposure (inhalation, ingestion, and dermal contact) to soils containing unacceptable levels of chromium and arsenic.

2) Maintain or further minimize the potential for groundwater quality and/or surface water quality degradation resulting from movement of metals from fill material to infiltrating rainwater or runoff.

3) Stabilize exposed surface soil to control wind erosion, dust generation, stormwater migration and infiltration.

3.2 Standards, Criteria and Guidance (SCGs)

As defined by Section 1.3 of DER-10, Standards, Criteria and Guidance (SCGs) mean standards and criteria that are generally applicable, consistently applied, and officially promulgated, that are either directly applicable, or that are not directly applicable but are relevant and appropriate. SCGs incorporate the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) concept of 'applicable or relevant and appropriate requirements' (ARARs) and the EPA's 'to be considered' (TBCs) category of non-enforceable criteria or guidance.

3.2.1 Chemical-Specific SCGs & TBCs

Chemical-specific SCGs, including soil cleanup objectives identified in 6 NYCRR §375-6.8, provide guidance on acceptable or permissible contaminant concentrations in soil, air and water. Chemical-specific SCGs for Site-related contaminants are summarized in Table 5.

New York State Class GA Water Quality Standards promulgated by the NYSDEC apply to all fresh groundwater in New York State: The best usage of Class GA waters is as a source of potable water

supply. Class GA waters are fresh groundwater found in the saturated zone of unconsolidated deposits and consolidated rock or bedrock. Class GA groundwater standards are equivalent to the maximum contaminant levels (MCLs) established by the New York State Department of Health (NYSDOH) for public drinking water supplies, and are published in 10 NYCRR §5. Class GA standards applicable to the COCs at the Site are as follows: Chromium (50 ppb) and Arsenic (25 ppb).

New York State Recommended SCOs are published by the NYSDEC in the Soil Cleanup Guidance Policy (CP-51). This guidance outlines the basis and procedures for determining soil cleanup levels at inactive hazardous waste sites. The SCOs apply to unsaturated soils above the water table.

The Occupational Safety and Health Administration (OSHA) promulgated permissible exposure limits (PELs) for workers for a variety of contaminants in the air (29 CFR 1910, Subpart Z). The PELs are time-weighted average (TWA) concentrations to which workers may be exposed over an 8-hour exposure period without adverse health effects. PELs and TWAs are intended for adult workers exposed in an occupational setting and are not directly applicable to New York Brownfield Cleanup Program sites. The PELs and TWAs may be used as guidance values to determine whether long-term exposures to contaminants in air pose a potential human health risk.

The National Institute for Occupational Safety and Health (NIOSH) developed concentrations for contaminants in the air that are immediately dangerous to life or health (IDLH) for individuals in occupational settings. The IDLH is the maximum concentration, in the event of respiratory failure, that could be tolerated for 30 minutes without experiencing irreversible health effects. The IDLHs are appropriate only for sub-chronic exposures to non-carcinogenic compounds or effects of compounds in air. Although these values are not directly applicable to New York BCP sites, they may provide guidance regarding allowable exposures for onsite workers. NIOSH also has established recommended exposure limits (RELs) for each COC. A REL is typically a 10-hour time-weighted average based on toxicological and industrial hygiene data.

The American Conference of Governmental Industrial Hygienists (ACGIH) developed threshold limit values (TLVs) for occupational settings. The TLV is a time-weighted average concentration of contaminant under which most people can work consistently for eight (8) hours per day, day after day, and avoid harmful effects.

3.2.2 Action-Specific SCGs

6 NYCRR §375 describes general provisions for inactive hazardous waste disposal sites and remediation thereof. This regulation also describes the procedure for conducting Interim Remedial Measures (IRMs).

The RCRA, as implemented by New York's Hazardous Waste Regulations (6 NYCRR §370-376) deals with the treatment and disposal of hazardous waste. Any hazardous waste generated at the Site must be handled in accordance with the Federal and New York State hazardous waste regulations, if applicable, and disposed of in accordance with Federal and State land disposal restrictions (LDRs). Determination of the presence and appropriate waste code for any hazardous wastes at the Site will be made in accordance with 6 NYCRR §371 (Identification and Listing of Hazardous Wastes) and applicable Federal and State guidance. If soils need to be removed from the Site as hazardous, they will be assigned an appropriate waste classification based on the waste characterization analysis.

NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10) establishes the methodology for characterizing the nature and extent of the risks posed by contaminated sites and for evaluating potential remedial options.

3.2.3 Site Specific Cleanup Levels

In accordance with DER-10, the current, intended and reasonably anticipated future use of the Site and its surroundings were considered in developing Site-specific cleanup levels. As noted in Section 1.3.1 above, the Site is zoned as an industrial property and is used for the treatment of wood products. Northeast Treaters entered the BCP and committed to undertaking remediation of the Site to facilitate its program to demolish its existing wood treatment facility and replace it with a new, more efficient one. Thus, upon completion of remedial activities, the Site will continue to be used for industrial purposes. As noted above, this use is consistent with the vision of the Greene County Comprehensive Economic Development Plan, dated July 2007, to expand the Athens Industrial Park. Moreover, the local zoning code prohibits residential development and day-care facilities at the Site. Accordingly, industrial use SCOs which establish cleanup guidance values that are protective of public health assuming limited potential for soil contact, are appropriate for the Site.

As discussed in Section 2.3, chromium and arsenic were identified as COCs at the Site based on their detected concentrations and frequency and the history of the Site. Industrial use SCOs for chromium and arsenic are 6,800 ppm and 16 ppm, respectively. The unrestricted use SCOs for chromium and arsenic are 30 ppm and 13 ppm, respectively.

4.0 REMEDIAL TECHNOLOGY SCREENING PROCESS

In accordance with DER-10 section 4.3, an initial screening was performed to develop a list of potentially applicable remedial technologies applicable to the Site conditions, contaminants, and contaminated media. Applicable technologies undergo a detailed analysis of alternatives.

4.1 Identification and Screening of Technologies

The screening of remedial technology types and process options is described below. This screening was based on the criteria of effectiveness for remediating impacted soils and implementability.

4.1.1 Source Controls

Controls to prevent the migration of contaminants from source soils include institutional measures, containment, in-situ treatment, removal, onsite treatment, and disposal. These general response actions and the applicable technology types are described below.

Institutional measures for addressing soil contamination typically include use restrictions and an Environmental Easement to reduce the possibility of human contact with contaminants. Fencing may deter unauthorized access to impacted areas at the Site. Signs can be placed on the Site to warn utility and construction workers of the contaminated soil and advise notifying the NYSDEC prior to excavation. An Environmental Easement will provide notice to prospective owners that certain uses and/or development of the Site is restricted and may necessitate further remedial action in the event the property ownership is transferred in the future.

Containment measures limit exposure to, and potential migration of, contamination by placing protective barriers around the areas of contamination. Protective barriers consist of a variety of materials designed to achieve containment and to eliminate exposure, and are generally known as capping. Capping of contaminated soils in place minimizes human contact by creating a permanent barrier between the contaminated soil and human and environmental receptors. Capping also diverts precipitation away from

the impacted soils and minimizes infiltration, reducing potential for contaminant migration, when a low permeability material is part of the cap design. Much of the Site is already paved or covered by buildings, that comprise a cap over impacted soil.

In-situ treatment technologies include biological, thermal, and physical/chemical treatment processes. Many of these processes are innovative technologies, with unproven and potentially unreliable effectiveness. As a result, the need for treatability or pilot-scale studies often makes these technologies less economically feasible than other proven technologies.

A variety of in-situ treatment technologies are available and applicable for soils contaminated with metals. In-situ treatment approaches considered for the Site include electrokinetic remediation, phytoremediation, soil flushing, and solidification/stabilization.

Electrokinetic techniques rely on the application of low-intensity direct current between electrodes placed in the soil, which mobilizes charged ions toward the electrodes, where they are removed and subsequently treated aboveground. Most experience with this technology is limited to bench and pilot scale studies. Because of limited performance data for electrokinetic remediation for metals, and because inadequate soil moisture in the vadose zone can limit its effectiveness, this approach is not considered a viable alternative for the Site.

Phytoremediation techniques include both phytoextraction, which relies on uptake of metals and subsequent harvesting, and phytostabilization, which relies on plant secretions that form metal complexes with reduced solubility. Phytoremediation measures take several years to implement. However, the continued viability of the Northeast Treaters' operation is contingent on completing the redevelopment of the Site quickly and the continued use of the Site as a manufacturing plant. Moreover, this remedial technique would alter the Site to a forested area unfit for industrial use. Under these circumstances, phytoremediation is not considered a viable alternative for the Site.

Soil flushing involves extraction of metals from soil using water or other suitable aqueous agents. Leached contaminants are typically recovered from the subsurface via pump-and-treat methods. The general affinity of the metals to adhere to soil, materials handling issues and the planned construction of a new process building make this technology impractical and incompatible with the planned development of the Site. On this basis this technology is not considered applicable.

Solidification and stabilization involves changes to the physical or chemical properties of impacted soil to immobilize contaminants. The stabilization technique utilizes cement dust and/or coal ash, which is spread on and disked into the surficial soil, in impacted areas to bind contaminants within the soils matrix. Solidification and stabilization is applicable to the Site.

Excavation and removal of contaminated surficial soil can be accomplished with conventional equipment and is an effective remedial measure.

4.2 Development of Remedial Alternatives

In accordance with DER-10 section 4.3, preliminary alternatives were evaluated against the criteria of effectiveness and implementability, and subsequently the technologies described above have been combined to develop five (5) remedial alternatives that are applicable to the Site contaminants and conditions. These alternatives include:

- Alternative 1: No Further Action
- Alternative 2: Capping and Institutional Controls
- Alternative 3: Excavation and Offsite Disposal
- Alternative 4: In-Situ Treatment
- Alternative 5: Capping Through Site Redevelopment and Institutional Controls

The development and selection of remedial alternatives is presented below.

4.2.1 Alternative 1: No Further Action

The No Further Action alternative allows contaminated soil at the Site to be left in place. No groundwater monitoring will be conducted. This alternative may include institutional controls, such as land use restrictions, to minimize human contact with contaminated media. Signs can be posted to warn construction or utility workers to contact NYSDEC before excavating. Offsite contamination will not be addressed under this alternative.

Existing pavement and buildings will continue to act as a cap by diverting rainwater away from some areas of impacted soil.

4.2.2 Alternative 2: Capping and Institutional Controls

Alternative 2 consists of a protective barrier (i.e., capping) and institutional controls. A Site cap will be constructed to allow for unrestricted use of the Site. The cap will consist either of the structures such as buildings, pavement, sidewalks comprising the Site development or a soil cover in areas where the exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required, it will be a minimum of two (2) feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for unrestricted use. The soil cover will be placed over a demarcation layer, with the upper six (6) inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d).

The initial phase of the project will involve demolishing the existing processing building, demolition and removal of the existing drip pad, and capping the area of impacted surface soils above unrestricted use SCOs, as depicted on Figure 12, with a protective cover. Figure 12 was prepared for cost estimation purposes associated with Alternatives 2 through 4. Figure 12 does not depict the area of impacted surface soil with complete accuracy as it is a computer generated approximation that assumes no uncertainty in analytical data.

Following the remediation of the Site, a new processing building will be constructed on another portion of the Northeast Treaters property, and the Site will be used by the facility for the storage of lumber and industrial equipment. Institutional controls will be implemented to further manage contact with contamination. Specifically, an Environmental Easement will be imposed at the Site to disallow future construction or other disturbance within the capped area without prior approval from the NYSDEC. Minimal soil disturbance will be proposed under this alternative.

Similarly, impacted offsite areas will be purchased by Northeast Treaters and impacted areas will be addressed by capping with a protective cover and implementing institutional controls as described above.

Capping impacted soils, combined with appropriate stormwater runoff controls, will: 1) minimize potential contact with contaminated surface soil by onsite workers; 2) further minimize migration of metals by preventing infiltration of precipitation and stormwater; and 3) stabilize surface soil to control wind erosion and dust generation.

4.2.3 Alternative 3: Excavation and Offsite Disposal

Alternative 3 includes excavation and offsite disposal of impacted soil and concrete associated with the existing drip pad. Analytical data suggests that most metal contamination within Site boundaries is limited to fill material, and field observations indicate that fill material is present to a depth of approximately four (4) feet bgs throughout the Site. Under this alternative, following the demolition of the processing building and removal of the existing drip pad, the estimated area of impacted surface soils above unrestricted use SCO, as depicted on Figure 12, will be excavated for offsite disposal. Figure 12 was prepared for cost estimation purposes associated with Alternatives 2 through 4. Figure 12 does not depict the area of impacted surface soil with complete accuracy as it is a computer generated approximation that assumes no uncertainty in analytical data.

Soil in the vicinity of the Site's northern and southern sumps will be excavated to a depth of approximately 14 feet bgs. Impacted offsite areas will be purchased by Northeast Treaters and impacted areas exhibiting concentrations of COCs in excess of the unrestricted use SCO will be excavated to a depth between two (2) inches to one (1) foot bgs; for cost estimate purposes, a depth of six (6) inches was assumed. Data indicate contaminant concentrations below these depths satisfy unrestricted use SCOs.

Excavation will be conducted using conventional earthmoving equipment, such as backhoes, excavators and front-end loaders. For cost estimating purposes, it is assumed that post-excavation samples will be collected from the bottom of the excavation at the rate of one (1) sample per 900 square feet in accordance with DER-10 subdivision 5.4(b)5. The samples will be analyzed for total arsenic, total chromium and hexavalent chromium. The excavation will be backfilled with suitable clean fill material and a new processing building will be constructed on the Site.

Excavating all impacted soil at the Site will eliminate potential exposure routes to future receptors and unrestricted use SCOs will be achieved at the Site. Under this remedy, no institutional controls will be required at the Site following remedial activities.

4.2.4 Alternative 4: In-Situ Treatment

Alternative 4 includes treatment of contaminated soil in place (in-situ) by solidification and stabilization. Cement dust and/or coal ash will be spread on, and disked into, the surficial soil in contaminated areas. The introduction of these materials into the soil reduces the pH of the soil and binds the metals within the soils matrix. This treatment option may be used for the entire Site or, in defined areas where elevated concentrations of metals are present. Following treatment, the area will be capped with clean soil or an impervious engineered cap.

Analytical data suggests that most metal contamination within Site boundaries is limited to fill material, and field observations indicate that fill material is present to a depth of approximately four (4) feet bgs throughout the Site. Following the demolition of the processing building and removal of existing drip pad, the estimated area of impacted surface soils above unrestricted use SCO, as depicted on Figure 12, will be treated by solidification and stabilization. Figure 12 was prepared for cost estimation purposes associated with Alternatives 2 through 4. Figure 12 does not depict the area of impacted surface soil with complete accuracy as it is a computer generated approximation that assumes no uncertainty in analytical data.

Soil in the vicinity of the Site's northern and southern sumps will be treated to a depth of approximately 14 feet bgs. Impacted offsite areas will be purchased by Northeast Treaters and impacted areas will be treated to a depth between two (2) inches to one (1) foot bgs; for cost estimate purposes, a depth of six (6) inches was assumed. Data indicate contaminant concentrations below these depths satisfy unrestricted use SCOs.

Areas designated for in-situ treatment at the Site may require institutional controls to prevent future disturbance to contaminated soils remaining onsite.

4.2.5 Alternative 5: Capping Through Site Redevelopment and Institutional Controls

Alternative 5 consists of capping exposed impacted soil through the construction of a new processing building and redevelopment of the Site. Institutional controls will also be implemented under this Alternative. Following the demolition of the existing processing building, construction-specific excavation or earth moving activities pertaining to the construction of the new processing building will be conducted. Excavation areas will be identified based on redevelopment needs, and excavation areas will not be identified based on environmental impacts. Actively managed media (i.e. soil and concrete) located within the footprint of the existing drip pad will be managed and disposed, or reused onsite, in accordance with Federal and State regulations and guidance. Following construction-specific excavation, the Site will be capped with a protective cover in support of the construction of a new processing building.

The Site cover will allow for industrial use of the Site. The cover will consist either of the structures such as buildings, pavement, and sidewalks comprising the Site redevelopment, or a soil cover in areas where exposed surface soil will exceed the applicable SCOs. Where the soil cover is required, it will be a minimum of one (1) foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer. Any fill material brought to the Site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

Northeast Treaters has acquired title to the adjacent property located to the north and east of the Site, and offsite contamination will be addressed by capping with a protective cover. Northeast Treaters may further delineate impacts in offsite areas and place a protective cover over soil exhibiting concentrations of COCs in excess of industrial use SCOs. Further delineation may not be necessary if the protective cover extends to the currently known limits of impacted soil (i.e., OSS-15 through OSS-19).

Sediment from catch basins associated with samples CB-1, CB-7 and CB-8 will bemanaged and disposed, or reused onsite, in accordance with applicable State and Federal regulations and guidance. Further, an Environmental Easement will be imposed to control future construction or other disturbance within designated areas.

Completion of this alternative will: 1) eliminate human exposure to impacted surface soil; 2) further minimize migration of metals by preventing infiltration of precipitation and stormwater; and 3) stabilize surface soil to control wind erosion and dust generation. Potential future exposure to workers from impacted soil left in place (e.g. new utility trenches) will be addressed by an Excavation Work Plan (EWP) and Site Management Plan (SMP)

5.0 DETAILED EVALUATION OF ALTERNATIVES

This section presents an evaluation of the remedial alternatives described in Section 4.0. The purpose of the evaluation is to identify the advantages and disadvantages of each alternative and evaluate the extent to which each alternative meets the remedial objectives. Each alternative was evaluated using the criteria set forth in 6 NYCRR §375-1.8(f), as follows:

- Overall Protectiveness of Public Health and the Environment
- Compliance with SCGs
- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility and Volume through Treatment
- Short-Term Impact and Effectiveness
- Implementability
- Cost Effectiveness
- Land Use

Community and State acceptance are also considered through the receipt and review of public comments. The Record of Decision (ROD) for the Site will address community and State acceptance.

5.1 Individual Analysis of Alternatives

5.1.1 Alternative 1: No Further Action

Overall Protectiveness of Public Health and the Environment. Alternative 1 is protective of human health through the use of institutional measures (i.e. land use restrictions) to prevent human contact with the contaminants that will remain at the Site; however, the potential for human exposure to the surficial soil contaminants will remain. Exposure routes will remain for onsite workers by inhalation or direct contact with impacted dust or soil.

Compliance with SCGs. Chemical-Specific SCGs and Site-specific cleanup levels will not be achieved in onsite soils. Alternative 1 will not eliminate existing exposure routes and will therefore not be protective of human health and environment.

Long-Term Effectiveness and Permanence. Alternative 1 does not provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility and Volume Through Treatment. Implementation of Alternative 1 will not result in a reduction of toxicity, mobility or volume of contamination present at the Site.

Short-Term Impact and Effectiveness. Alternative 1 does not provide short-term effectiveness.

Implementability. Institutional controls, such as land use restrictions, are easily implemented.

Cost Effectiveness. Estimated capital costs for Alternative 1 are presented in Table 6.

Land Use. Alternative 1 does not alter the current land use of the Site. However, Alternative 1 does not allow for the construction of a new processing building and therefore the future land use of the Site is unknown.

5.1.2 Alternative 2: Capping and Institutional Controls

Overall Protectiveness of Public Health and the Environment. Alternative 2 eliminates the most direct exposure by placing a protective cover over contaminated surface soil. The protective cover is also protective of groundwater by minimizing stormwater contact with underlying impacted soils. Alternative 2 is protective of human health through the implementation of an Environmental Easement to prevent human contact with impacted soil that will remain onsite.

Compliance with SCGs. Chemical-Specific SCGs and Site-specific cleanup levels will not be achieved in onsite soils. Alternative 2 will be protective of human health and environment by eliminating exposure routes.

Long-Term Effectiveness and Permanence. Alternative 2 eliminates exposure to impacted soils by future onsite workers. Institutional controls ensure that the capped areas and drainage controls are properly maintained and will prevent future disturbance or construction within the capped area without prior approval of NYSDEC and use of proper protective control and safety measures. However, an Environmental Easement will restrict the future use of the Site which may affect future facility expansion plans or the anticipated expansion of the Athens Industrial Park.

Reduction of Toxicity, Mobility and Volume Through Treatment. Alternative 2 further reduces mobility of subsurface metals by reducing infiltration of water. Impacted surficial soils will also be protected from erosion by wind and water. No reduction in toxicity or volume will be achieved.

Short-Term Impact and Effectiveness. Alternative 2 is immediately effective, in that the potential for worker exposure to surface soil will be eliminated once the cap is complete. Soil disturbance at the Site could temporarily result in potential exposure for onsite workers through the dust inhalation. However, exposure to dust will be controlled by real-time air monitoring and responses to set points as specified in the EWP. Institutional controls will be implemented to restrict future construction or other disturbance at the Site.

Implementability. Alternative 2 is implementable with major modifications to the planned facility upgrade, and an Environmental Easement will be arranged by the owner.

Cost Effectiveness. Estimated capital costs for Alternative 2 are presented in Table 7. Long-term monitoring and maintenance costs include cap inspections and maintenance. A one (1) foot cover of consisting of cover soil and top soil was assumed for cost estimation purposes.

Land Use. Alternative 2 does not alter the current land use of the Site and is consistent with the anticipated future land use of the Site as an industrial property. Alternative 2 does not allow for the proposed redevelopment of the Site.

5.1.3 Alternative 3: Excavation and Offsite Disposal

Overall Protectiveness of Public Health and the Environment. Alternative 3 includes remediation through excavation and offsite disposal of excavated soil. This alternative eliminates potential transport of contaminants via groundwater migration, runoff, or erosion and will eliminate the potential exposure to impacted soil. Soil excavation creates the potential for exposure to impacted soil by onsite workers and remediation personnel via ingestion and inhalation of airborne dust during the implementation of the remedial action. Exposure of soil during excavation also creates the potential for impacted soil erosion

during the implementation of the remedial action. Appropriate measures to prevent human exposure and erosion of impacted soil will be specified in the Site's EWP.

Compliance with SCGs. Alternative 3 achieves chemical-specific SCGs and Site-specific cleanup levels by removing all impacted soil from the Site, and will therefore be protective of human health and the environment.

Long-Term Effectiveness and Permanence. Alternative 3 provides long-term effectiveness and permanence by excavating and removing impacted soil for offsite disposal.

Reduction of Toxicity, Mobility and Volume Through Treatment. Alternative 3 will reduce the volume of impacted soil by excavating and removing it for offsite disposal.

Short-Term Impact and Effectiveness. Alternative 3 is immediately effective, in that the potential for human exposure to surface soil will be eliminated. Demolition of the concrete pad, removal of pavement and extensive soil excavation at the Site during remediation has the potential to result in exposure for onsite workers through dust inhalation. Controls will be implemented during the excavation phase, as described in the EWP, to reduce the risk of exposure.

Implementability. Excavation and backfilling are commonly applied remedial technologies; however, offsite transport of excavated soil may be logistically difficult and cost-prohibitive given current market conditions. Recent canvassing of RCRA-permitted disposal facilities in New York indicates that only the Chemical Waste Management Landfill in Model City, New York is currently operating. However, this disposal facility has reached its permitted daily capacity and it is unlikely that the facility will accept new customers. Moreover, Alternative 3 requires the greatest effort of all the remedial alternatives and so cannot be completed by the planned deadline for commencing construction of the facility upgrades. For these reasons, this alternative is not considered feasible.

Cost Effectiveness. Estimated capital costs for Alternative 3 are presented in Table 8. The cost of Alternative 3 far exceeds the marginal utility of achieving unrestricted use SCOs within the boundaries of an industrial property that is reasonably anticipated to remain an industrial property in the future. Therefore, Alternative 3 is not cost effective.

Land Use. Alternative 3 allows unrestricted land use at the Site. Alternative 3 does not align with the timeline of the planned facility upgrades because this alternative requires the greatest amount of effort when compared to other alternatives. Facility upgrades are anticipated to begin in late July 2015.

5.1.4 Alternative 4: In Situ Treatment

Overall Protectiveness of Public Health and the Environment. This alternative enhances the stabilization of subsurface contaminants and thus reduces their ability to migrate. But as discussed in Section 2.3, the subsurface contaminants are not mobile. However, impacted soil will remain onsite.

Compliance with SCGs. Alternative 4 does not achieve chemical-specific SCGs and Site-specific cleanup levels because stabilization and solidification do not remove metals from impacted soil. Alternative 4 is protective of human health and environment as it eliminates exposure routes.

Long-Term Effectiveness and Permanence. Stabilization and solidification is a proven technology that is expected to provide an effective remedy by preventing mobilization of the metals in the soil. However, Alternative 4 will interfere with the planned redevelopment of the site.

Reduction of Toxicity, Mobility and Volume Through Treatment. While Alternative 4 may marginally reduce the mobility of the subsurface contaminated soil, the toxicity will not be significantly reduced. Volume of impacted media will be increased under this alternative.

Short-Term Impact and Effectiveness. Alternative 4 is immediately effective in that the potential for metal mobility will be reduced. Excavation and disturbance of soils during remediation could temporarily result in potential exposure for onsite workers through dust inhalation. Controls will be implemented during the excavation phase to reduce the risk of exposure.

Implementability. Soil solidification and stabilization is a proven technology and can be readily implemented with proper planning and engineering. However, Alternative 4 does not allow for the construction of a new processing building and will thereby not be implementable considering the planned facility upgrade.

Cost Effectiveness. Capital costs for in-situ stabilization are presented in Table 9. The costs associated with Alternative 4 are prohibitive compared to the overall effectiveness of the remedy and therefore Alternative 4 is not cost effective.

Land Use. Alternative 4 does not alter the current land use. Alternative 4 does not allow for the construction of a new processing building at the Site.

5.1.5 Alternative 5: Capping Through Site Redevelopment and Institutional Controls

Overall Protectiveness of Public Health and the Environment. Alternative 5 eliminates exposure and mobility by placing a protective cover over impacted soil. The protective cover prevents mobility from subsurface contaminants by preventing stormwater infiltration through impacted fill material. The protective cover also prevents mobility from surface contaminants through wind migration and stormwater migration. An Environmental Easement and a SMP are necessary to protect the integrity of the protective cover and address future soil disturbance.

Alternative 5 includes limited excavation and earth moving activities necessary for the construction of a new processing building, independent of remedial activities. That limited soil excavation creates the potential for exposure to impacted soil by onsite workers and remediation personnel. Appropriate measures to prevent human exposure and erosion of impacted soil will be specified in the Site's EWP. The protective cover will prevent infiltration of precipitation into impacted fill. At locations where the subsurface concentrations exceed industrial use SCOs, the protective cover will be impermeable. At locations where the subsurface soils do not exceed industrial SCOs, the protective cover may be impermeable or may be one (1) foot of clean soil.

Compliance with SCGs. Chemical-specific SCGs and Site-specific cleanup levels will not be achieved. Alternative 5 protects human health and environment by eliminating exposure routes.

Long-Term Effectiveness and Permanence. Alternative 5 provides long-term effectiveness and permanence. Institutional controls will ensure that the encapsulated areas and drainage controls are properly maintained and that prevent future disturbance or construction within the capped area is prevented. Alternative 5 aligns with the proposed facility upgrades and the expansion of the Athens Industrial Park, as described in the Greene County Comprehensive Economic Development Plan, dated July 2007.

Reduction of Toxicity, Mobility and Volume Through Treatment. Installation of a protective cover will eliminate the mobility, if any, of surface soils via erosion, stormwater and wind and will eliminate the potential of mobility in the subsurface soils (e.g., eliminate potential for stormwater infiltration). Going forward, an Environmental Easement will protect the integrity of the protective cover and ensure that best management practices are employed during any soil disturbance.

Short-Term Impact and Effectiveness. Construction-specific excavation during remediation could temporarily result in potential exposure for onsite workers through dust inhalation. Controls will be implemented during the excavation phase, as described in the EWP, to reduce the risk of exposure, and institutional controls will be implemented to restrict future construction or other disturbance at the Site.

Implementability. Alternative 5 uses conventional, proven technology that is easily implemented. Alternative 5 also aligns with the anticipated upgrade of the facility.

Cost Effectiveness. Estimated costs for Alternative 5 are summarized in Table 10.

Land Use. Alternative 5 does not alter the current land use of the Site and is consistent with the anticipated future land use of the Site.

5.2 Comparative Analysis of Alternatives

Each of the remedial alternatives was individually evaluated with respect to seven (7) criteria in Section 5.1. In this section the comparative performance of the alternatives is discussed where common elements exist among alternatives. A summary of the evaluation of alternatives is provided in Table 11.

5.2.1 Overall Protectiveness of Public Health and the Environment

Alternative 1 provides the least protection of human health, as the existing exposure of impacted fill to onsite workers will remain. However, institutional controls may be implemented to prevent the disturbance of the existing concrete drip pad and asphalt pavement located on the western portion of the Site. Alternative 3 provides the greatest protection of human health as it removes all impacted fill material from the Site. Alternatives 2, 4 and 5 are comparatively protective of human health, as all three (3) alternatives reduce the mobility of onsite COCs and eliminate the potential for direct exposure to impacted soil.

5.2.2 Compliance with SCGs

Alternatives 1, 2, 4 and 5 will not result in compliance with chemical-specific SCGs or Site-specific cleanup levels. Alternative 1 will not eliminate the existing exposure of impacted soil by onsite workers. Alternatives 2, 4 and 5 will effectively eliminate the exposure to impacted soil by onsite workers. Alternative 3 will result in complete compliance with SCGs and Site-specific cleanup levels.

5.2.3 Long-Term Effectiveness and Permanence

Alternative 1 provides the least long-term effectiveness and permanence. Alternative 3 will provide the greatest permanence and long-term effectiveness as impacted fill will be transported offsite.

Alternatives 2, 4 and 5 provide immediate effectiveness by eliminating potential exposure pathways; however, the long-term effectiveness of these alternatives will require maintenance of the cap and proper implementation of institutional controls.

Coordinating remedial measures with the proposed facility upgrades ensures that the remedy is consistent with the proposed future use of the Site and will thereby provide a greater degree of permanence. Of the proposed alternatives, Alternative 5 is most consistent with the planned facility upgrades. Alternatives 2 and 4 will require altering the entire layout of the Northeast Treaters property to accommodate space for a new processing building and will therefore not align with the timeline or operational plans of the planned facility upgrades. For these reasons, Alternative 5 provides a greater degree of permanence when compared to Alternatives 2 and 4.

5.2.4 Reduction of Toxicity, Mobility and Volume Through Treatment

A reduction of toxicity will not be achieved by any of the five (5) alternatives. Alternatives 2, 4, and 5 will all reduce mobility. Alternative 3 will reduce the volume of impacted soil by excavation and offsite disposal.

5.2.5 Short-Term Impact and Effectiveness

Alternatives 2, 3, 4, and 5 will be immediately effective by eliminating direct exposure pathways. No positive short-term impacts will result from the implementation of Alternative 1. Alternatives 2 and 5 will have minimal potential for short-term adverse impacts, as they require minimal handling of impacted soil when compared to Alternatives 3 and 4. Alternatives 3 and 4 will have the most significant adverse effects in the short term as the potential for airborne dust movement will extend over nearly the entire implementation period of these alternatives.

5.2.6 Implementability

Incorporating remedial measures into the proposed facility upgrades provides for a greater degree of implementability. Alternative 1 is the easiest alternative to implement; however, Alternative 1 does not meet the remedial objectives. Alternative 2 is implementable with conventional methods but will require a significant commitment of time and resources to alter the physical layout of the Northeast Treaters property to accommodate space for a new processing building. Under Alternative 3, excavating and transporting all impacted fill material from the Site will require the greatest amount of effort when compared to all other Alternatives and may not be feasible considering the limited capacity of nearby disposal facilities. The need for bench or pilot scale tests to evaluate the implementability of Alternative 4 at the Site will significantly delay the remediation of the Site, making this option unfeasible given the schedule for redeveloping the Site. Alternative 5 is feasible and will align with the planned upgrade of the Northeast Treaters' facility.

5.2.7 Cost Effectiveness

The capital costs for each alternative vary with cleanup objective. Tables 6 through 10 provide a summary of the costs.

The lowest cost is associated with the no Further Action alternative, but no positive human health or environmental impacts are associated with this alternative. Alternative 2 does not align with the proposed facility upgrade and will greatly increase the cost of facility upgrades (i.e. the cost to alter the facility layout). The costs associated with Alternatives 3 and 4 are not proportional to the overall effectiveness of the remedies considering the excessive cost associated with Alternative 3 and the marginal benefits associated with Alternative 4. Alternative 5 provides for the greatest protection of human health and the environment relative to the overall cost when compared to other alternatives.

5.2.8 Land Use

A description of the Site is provided in Section 1.3. The Site is currently zoned industrial and it is anticipated the Site will remain an industrial property as described in the Greene County Comprehensive Economic Development Plan, dated July 2007.

Alternatives 1, 2, 3, and 4 will not alter the industrial use of the Site, but these alternatives are not consistent with the planned facility upgrade. Alternative 5 will not alter the current land use of the Site. Further, Alternative 5 is consistent with the planned facility upgrade, and will thereby ensure the future industrial use of the Site.

Alternative 1 will not alter the use of the eastern adjacent offsite property. Alternative 2, 3, 4, and 5 will restrict the use of the eastern adjacent offsite property through institutional controls and an Environmental Easement. Under Alternative 5 the eastern adjacent property will be purchased and rezoned as an industrial property for the purposes of facility storage and expansion. The expansion of the Athens Industrial Park aligns with the Greene County Comprehensive Economic Development Plan, dated July 2007.

5.3 Preferred Remedial Alternative

Based on the current and intended use of the property and the owner's development plans, the preferred remedy for the Site is Alternative 5, consisting of a protective cover over any soil which exceeds the industrial use criteria, and institutional controls, as detailed below:

Cover System. A site cover will be required to allow for industrial use of the Site. Site redevelopment will install or maintain a Site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one (1) foot of exposed surface soil will exceed the applicable SCOs. Where the soil cover is required it will be a minimum of one (1) foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR §375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six (6) inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR §375-6.7(d).

The extent of the anticipated Site cover is shown on Figure 12. The final boundaries of this Site cover to the north and east may be refined based upon sampling during remedial design activities.

Institutional Controls. Imposition of an institutional control in the form of an Environmental Easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with §375-1.8 (h)(3);
- allows the use and development of the controlled property for industrial use as defined by §375-1.8(g), although land use is subject to local zoning laws; and
- requires compliance with the Department approved SMP.

Site Management Plan (SMP). A SMP is required, which includes the following:

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

    - Institutional Controls: The Environmental Easement discussed above.
    - Engineering Controls: The protective cover discussed above.

    This plan includes, but may not be limited to:

    - an EWP which details the provisions for management of future excavations in areas of remaining contamination;
    - descriptions of the provisions of the Environmental Easement including any land use restrictions;
    - provisions for the management and inspection of the identified engineering controls;
    - maintaining site access controls and Department notification; and
    - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to, a schedule of monitoring and frequency of submittals to the Department.

Alternative 5 will: 1) minimize human exposure to surface soils; 2) minimize potential infiltration and migration of metals into groundwater and surface water and 3) stabilize and cover surficial soil to control wind erosion and dust generation. These soil management controls are addressed in the Remedial Design (RD) (see Section 6.0).

Onsite management of contaminated soil has been endorsed by the NYSDEC for properties impacted by heavy metals, such as orchard land. On those sites, impacted soil is capped under roads and parking areas, or covered so that human exposure to the soil is minimized. These remedial measures are commonly employed.

Alternative 5 addresses areas on the Site where soil sampling demonstrates COCs exceed the NYSDEC industrial use SCOs. Capping contaminated soil will eliminate human exposure pathways and erosion of surface soil, and eliminate potential offsite transportation of impacted sediment. Institutional controls will be employed to further prevent future exposure. Soil management measures are appropriate for the Site as they can be incorporated into the future Site development project. Sediment will be removed from the existing catch basins and managed and disposed, or reused onsite, in accordance with applicable State and Federal regulations and guidance. Stormwater discharge will continue to be controlled and monitored under the facility's SPDES Multi-Sector General Permit.

Previous studies showed, and the RI confirmed, that the glacial till and glaciolacustrine units at the Site act as confining units that restrict the vertical movement of groundwater. The results of groundwater monitoring confirms that groundwater in the fill is perched and occurs only sporadically. Analytical data from the groundwater collected at the Site confirm that Site groundwater has not been impacted. Groundwater monitoring wells will be removed prior to capping.

6.0 REMEDIAL DESIGN

A proposed Remedial Design (RD) has been prepared based upon the preferred alternative. Under the preferred alternative, a Track 4 cleanup track is used for the remediation of the Site for industrial use. A Site Plan for the proposed RD and facility upgrades, presented in Appendix E, provides the detailed description of the work, engineering drawings, construction-specifications and various work plans required during construction. These documents collectively will be used by Northeast Treaters, BCI Construction, Inc. (BCI) and a qualified environmental contractor ("environmental contractor") to implement and complete the RD. Certain construction contract documents and specifications regarding measurement and payment of the work are not part of this RD.

6.1 General Description of Construction Activity

All new construction, including the construction of the new concrete slab, building foundation and associated Site grading are set forth in the Site Plan provided as Appendix E.

The general construction sequence provides for:

- Establishing stormwater and erosion controls;
- Removing and/or relocating equipment;
- Demolishing buildings;
- Installing new frost walls;
- Capping of impacted soils with a protective cover;
- Constructing new processing building; and
- Increasing outdoor storage space

6.1.1 General Site Work Preparation

Site work preparation consists of establishing security measures, erosion control measures, and stormwater controls, etc. Construction-specifications and engineering drawings for the implementation of the remedy are provided in Appendix E.

BCI will add approximately six (6) inches of subbase to the unpaved area of the Site, located to the east of the processing building, to limit exposure to and migration of existing onsite fill material.

Northeast Treaters personnel will triple pressure wash (rinse) the interior of the processing building including, but not limited to, the area of the drip pad, the lower four (4) feet of the walls and kneewalls adjacent to the drip pad, the pressure treatment cylinder, and equipment used in the pressure treating process. Facility equipment will be managed as described in Section 6.1.2. Used rinse water will be discharged to the drip pad sump to be collected and directly reused as process water upon construction completion. Any rinse water that will not be directly reused will be managed as F035 hazardous waste.

Northeast Treaters will install and maintain a polyethylene barrier/equipment protection cover over the area of the drip pad to prevent stormwater contact with the drip pad and to protect the drip pad from damage by construction equipment. This barrier will also protect workers during building demolition.

6.1.2 Existing Facility Equipment

The concrete sumps within the existing drip pad will be managed by filling them with compacted gravel and covering them with the new drip pad installation. Piping and equipment will first be removed, cleaned (as described in Section 6.1.3) and relocated for subsequent reuse onsite or for sale as usable equipment or scrap. The drip pad sump will be filled with compacted gravel to create a firm subbase to support the new drip pad.

The southern sump associated with the tank farm is located south of the new building and drip pad. This sump only handled virgin treatment products prior to use in the process. As indicated on the Site Plan in Appendix E, this area is to be properly graded and capped with a protective cover. Following removal and cleaning of the tanks and process piping, the sump will be filled with compacted gravel and the area south of the proposed building will be capped with a protective cover.

The existing bulk storage tanks for the wood preservatives used in the present operations are located south of the existing drip pad and the proposed building. This area of the plant is not part of the drip pad. To the extent required by NYSDEC regulations, the tanks and piping will be cleaned in place by rinsing, removed and managed as scrap metal, or temporarily relocated for reuse. Rinse water will be discharged to the drip pad sump to allow for later reuse in the wood treatment process. Following filling of the sump described above, the concrete floor and curbs will be covered and paved. The details for paving are provided in the Site Plan presented in Appendix E.

The existing 80-foot long treatment cylinder will be decontaminated by rinsing (as described in Section 6.1.1) and removed from the Process Building. Northeast Treaters intends to search for a buyer for the decontaminated cylinder. If no buyer is found, the treatment cylinder will likely be sold for scrap. The rinse water will be discharged to the drip pad sump to be collected for reuse.

Other equipment in use at the facility, including certain tanks, pumps and other equipment, will be decontaminated and reused at the facility, sold for reuse or sold for scrap. Rinsing and cleaning of the equipment will occur over the existing drip pad. Rinse water will be collected and managed as described above.

6.1.3 Building Demolition

Between January 7 and 10, 2015 Alpine Environmental Services, Inc. (Alpine) removed previously identified asbestos containing material (ACM) in conformance with 12 NYCRR Part 56. A Report of Asbestos Air Monitoring & Project Monitoring Visual Inspection prepared by Alpine is provided as Appendix F.

Following the completion of the scope of work outlined in Section 6.1.1, roofing, siding and structural members more than four (4) feet above the floor will be dismantled and managed as general construction debris. Structure members and wood within four (4) feet of floor elevation will be separately managed as treated wood. Structural timber above four (4) feet from the floor can be salvaged. Northeast Treaters will maintain a barrier/equipment protection cover over the area of the drip pad during building demolition. Building demolition will be performed by BCI.

6.1.4 Frost Wall Installation

Frost walls and spread footers must be installed to support the new building. Two six (6) foot wide sections of the existing drip pad must be removed for the full width of the existing drip pad as indicated on the Site Plan. The existing drip pad will be saw cut and the six (6) foot width will be demolished using a pneumatic hammer to create concrete debris. Cuttings generated by saw cutting will be collected by wet/dry vac equipment. The saw cut residue will be containerized and managed as F035 hazardous waste.

Concrete rubble will be loaded out to transport trailers lined with plastic sheeting for disposal at a properly permitted secure hazardous waste landfill. The concrete may be subject to additional testing, as necessary, to satisfy the disposal facility's waste acceptance profile. Most of the facilities contacted regarding disposal of the waste will require full TCLP analysis for metals. The testing previously conducted may be sufficient for disposal characterization. Some facilities may also require testing for VOCs, SVOCs, PCBs and pesticides. Based upon the analytical results, disposal facilities may require treatment of the concrete by stabilization if LDRs are exceeded.

The concrete quantity generated during frost wall installation is estimated at 20 yd^3. The concrete will be demolished without attempting to clean or segregate the surface.

Subbase materials will be excavated as needed to accommodate the forms for the frost walls and spread footers. Excavated soil will be stockpiled on the existing concrete pad (the "Stockpiled Soil") and within a designated soil management area. Material within the soil management area must be placed over and covered by polyethylene sheeting at the end of each construction day. Following the installation of the spread footers and the frost walls, the area will be backfilled with the Stockpiled Soil and select gravel and compacted in preparation for installation of the new drip pad. Any Stockpiled Soil not returned to the excavation will either be used as fill to prepare the subbase for the new section of drip pad or will be characterized for disposal. Sampling will be conducted in accordance with NYSDEC Guidance DER-10 to document the concentration levels in soil under the drip pad. Sample results associated with the June 23, 2014 sampling investigation indicates the subbase soils will likely meet the alternative LDR treatment standards for contaminated soil, allowing the soil to be managed as non-hazardous solid waste. However, any soil which exceeds the alternative LDR treatment standards for contaminated soil will be managed as F035 hazardous waste. The Site Plan provided in Appendix E shows the planned new pad installation.

Drip pad demolition and excavation activities within the boundaries of the Site will be performed by the environmental contractor. Excavated material will be managed by the environmental contractor. Following excavation, the environmental contractor will install a protective liner as shown in Figure 14 to limit worker exposure to impacted soils. After a protective liner is installed in an excavation, BCI may enter the excavation to install spread footers and frost walls as shown in the Site Plan provided in Appendix E. In the event that a protective liner becomes damaged, BCI will immediately exit the excavation until it is repaired or replaced by the environmental contractor.

Stormwater that accumulates in excavation areas will be pumped and stored in 275 gallon totes supplied by Northeast Treaters or in Frac Tanks for reuse as process water upon construction completion.

6.1.5 Site Grading and Capping

All impacted areas exceeding the industrial use SCO will be capped witha protective cover. At a minimum, a protective cover will be installed to cover the area of impacted soil as shown in the Site Plan provided in Appendix E to prevent future exposure to existing impacted fill material or soil that is not excavated. Grubbing, grading and subbase preparation will occur, where applicable, to prepare for the

installment of a protective cover.

As part of the planned plant improvements, the 30 foot by 57 foot section of the existing pad located at the extreme northern end of the existing drip pad and extending approximately 30 feet beyond the proposed new building and canopy will be capped in-place with a protective cover. In addition, perimeter areas surrounding the new building will be paved. In this way, surficial soils potentially impacted by past operations will be covered with impervious surface. These measures will ensure that stormwater does not come into contact with potentially impacted soils.

6.1.6 Building Construction

The new drip pad and processing building will be constructed by BCI as presented by the Site Plan provided in Appendix E.

6.1.7 Expansion of Outdoor Storage Area

Northeast Treaters has acquired title to the adjacent property located to the north and east of the Site. Northeast Treaters will seek a property line adjustment to incorporate areas of offsite impact to the defined Brownfield Cleanup Area. The added area will be rezoned for industrial use and offsite contamination will be addressed by capping with a protective cover for the purposes of expanding the facility's outdoor storage yard. Northeast Treaters may further delineate impacts in offsite areas and place a protective cover over soil exhibiting concentrations of COCs in excess of industrial use SCOs. Further delineation may not be necessary if the protective cover extends to the currently known limits of impacted soil (i.e., OSS-15 through OSS-19).

In the event that Northeast Treaters decides to further define the extent of impacted surface soils beyond the existing boundaries of the Site, samples will be collected parallel to the existing northern and eastern boundaries of the Site and beyond offsite samples OSS-5 through OSS-13, previously collected (see Figure 10). Once the extent of contamination on the adjoining property has been delineated and Northeast Treaters has determined its plans for the newly acquired property, STERLING and Northeast Treaters will determine the extent of offsite capping. The expansion of the storage yard is planned for the 2016 construction season (see Section 7.0).

6.2 Project Organization and Responsibilities

A detailed description of the work and individual item specifications for all elements of the work are provided in Appendix E. These include minimum specifications for all earth materials and construction products to be incorporated into the remedial work. The specifications also address earth work and construction activities at the Site.

6.3 Construction-Specifications and Engineering Plans

The following list of engineering drawings (provided in Appendix E) present the construction requirements for the preferred alternative.

Plate	Drawing
Plate C1	Site Plan
Plate C2	Cover Page / Stormwater Plan

Plate C3	Tank Farm Enlarged Plan / Erosion Control Plan and Detail
Plate C4	Elevations and Details at Each Cylinder
Plate C5	Cylinder Pier Elevations and Details
Plate C6	Sections
Plate C7	Tank Farm Sections
Plate C8	Tank Farm Enlarged Plan
Plate C9	Concrete Details
Plate C10	Preformed Sump Box Details
Plate C11	Concrete Notes
Plate C12	Concrete Notes
Plate A1	Process Building Elevations
Plate A2	Process Building Elevations
Plate A3	Office Building Elevations

6.4 Excavation Work Plan (EWP)

During construction and remediation activities, onsite soils will be managed in accordance with the EWP provided as Appendix G. The EWP outlines the methods and procedures, work sequence, and construction management practices to complete soil excavation, consolidation, relocation and disposal in an environmentally responsible fashion, and in conformance with applicable local, state, and federal regulations.

6.5 Health and Safety Plan (HASP)

A Health and Safety Plan (HASP) is provided as Appendix H in accordance with 40 CFR 1910 and 1926. The Site HASP addresses general construction health and safety issues and the potential health and safety concerns associated with exposure to airborne dust and Site specific COCs (i.e. chromium and arsenic) in soil.

6.6 Community Air Monitoring Plan (CAMP)

The Community Air Monitoring Plan (CAMP) developed for the remediation project is based on the Generic CAMP prepared by the NYSDOH. The CAMP provides for real time particulate monitoring at the upwind and downwind perimeter of the work area. The CAMP is provided as Appendix I.

6.7 Dust Control Plan (DCP)

A Dust Control Plan (DCP) is provided as Appendix J. Dust management during invasive onsite work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated onsite water truck for road wetting. The truck will be equipped with a water cannon or hose capable of spraying water directly onto off-road areas including excavations, stockpiles and staging areas.
- Clearing and grubbing of larger sites will be performed 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.
- Onsite roads will be limited in total area to minimize the area required for water truck sprinkling.
- Wetting of concrete saw cuts to suppress dust.

6.8 Stormwater Management

The facility is subject to a General Stormwater Permit and associated Storm Water Pollution Prevention Plan (SWPPP). A copy of the existing SWPPP is provided in Appendix K.

The construction activities discussed in this herein result in minimal ground disturbance and the work sequence is designed to minimize opportunity for stormwater to come in contact with impacted concrete or excavated soils. The erosion and sediment control measures presented in the Site Plan in Appendix E will be implemented to minimize the impact of the construction activity on stormwater.

6.9 Site Management Plan (SMP)

Permanent use restrictions and institutional controls will be implemented for the soil consolidation and capped area in accordance with the Brownfield Cleanup Agreement (BCA). These restrictions will include, but not be limited to the following: (1) restrictions on the use of groundwater as potable water, if determined necessary by DEC; (2) maintenance of the cap; and (3) restrictions limiting future use to industrial activity. Such will be set forth in the SMP to be furnished to the NYSDEC following construction. The details of the Environmental Easement will be as required by NYSDEC protocol.

7.0 IMPLEMENTATION SCHEDULE

The tasks required to complete the subsequent development of the Site are provided as Appendix L.

7.1 Reporting

Written progress reports will be submitted to the NYSDEC on the 10th day of each month. A Final Engineering Report will be prepared by STERLING and submitted to the NYSDEC at the conclusion of all activities required by the Remedial Work Plan.

TABLES

Table 1a: Summary of Historical Soil Analytical Results
Northeast Treaters of New York, LLC (Formerly Atlantic Wood Industries, Inc.)
796 Schoharie Turnpike, Town of Athens, New York

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent	Copper, Total Recoverable	Arsenic, TCLP	Chromium, TCLP	Copper, TCLP
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L
			Soil Cleanup Objectives (Unrestricted)	13	30	1	50	---	---	---
			Soil Cleanup Objectives (Commercial)	16	1,500	400	270	---	---	---
			Soil Cleanup Objectives (Industrial)	16	6,800	800	10,000	---	---	---
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**							
C-1	14.5 - 15.5' bgs	Fill	11/12/1998-11/13/1998	5.40	22.3	< 2.50	---	---	---	---
C-1	15.5 - 16.0' bgs	Clay	11/12/1998-11/13/1998	8.60	34.2	< 2.80	---	---	---	---
C-2	4.5 - 5.0' bgs	Fill	11/12/1998-11/13/1998	192	229	17.6	---	---	---	---
C-2	5.0 - 5.5' bgs	Clay	11/12/1998-11/13/1998	28.6	79.1	< 2.60	---	---	---	---
C-3	4.25 - 4.5' bgs	Fill	11/12/1998-11/13/1998	662	580	21.6	---	---	---	---
C-3	4.5 - 5.25' bgs	Clay	11/12/1998-11/13/1998	22.1	47.0	< 2.70	---	---	---	---
C-4	6.25 - 6.5' bgs	Fill	11/12/1998-11/13/1998	246	155	10.0	---	---	---	---
C-4	7.0 - 7.5' bgs	Clay	11/12/1998-11/13/1998	6.20	40.5	3.40	---	---	---	---
C-5	4.5 - 5.5' bgs	Fill	11/12/1998-11/13/1998	7.50	39.9	< 2.40	---	---	---	---
C-6	13.5 - 14.0' bgs	Fill	11/12/1998-11/13/1998	16.0	41.9	< 2.40	---	---	---	---
C-6	14.0 - 14.5' bgs	Clay	11/12/1998-11/13/1998	8.50	425.5	< 2.70	---	---	---	---
C-7	6.5 - 7.0' bgs	Fill	11/12/1998-11/13/1998	70.9	46.5	< 2.20	---	---	---	---
C-7	7.0 - 7.5' bgs	Clay	11/12/1998-11/13/1998	10.6	41.8	< 2.60	---	---	---	---
C-B	3.5 - 4.0' bgs	Clay	11/12/1998-11/13/1998	6.60	29.0	< 2.50	---	---	---	---
C-8	6.0 - 6.5' bgs	Fill	11/12/1998-11/13/1998	25.2	99.0	3.50	---	---	---	---
C-8	6.5 - 7.0' bgs	Clay	11/12/1998-11/13/1998	9.50	36.4	< 2.70	---	---	---	---
C-9	7.0 - 7.5' bgs	Fill	11/12/1998-11/13/1998	50.9	29.8	< 2.10	---	---	---	---
C-9	7.5 - 8.0' bgs	Clay	11/12/1998-11/13/1998	6.70	36.9	< 2.60	---	---	---	---
C-10	7.0 - 7.5' bgs	Fill	11/12/1998-11/13/1998	404	312	42.0	---	---	---	---
C-10	7.5 - 8.0' bgs	Clay	11/12/1998-11/13/1998	21.3	348	4.30	---	---	---	---
C-11	2.5 - 3.0' bgs	Fill	11/12/1998-11/13/1998	74.1	21.4	< 2.10	---	---	---	---
C-11	3.0 - 3.5' bgs	Clay	11/12/1998-11/13/1998	10.8	42.8	< 2.50	---	---	---	---
C-12	2.0 - 2.5' bgs	Fill	11/12/1998-11/13/1998	9.20	730	< 2.10	---	---	---	---
C-12	2.5 - 3.0' bgs	Clay	11/12/1998-11/13/1998	41.7	108	< 2.50	---	---	---	---
C-13	1.5 - 2.0' bgs	Fill	11/12/1998-11/13/1998	71.7	84.7	3.80	---	---	---	---
C-13	2.0 - 2.5' bgs	Clay	11/12/1998-11/13/1998	6.90	32.8	< 2.50	---	---	---	---
C-14	1.5 - 2.0' bgs	Fill	11/12/1998-11/13/1998	911	120	30.5	---	---	---	---
C-14	2.0 - 2.5' bgs	Clay	11/12/1998-11/13/1998	23.8	48.8	< 2.60	---	---	---	---
C-15	2.5 - 3.0' bgs	Fill	11/12/1998-11/13/1998	75.0	28.3	3.40	---	---	---	---
C-15	3.0 - 3.5' bgs	Clay	11/12/1998-11/13/1998	8.50	40.8	< 2.50	---	---	---	---
BK-1	5.0 - 6.0' bgs	Clay	6/17/1997	< 2.85	24.0	< 4.98	---	---	---	---
B-1	5.5 - 8.5' bgs	Clay	6/17/1997	< 2.87	25.5	< 5.16	---	---	---	---
B-2	5.5 - 6.0' bgs	Clay	6/17/1997	< 2.87	28.6	< 5.47	---	---	---	---
B-3	5.2 - 5.8' bgs	Clay	6/17/1997	< 2.90	25.9	< 5.23	---	---	---	---
B-4	5.5 - 6.9' bgs	Clay	6/17/1997	< 2.88	29.0	< 5.37	---	---	---	---
B-5	6.0 - 7.5' bgs	Fill	6/17/1997	< 2.82	23.8	< 5.26	---	---	---	---
B-6	5.0 - 6.0' bgs	Clay	6/17/1997	< 2.95	32.7	< 5.18	---	---	---	---
B-7	5.0 - 8.0' bgs	Clay	6/17/1997	< 2.95	27.5	< 5.24	---	---	---	---
B-8	5.0 - 6.0' bgs	Clay	6/17/1997	< 2.86	42.3	< 4.90	---	---	---	---
B-9	5.0 - 6.0' bgs	Clay	6/17/1997	< 3.25	24.5	< 5.27	---	---	---	---
BSS-1	6.0 - 12.0" bgs	---	10/10/1995	4.40	33.8	---	33.8	< 0.03	< 0.01	< 0.01
BSS-2	6.0 - 12.0" bgs	---	10/10/1995	4.90	32.1	---	32.1	< 0.03	< 0.01	0.011
SS-1	6.0 - 12.0" bgs	---	10/10/1995	11.1	15.6	---	25.6	< 0.03	< 0.01	< 0.01
SS-2	12.0 - 18.0" bgs	---	10/10/1995	42.7	50.0	---	42.7	< 0.03	< 0.01	< 0.01
SS-3	14.0 - 20.0" bgs	---	10/10/1995	5.50	27.3	---	32.5	< 0.03	< 0.01	< 0.01
SS-4	16.0 - 22.0" bgs	---	10/10/1995	5.30	31.3	---	26.3	< 0.03	< 0.01	0.011
SS-5	15.0 - 21.0" bgs	---	10/10/1995	5.20	29.1	---	27.8	< 0.03	< 0.01	0.014
SS-6	13.0 - 19.0" bgs	---	10/10/1995	4.30	26.8	---	25.6	< 0.03	< 0.01	< 0.01
SS-7	15.0 - 21.0" bgs	---	10/10/1995	3.80	29.5	---	19.2	< 0.03	< 0.01	< 0.01
SS-8	15.0 - 21.0" bgs	---	10/10/1995	2.40	29.3	---	29.3	< 0.03	< 0.01	0.021
SS-9	19.0 - 25.0" bgs	---	10/10/1995	3.90	32.9	---	29.1	< 0.03	< 0.01	0.015
SS-10	15.0 - 21.0" bgs	---	10/10/1995	4.40	27.8	---	30.4	< 0.03	< 0.01	0.014
SS-A (DUP SS-9)	19.0 - 25.0" bgs	---	10/10/1995	2.40	34.6	---	30.8	< 0.03	< 0.01	< 0.01
P-1	3.0 - 5.0' bgs	Clay	10/30/1995	< 0.63	21.2	---	22.5	< 0.03	< 0.01	< 0.01
P-2	3.0 - 5.0' bgs	Clay	10/30/1995	10.6	28.6	---	28.6	< 0.03	< 0.01	0.012
SS-11	12.0" bgs	---	11/16/1995	---	---	---	---	---	---	---
SS-12	---	---	11/16/1995	128	105	---	34.0	< 0.03	0.028	0.010
SS-13	---	---	11/16/1995	10.3	18.9	---	15.8	< 0.03	< 0.01	0.011
SS-14	---	---	11/16/1995	7.70	25.3	---	20.0	< 0.03	< 0.01	0.016
SS-15	9.5 - 10.0' bgs	---	11/16/1995	8.20	25.0	---	27.6	< 0.03	< 0.01	< 0.01
SS-16	0.0 - 14.0" bgs	---	11/16/1995	48.4	38.9	---	31.6	< 0.03	< 0.01	0.014
SS-17	0.0 - 16.0" bgs	---	11/16/1995	18.9	20.0	---	22.1	< 0.03	< 0.01	0.012
SS-18	0.0 - 12.0" bgs	---	11/16/1995	22.6	31.0	---	17.9	< 0.03	< 0.01	0.014
SS-19	0.0 - 7.0" bgs	---	11/16/1995	6.30	32.4	---	33.8	< 0.03	< 0.01	< 0.01
SS-20	0.0 - 13.0" bgs	---	11/16/1995	16.2	32.4	---	23.0	< 0.03	< 0.01	< 0.01
SS-21	0.0 - 7.0" bgs	---	11/16/1995	9.20	30.6	---	18.1	< 0.03	< 0.01	< 0.01
SS-23	2.8' bgs	---	11/16/1995	5.70	29.9	---	22.1	< 0.03	< 0.01	0.011
SS-24	18.0" bgs	---	11/16/1995	6.50	30.8	---	32.1	< 0.03	< 0.01	< 0.01
SS-25	Surface	---	11/16/1995	---	---	---	---	---	---	---

Note:
--- = Not Applicable
< = Constituent not detected; value shown is the detection limit.
Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives
Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Table 1b: Summary of Groundwater Analytical Results (Original Plant Well)
Northeast Treaters of New York, LLC (Formerly Atlantic Wood Industries, Inc.)
796 Schoharie Turnpike, Town of Athens, New York

		Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Copper, Total Recoverable	Arsenic, Dissolved	Chromium, Dissolved	Copper, Dissolved
		Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		NYSDEC Class GA Groundwater Standards	0.025	0.050	0.200	0.025	0.050	0.200
Sample ID	**Sample Matrix**	**Date Sampled**						
AW-1	Water	10/31/1995	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Table 2a: Analytical Results for Full Parameter Sampling
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
November 18-20, 2014

				Sample ID	SP01S	SP02S	SP03S	SP04S	SP05S	SP05D	SP06S	SP06D	DPP02ES	DPP05ES	DPP08ES	DPP10ES	DPP13ES	DPP16ES	SUMP FILL	SUMP Clay	DP01 FILL	DP01 Clay	DP03 FILL	DP03 Clay
				Sample Matrix	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Soil
				Date Sampled	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/19/2014	11/19/2014	11/20/2014	11/20/2014	11/19/2014	11/19/2014
	Clay Cleanup Objectives																							
Semivolatiles (µg/kg)	**Unrestricted**	**Commercial**	**Industrial**																					
Acenaphthene	20,000	500,000	1,000,000		14 U	14 U	13 U	14 U	14 U	17 U	19 U	13 U	14 U	14 U	14 U	16 U	16 U	14 U	17 U	17 U	14 U	16 U	17 U	18 U
Acenaphthylene	100,000	500,000	1,000,000		16 U	16 U	15 U	16 U	16 U	20 U	22 U	16 U	16 U	16 U	16 U	18 U	18 U	16 U	19 U	19 U	17 U	19 U	20 U	21 U
Anthracene	100,000	500,000	1,000,000		15 U	15 U	14 U	15 U	15 U	18 U	20 U	15 U	15 U	15 U	71 J	17 U	17 U	15 U	18 U	18 U	16 U	18 U	19 U	20 U
Benzo[a]anthracene	1,000	5,600	11,000		14 U	14 U	13 U	14 U	14 U	17 U	19 U	13 U	14 U	14 U	1700	16 U	16 U	14 U	17 U	17 U	14 U	16 U	17 U	18 U
Benzo[a]pyrene	1,000	1,000	1,100		13 U	13 U	12 U	13 U	13 U	16 U	17 U	12 U	13 U	13 U	750	15 U	15 U	13 U	15 U	15 U	13 U	15 U	16 U	17 U
Benzo[b]fluoranthene	1,000	5,600	11,000		25 U	25 U	24 U	25 U	25 U	30 U	33 U	24 U	25 U	25 U	1800	28 U	28 U	25 U	30 U	29 U	25 U	29 U	31 U	32 U
Benzo[g,h,i]perylene	100,000	500,000	1,000,000		14 U	14 U	13 U	14 U	14 U	17 U	19 U	13 U	14 U	14 U	420	16 U	16 U	14 U	17 U	17 U	14 U	16 U	17 U	18 U
Benzo[k]fluoranthene	800	56,000	110,000		32 U	32 U	31 U	32 U	32 U	39 U	43 U	31 U	32 U	32 U	1500	36 U	37 U	33 U	39 U	38 U	33 U	38 U	40 U	42 U
Chrysene	1,000	56,000	110,000		19 U	19 U	18 U	19 U	19 U	24 U	26 U	19 U	19 U	19 U	1800	22 U	22 U	20 U	23 U	23 U	20 U	23 U	24 U	25 U
Dibenz(a,h)anthracene	330	560	1,100		12 U	12 U	11 U	12 U	12 U	14 U	16 U	11 U	12 U	12 U	140 J	13 U	13 U	12 U	14 U	14 U	12 U	14 U	15 U	15 U
Fluoranthene	100,000	500,000	1,000,000		13 U	13 U	12 U	40 J	13 U	16 U	17 U	12 U	13 U	53 J	2600	15 U	15 U	13 U	15 U	15 U	13 U	15 U	16 U	17 U
Fluorene	30,000	500,000	1,000,000		16 U	16 U	15 U	16 U	16 U	20 U	22 U	16 U	16 U	16 U	16 U	18 U	18 U	16 U	19 U	19 U	17 U	19 U	20 U	21 U
Indeno[1,2,3-cd]pyrene	500	5,600	11,000		15 U	15 U	14 U	15 U	15 U	18 U	20 U	15 U	15 U	15 U	440	17 U	17 U	15 U	18 U	18 U	16 U	18 U	19 U	20 U
m & p - Cresol	330	500,000	1,000,000		79 U	79 U	76 U	79 U	79 U	97 U	110 U	77 U	79 U	80 U	80 U	89 U	90 U	80 U	95 U	94 U	82 U	93 U	99 U	100 U
Naphthalene	12,000	500,000	1,000,000		16 U	16 U	15 U	16 U	16 U	20 U	22 U	16 U	16 U	16 U	16 U	18 U	18 U	16 U	19 U	19 U	17 U	19 U	20 U	21 U
o-Cresol	330	500,000	1,000,000		43 U	43 U	41 U	43 U	43 U	52 U	58 U	41 U	43 U	43 U	43 U	48 U	49 U	43 U	51 U	51 U	44 U	51 U	54 U	56 U
Pentachlorophenol	800	6,700	55,000		72 U	73 U	70 U	73 U	73 U	89 U	98 U	71 U	73 U	73 U	73 U	82 U	83 U	74 U	87 U	87 U	75 U	86 U	91 U	95 U
Phenanthrene	100,000	500,000	1,000,000		13 U	13 U	12 U	13 U	13 U	16 U	17 U	12 U	13 U	13 U	340 J	15 U	15 U	13 U	15 U	15 U	13 U	15 U	16 U	17 U
Phenol	330	500,000	1,000,000		43 U	43 U	41 U	43 U	43 U	52 U	58 U	41 U	43 U	43 U	43 U	48 U	49 U	43 U	51 U	51 U	44 U	51 U	54 U	56 U
Pyrene	100,000	500,000	1,000,000		15 U	15 U	14 U	15 U	15 U	18 U	20 U	15 U	15 U	49 J	2500	17 U	17 U	15 U	18 U	18 U	16 U	18 U	19 U	20 U

				Sample ID	SP01S	SP02S	SP03S	SP04S	SP05S	SP05D	SP06S	SP06D	DPP02ES	DPP05ES	DPP08ES	DPP10ES	DPP13ES	DPP16ES	SUMP FILL	SUMP Clay	DP01 FILL	DP01 Clay	DP03 FILL	DP03 Clay
				Sample Matrix	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Soil
				Date Sampled	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/19/2014	11/19/2014	11/20/2014	11/20/2014	11/19/2014	11/19/2014
	Clay Cleanup Objectives																							
Volatiles (µg/kg)	**Unrestricted**	**Commercial**	**Industrial**																					
1,1,1-Trichloroethane	680	500,000	1,000,000		0.25 U * E	0.35 U	0.35 U	0.39 U	0.27 U	16 U	0.43 U	0.25 U	0.29 U	0.39 U	0.35 U	0.36 U	0.27 U	0.29 U	0.37 U	0.33 U	0.29 U	0.32 U	0.37 U	0.35 U
1,1-Dichloroethane	270	240,000	480,000		0.36 U * E	0.50 U	0.50 U	0.57 U	0.39 U	16 U	0.63 U	0.36 U	0.42 U	0.56 U	0.51 U	0.52 U	0.38 U	0.42 U	0.53 U	0.48 U	0.42 U	0.46 U	0.53 U	0.51 U
1,1-Dichloroethene	330	500,000	1,000,000		0.22 U * E	0.31 U	0.31 U	0.36 U	0.24 U	17 U	0.39 U	0.23 U	0.26 U	0.35 U	0.32 U	0.32 U	0.24 U	0.26 U	0.33 U	0.30 U	0.26 U	0.29 U	0.33 U	0.32 U
1,2-Dichlorobenzene	1,100	500,000	1,000,000		0.10 U * E	0.15 U	0.15 U * E	0.17 U * E	0.11 U * E	16 U	0.18 U	0.10 U	0.12 U	0.16 U * E	0.15 U	0.15 U * E	0.11 U * E	0.12 U	0.15 U	0.14 U	0.12 U	0.13 U	0.15 U	0.15 U
1,2-Dichloroethane	20	30,000	60,000		0.69 U * E	0.98 U	0.97 U	1.1 U	0.75 U	13 U	1.2 U	0.70 U	0.82 U	1.1 U	0.99 U	1.0 U	0.74 U	0.82 U	1.0 U	0.93 U	0.81 U	0.90 U	1.0 U	0.99 U
cis-1,2-Dichloroethene	250	500,000	1,000,000		0.34 U * E	0.48 U	0.48 U	0.55 U	0.37 U	14 U	0.60 U	0.35 U	0.41 U	0.54 U	0.49 U	0.49 U	0.37 U	0.40 U	0.51 U	0.46 U	0.40 U	0.44 U	0.51 U	0.49 U
trans-1,2-Dichloroethene	190	500,000	1,000,000		0.066 U * E	0.093 U	0.093 U	0.11 U	0.071 U	16 U	0.12 U	0.067 U	0.078 U	0.10 U	0.094 U	0.095 U	0.071 U	0.078 U	0.098 U	0.088 U	0.078 U	0.086 U	0.098 U	0.095 U
1,3-Dichlorobenzene	2,400	280,000	560,000		0.088 U * E	0.12 U	0.12 U * E	0.14 U * E	0.095 U * E	15 U	0.15 U	0.089 U	0.10 U	0.14 U * E	0.12 U	0.13 U * E	0.094 U * E	0.10 U	0.13 U	0.12 U	0.10 U	0.11 U	0.13 U	0.13 U
1,4-Dichlorobenzene	1,800	130,000	250,000		0.30 U * E	0.43 U	0.42 U * E	0.48 U * E	0.33 U * E	15 U	0.53 U	0.31 U	0.36 U	0.48 U * E	0.43 U	0.44 U * E	0.32 U * E	0.36 U	0.45 U	0.40 U	0.36 U	0.39 U	0.45 U	0.43 U
1,4-Dioxane	100	130,000	250,000		11 U * E	16 U	16 U	18 U	12 U	880 U	19 U	11 U	13 U	18 U	16 U	16 U	12 U	13 U	17 U	15 U	13 U	14 U	16 U	16 U
Acetone	50	500,000	1,000,000		6.5 B * ND E	6.3 B ND	7.6	7.0	8.5	140 J B ND	5.7 U	5.4 B	4.7 B ND	5.9 J	8.3	7.4 B	3.6 J B	14 B ND	12 B	18 B	15 B	17 B	23 B	20 B ND
Benzene	60	44,000	89,000		0.34 U * E	0.48 U	0.48 U	0.55 U	0.37 U	17 U	0.60 U	0.35 U	0.41 U	0.87 J	0.49 U	0.49 U	0.37 U	0.40 U	0.60 J	0.46 U	0.40 U	0.44 U	0.51 U	0.49 U
n-Butylbenzene	12,000	500,000	1,000,000		0.21 U * E	0.29 U	1.9 J * E	0.33 U * E	0.22 U * E	15 U	0.36 U	0.21 U	0.25 U	0.33 U * E	0.29 U	0.30 U * E	0.22 U * E	0.24 U	0.31 U	0.28 U	0.24 U	0.27 U	0.31 U	0.30 U
Carbon tetrachloride	760	22,000	44,000		0.043 U * E	0.061 U	0.060 U	0.069 U	0.046 U	12 U	0.075 U	0.044 U	0.051 U	0.068 U	0.061 U	0.062 U	0.046 U	0.051 U	0.064 U	0.057 U	0.051 U	0.056 U	0.064 U	0.062 U
Chlorobenzene	1,100	500,000	1,000,000		0.088 U * E	0.12 U	0.12 U * E	0.14 U	0.095 U	16 U	0.15 U	0.089 U	0.10 U	0.14 U	0.12 U	0.13 U	0.094 U * E	0.10 U	0.13 U	0.12 U	0.10 U	0.11 U	0.13 U	0.13 U
Chloroform	370	350,000	700,000		0.35 U * E	0.49 U	0.49 U	0.56 U	0.38 U	15 U	0.61 U	0.35 U	0.41 U	0.55 U	0.50 U	0.51 U	0.38 U	0.41 U	0.52 U	0.47 U	0.41 U	0.45 U	0.52 U	0.50 U
Ethylbenzene	1,000	390,000	780,000		0.054 U * E	0.076 U	0.076 U * E	0.087 U	0.058 U	16 U	0.095 U	0.055 U	0.064 U	0.085 U	0.077 U	0.078 U	0.058 U * E	0.064 U	1.8 J	0.072 U	41	0.070 U	2.2 J	0.078 U
Hexachlorobenzene	330	6,000	12,000		49 U E	49 U	47 U	49 U	49 U	60 U	67 U	48 U	49 U	50 U	49 U	56 U	56 U	50 U	59 U	59 U	51 U	58 U	62 U	65 U
Methyl Ethyl Ketone	120	500,000	1,000,000		1.8 U * E	2.5 U	2.5 U	2.8 U	1.9 U	68 U	3.1 U	1.8 U	2.1 U	2.8 U	2.5 U	2.5 U	1.9 U	2.5 J	2.6 U	5.8	5.4	3.3 J	4.2 J	5.9
Methyl tert-butyl ether	930	500,000	1,000,000		0.27 U * E	0.38 U	0.38 U	0.43 U	0.29 U	14 U	0.47 U	0.27 U	0.32 U	0.43 U	0.39 U	0.39 U	0.29 U	0.32 U	0.40 U	0.36 U	0.32 U	0.35 U	0.40 U	0.39 U
Methylene Chloride	50	500,000	1,000,000		0.80 J B * ND E	0.63 J B ND	0.79 J B ND	0.76 J B ND	0.48 U	21 U	1.4 J B ND	0.45 U	0.55 J B ND	0.70 U	0.65 J B ND	0.90 J B ND	0.49 J B ND	0.52 U	0.66 U	0.60 U	0.77 J B	0.58 U	0.87 J B ND	0.71 J B ND
N-Propylbenzene	3,900	500,000	1,000,000		0.25 U * E	0.35 U	0.35 U * E	0.39 U * E	0.27 U * E	16 U	0.43 U	0.25 U	0.29 U	0.39 U * E	0.35 U	0.36 U * E	0.27 U * E	0.29 U	0.37 U	0.33 U	0.33 J	0.32 U	0.37 U	0.35 U
sec-Butylbenzene	11,000	500,000	1,000,000		0.088 U * E	0.12 U	1.8 J * E	0.14 U * E	0.095 U * E	15 U	0.15 U	0.089 U	0.10 U	0.14 U * E	0.12 U	0.13 U * E	0.094 U * E	0.10 U	0.13 U	0.12 U	0.10 U	0.11 U	0.13 U	0.13 U
tert-Butylbenzene	5,900	500,000	1,000,000		0.20 U * E	0.28 U	0.28 U * E	0.32 U * E	0.21 U * E	14 U	0.35 U	0.20 U	0.24 U	0.31 U * E	0.28 U	0.29 U * E	0.21 U * E	0.23 U	0.29 U	0.27 U	0.23 U	0.26 U	0.29 U	0.29 U
Tetrachloroethene	1,300	150,000	300,000		0.23 U * E	0.33 U	0.32 U * E	0.37 U	0.25 U	16 U	0.40 U	0.23 U	0.27 U	0.36 U	0.33 U	0.33 U	0.25 U * E	0.27 U	0.34 U	0.31 U	0.27 U	0.30 U	0.34 U	0.33 U
Toluene	700	500,000	1,000,000		0.30 J * E	0.21 U	1.2 J * E	0.24 U	0.16 U	16 U	0.26 U	0.15 U	0.18 U	0.89 J	0.22 U	0.70 J	1.1 J * E	0.18 U	3.0 J	0.20 U	1.5 J	0.20 U	0.92 J	0.25 J
Trichloroethene	470	200,000	400,000		0.45 U * E	0.64 U	0.64 U	0.73 U	0.49 U	13 U	0.79 U	0.46 U	0.54 U	0.72 U	0.65 U	0.66 U	0.49 U	0.53 U	0.67 U	0.61 U	0.53 U	0.59 U	0.67 U	0.65 U
1,2,4-Trimethylbenzene	3,600	190,000	380,000		0.096 U * E	0.13 U	2.6 J * E	0.15 U * E	0.10 U * E	14 U	0.17 U	0.097 U	0.11 U	0.15 U * E	0.14 U	0.14 U * E	0.10 U * E	0.17 J	0.24 J	0.13 U	0.61 J	0.12 U	0.36 J	0.14 U
1,3,5-Trimethylbenzene	8,400	190,000	380,000		0.18 U * E	0.25 U	0.25 U * E	0.28 U * E	0.19 U * E	16 U	0.31 U	0.18 U	0.21 U	0.28 U * E	0.25 U	0.25 U * E	0.19 U * E	0.21 U	0.26 U	0.23 U	0.30 J	0.23 U	0.26 U	0.25 U
Vinyl chloride	20	13,000	27,000		0.53 U * E	0.74 U	0.74 U	0.84 U	0.57 U	16 U *	0.92 U	0.53 U	0.62 U	0.83 U	0.75 U	0.76 U	0.56 U	0.62 U	0.78 U	0.70 U	0.62 U	0.68 U	0.78 U	0.75 U
Xylenes, Total	260	500,000	1,000,000		0.042 U* E	0.059 U	0.059 U * E	0.067 U	0.046 U	17 U	0.074 U	0.043 U	0.050 U	0.067 U	0.060 U	0.061 U	0.045 U * E	0.050 U	13	0.056 U	270	0.60 J	12	0.060 U

Notes:
Values highlighted in yellow indicate exceedance of Unrestricted Use Clay Cleanup Objective.
Values highlighted in blue indicate exceedance of Commercial Use Clay Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Clay Cleanup Objectives.

Lab Qualifiers:
U = Not detected above the laboratory method detection limit shown.
J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.
B = Compound was found in the blank sample.
* = Laboratory Control Sample (LCS) or Laboratory Control Sample Duplicate (LCSD) exceeds the control limits.

Data Validation Qualifiers:
ND = Not Detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank.
E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method .
R = Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample. Supporting data or information is necessary to confirm the result.

Table 2a: Analytical Results for Full Parameter Sampling
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
November 18-20, 2014

				Sample ID	SP01S	SP02S	SP03S	SP04S	SP05S	SP05D	SP06S	SP06D	DPP02ES	DPP05ES	DPP08ES	DPP10ES	DPP13ES	DPP16ES	SUMP FILL	SUMP Clay	DP01 FILL	DP01 Clay	DP03 FILL	DP03 Clay
				Sample Matrix	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Soil
				Date Sampled	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/19/2014	11/19/2014	11/19/2014	11/20/2014	11/20/2014	11/19/2014	11/19/2014
	Clay Cleanup Objectives																							
Pesticides (µg/kg)	**Unrestricted**	**Commercial**	**Industrial**																					
Silvex (2,4,5-TP)	3,800	500,000	1,000,000		6.3 U	6.4 U	6.3 U	6.2 U	6.3 U	7.7 U	8.3 U	6.3 U	6.4 U	6.4 U	6.4 U	7.1 U	7.1 U	6.4 U	7.7 U	7.6 U	6.5 U	7.4 U	7.9 U	8.1 U
4,4'-DDE	3.3	62,000	120,000		36 U	3.8 U	3.7 U	3.6 U	0.36 U	0.44 U	25 U	0.36 U	19 U	0.37 U	0.36 U	42 U	20 U	19 U	0.45 U	0.44 U	0.37 U	0.42 U	0.76 J E	0.48 U
4,4'-DDT	3.3	47,000	94,000		41 U	4.2 U	4.1 U	4.0 U	0.41 U	0.50 U	28 U	0.40 U	21 U	0.41 U	0.41 U	47 U	23 U	21 U	2.1 E	0.50 U	0.41 U	0.47 U	0.52 U	0.53 U
4,4'-DDD	3.3	92,000	180,000		34 U	3.5 U	3.4 U	3.3 U	0.34 U	0.41 U	23 U	0.33 U	17 U	0.34 U	0.34 U	39 U	19 U	17 U	0.41 U	0.41 U	0.34 U	0.39 U	0.43 U	0.44 U
Aldrin	5.0	680	1,400		43 U	4.4 U	4.3 U	4.2 U	0.43 U	0.52 U	29 U	0.42 U	22 U	0.44 U	0.43 U	49 U	24 U	22 U	0.53 U	0.52 U	0.44 U	0.50 U	0.54 U	0.56 U
alpha-BHC	20	3,400	6,800		31 U	3.2 U	4.9 J B ND	3.1 U	1.5 J B ND	0.84 J B ND	21 U	1.2 J B ND	16 U	3.1 B ND	2.6 B ND	36 U	17 U	16 U	1.5 J B ND	1.2 J B ND	0.51 J	0.88 J	1.4 J B ND	1.3 J B ND
beta-BHC	36	3,000	14,000		31 U	3.2 U	3.1 U	3.1 U	0.31 U	0.38 U	21 U	0.31 U	16 U	1.8 R	1.9 R	36 U	17 U	16 U	0.38 U	0.38 U	0.32 U	0.36 U	0.40 U	2.7
alpha-Chlordane	94	24,000	47,000		86 U	9.0 U	8.7 U	8.5 U	0.86 U	1.1 U	59 U	0.86 U	44 U	0.88 U	0.86 U	99 U	48 U	44 U	1.1 U	1.1 U	0.88 U	1.0 U	1.1 U	1.1 U
delta-BHC	40	500,000	1,000,000		32 U	3.3 U	3.2 U	3.2 U	0.43 J	0.39 U	22 U	0.32 U	17 U	0.49 J JN	0.65 J R	37 U	18 U	17 U	0.40 U	0.39 U	0.33 U	0.38 U	0.41 U	0.42 U
Dibenzofuran	7,000	350,000	1,000,000		17 U	17 U	16 U	17 U	17 U	21 U	23 U	17 U	17 U	17 U	17 U	19 U	20 U	17 U	21 U	20 U	18 U	20 U	21 U	22 U
Dieldrin	5.0	1,400	2,800		42 U	4.3 U	4.2 U	4.1 U	0.42 U	0.51 U	28 U	0.41 U	21 U	0.43 U	0.42 U	**48**	23 U	21 U	0.51 U	0.51 U	0.43 U	0.49 U	0.53 U	0.54 U
Endosulfan I	2,400	200,000	920,000		33 U	3.5 U	3.3 U	3.3 U	0.33 U	0.41 U	23 U	0.33 U	17 U	0.34 U	0.33 U	38 U	19 U	17 U	0.41 U	0.41 U	0.34 U	0.39 U	0.42 U	0.44 U
Endosulfan II	2,400	200,000	920,000		31 U	3.2 U	3.1 U	3.1 U	0.31 U	0.38 U	21 U	0.31 U	16 U	0.32 U	0.31 U	36 U	17 U	16 U	0.38 U	0.38 U	0.32 U	0.36 U	0.40 U	0.41 U
Endosulfan sulfate	2,400	200,000	920,000		32 U	3.4 U	3.2 U	3.2 U	0.32 U	0.40 U	22 U	0.32 U	17 U	0.33 U	0.32 U	37 U	18 U	17 U	0.40 U	0.40 U	0.33 U	0.38 U	0.41 U	0.42 U
Endrin	14	89,000	410,000		34 U	3.6 U	3.4 U	3.4 U	0.34 U	0.42 U	23 U	0.34 U	18 U	0.35 U	0.34 U	40 U	19 U	18 U	0.42 U	0.42 U	0.35 U	0.40 U	0.44 U	0.45 U
Heptachlor	42	15,000	29,000		38 U	3.9 U	3.8 U	3.7 U	0.38 U	0.46 U	25 U	0.37 U	19 U	0.38 U	0.38 U	43 U	21 U	19 U	0.46 U	0.46 U	0.38 U	0.44 U	0.48 U	0.49 U
gamma-BHC (Lindane)	100	9,200	23,000		32 U	3.3 U	3.2 U	3.1 U	0.32 U	0.39 U	22 U	0.32 U	16 U	0.46 J	0.32 U	37 U	18 U	16 U	0.39 U	0.39 U	0.33 U	0.37 U	0.40 U	0.42 U

				Sample ID	SP01S	SP02S	SP03S	SP04S	SP05S	SP05D	SP06S	SP06D	DPP02ES	DPP05ES	DPP08ES	DPP10ES	DPP13ES	DPP16ES	SUMP FILL	SUMP Clay	DP01 FILL	DP01 Clay	DP03 FILL	DP03 Clay
				Sample Media	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Soil
				Date Sampled	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/19/2014	11/19/2014	11/19/2014	11/20/2014	11/20/2014	11/19/2014	11/19/2014
	Clay Cleanup Objectives																							
Metals (mg/kg)	**Unrestricted**	**Commercial**	**Industrial**																					
Arsenic, Total Recoverable	13	16	16		18.7 E	19.1 E	27.0 E	10.5 E	13.1 E	7.7 E	18.8 E	6.5 E	76.4 E	40.4 E	46.3 E	17.7 E	28.9 E	46.5 E	333 E	74.3 E	641 E	14.5 E	401 E	8.7 E
Barium, Total Recoverable	350	400	10,000		103 E	89.1 E	78.8 E	90.8 E	107 E	488 E	75.9 E	126 E	64.5 E	37.5 E	64.0 E	83.6 E	71.8 E	81.0 E	84.5 E	157 E	65.7 E	211 E	325 E	224 E
Beryllium, Total Recoverable	7.2	590	2,700		0.35	0.48	0.56	0.57	0.52	1.7	0.55	1.1	0.61	0.52	0.59	0.46	0.66	0.49	0.69	1.4	0.59	1.3	0.51	1.5
Cadmium, Total Recoverable	2.5	9.3	60		0.44	0.51	0.77	0.56	0.67	0.76	0.63	0.59	1.3	0.85	0.97	0.56	0.70	0.84	4.3	1.6	2.5	0.051 J	6.0	0.75
Chromium, hexavalent	1.0	400	800		0.70 J	0.29 U	0.29 U	0.28 U	0.28 U	0.35 U	1.2 E	0.29 U	0.38 J	0.65 J	1.1	0.33 U	0.32 U	0.82 J	5.2	0.35 U	2.0	0.34 U	0.86 J	0.37 U
Chromium, trivalent	30	1,500	6,800		9.6	17.4	26.8	16.8	13.7	30.7	25.4	23.5	62.1	36.4	39.4	20.6	32.9	40.9	161	169	614	35.9	97.8	31.8
Chromium, Total Recoverable	-	-	-		10.3 E	17.4 E	26.8 E	16.8 E	13.7 E	30.7 E	26.6	23.5	62.4 E	37.1 E	40.5 E	20.6	32.9	41.7 E	166 E	169 E	616 E	35.9 E	98.6 E	31.8 E
Copper, Total Recoverable	50	270	10,000		17.2 E	47.9 E	45.0 E	23.6 E	33.1 E	36.9 E	27.2 E	26.8 E	78.1 E	80.6 E	82.5 E	26.3 E	32.1 E	36.5 E	424 E	98.3 E	358 E	35.6 E	225 E	34.0 E
Cyanide, Total	27	27	10,000		0.48 U E	0.52 U E	0.51 U E	0.49 U E	3.0 E	0.63 U E	0.66 U E	0.49 U E	0.52 U	0.51 U	0.50 U	0.58 U	0.55 U	0.51 U	2.1 E	0.61 U	0.52 U E	0.60 U	0.61 U E	0.64 U
Lead, Total Recoverable	63	1,000	3,900		8.8 B E	12.1 B E	17.3 B E	15.4 B E	26.7 B E	18.2 B E	12.6	15.6	15.8 B E	16.6 B E	18.4 B E	13.0	16.2	13.4 B E	16.0	17.5	17.7	18.5	24.3	20.8
Manganese, Total Recoverable	1,600	10,000	10,000		187 B E	322 B E	454 B E	455 B E	1900 B E	294 B E	408 E	334 E	282 B E	226 B E	166 B E	399 E	150 E	193 B E	850 E	1080 E	405 B E	700 B E	5470 B E	774 B E
Mercury, Total Recoverable	0.18	2.8	5.7		0.025	0.023	0.027	0.016 J	0.025	0.046	0.017 J	0.019 J	0.023	0.031	0.028	0.024	0.039	0.024	0.030	0.029	0.023	0.029	0.023 J	0.028
Nickel, Total Recoverable	30	310	10,000		12.8 E	19.2 E	27.8 E	28.0 E	27.7 E	43.5 E	23.6	33.9	**31.3 E**	27.9 E	30.9 E	21.9	28.8	22.5 E	31.7	48.5	33.9	42.2	25.9	43.6
Selenium, Total Recoverable	3.9	1,500	6,800		0.41 U	0.45 U	0.46 U	0.66 J B	0.40 U	1.0 J B	0.57 U	0.40 U	0.44 U	0.42 U	0.64 J B	0.53 U	0.83 J	0.39 U	1.4 J	0.70 J	0.64 J	0.50 U	0.55 U	1.2 J
Silver, Total Recoverable	2.0	1,500	6,800		0.21 U	0.22 U	0.23 U	0.21 U	0.20 U	0.27 U	0.29 U	0.20 U	0.22 U	0.21 U	0.23 U	0.27 U	0.26 U	0.20 U	0.29 U	0.26 U	0.21 U	0.25 U	0.28 U	0.30 U
Zinc, Total Recoverable	109	10,000	10,000		26.4 B E	51.6 B E	66.0 B E	72.9 B E	65.8 B E	87.5 B E	54.9 B E	66.4 B E	149 B E	86.2 B E	71.7 B E	60.9 B E	66.8 B E	54.6 E	103 B E	82.1 B E	87.1 B E	81.5 B E	76.0 B E	93.6 B E

				Sample ID	SP01S	SP02S	SP03S	SP04S	SP05S	SP05D	SP06S	SP06D	DPP02ES	DPP05ES	DPP08ES	DPP10ES	DPP13ES	DPP16ES	SUMP FILL	SUMP Clay	DP01 FILL	DP01 Clay	DP03 FILL	DP03 Clay
				Sample Media	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Soil	Fill	Soil	Fill	Soil
				Date Sampled	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/18/2014	11/18/2014	11/19/2014	11/19/2014	11/18/2014	11/19/2014	11/19/2014	11/19/2014	11/20/2014	11/20/2014	11/19/2014	11/19/2014
	Clay Cleanup Objectives																							
PCBs (mg/kg)	**Unrestricted**	**Commercial**	**Industrial**																					
Polychlorinated biphenyls, Total	0.1	1.0	25		0.11 U	0.11 U	0.11 U	0.099 U	0.11 U	0.15 U	0.14 U	0.12 U	0.10 U	0.11 U	0.11 U	0.12 U	0.11 U	0.12 U	0.12 U	0.14 U	0.10 U	0.12 U	0.12 U	0.15 U

Notes:
Values highlighted in yellow indicate exceedance of Unrestricted Use Clay Cleanup Objective.
Values highlighted in blue indicate exceedance of Commercial Use Clay Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Clay Cleanup Objectives.

Lab Qualifiers:
U = Not detected above the laboratory method detection limit shown.
J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.
B = Compound was found in the blank sample.
* = Laboratory Control Sample (LCS) or Laboratory Control Sample Duplicate (LCSD) exceeds the control limits.

Data Validation Qualifiers:
ND = Not Detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank.
E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method .
R = Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample. Supporting data or information is necessary to confirm the result.

Table 2b: Summary of Chromium and Arsenic Detections at Drip Pad Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
November 19-20, 2014

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**			
SUMP Fill	1 - 3' bgs	Fill	11/19/2014	333	166	5.2
SUMP Clay	3 - 4' bgs	Soil	11/19/2014	74.3	169	0.35 U
SUMP A	5 - 6' bgs	Soil	11/19/2014	34.7	50.2	0.37 U
SUMP B	10 - 11' bgs	Soil	11/19/2014	6.4	26	0.37 U
SUMP C	14 - 15' bgs	Soil	11/19/2014	9.3	22.2	0.29 U
DP01 FILL	1 - 3' bgs	Fill	11/20/2014	641	616	2
DP01 CLAY	3 - 4' bgs	Soil	11/20/2014	14.5	35.9	0.34 U
DP01A	5 - 6' bgs	Soil	11/20/2014	12.6	30	0.33 U
DP01B	10 - 11' bgs	Soil	11/20/2014	5.3	21	0.34 U
DP01C	14 - 15' bgs	Soil	11/20/2014	7.9	25.4	0.38 U
DP02A	1 - 3' bgs	Fill	11/20/2014	1360	1260	9.4
DP02B	4 - 5' bgs	Soil	11/20/2014	6.3	31.6	0.37 U
DP02C	8 - 9' bgs	Soil	11/20/2014	7.9	24.5	3.5
DP03 FILL	1 - 3' bgs	Fill	11/19/2014	401	98.6	0.86 J
DP03 CLAY	3 - 4' bgs	Soil	11/19/2014	8.7	31.8	0.37 U
DP03A	5 - 6' bgs	Soil	11/19/2014	8.6	28.3	0.37
DP03B	10 - 11' bgs	Soil	11/19/2014	13.3	25.2	0.41 J
DP03C	14 - 15' bgs	Soil	11/19/2014	20.5	30.1	0.38 J
DP04A	1 - 3' bgs	Fill	11/20/2014	91.8	37.8	1.5
DP04B	3 - 4' bgs	Soil	11/20/2014	6.8	29.7	0.34 U
DP04C	5 - 6' bgs	Soil	11/20/2014	5.2	29.2	0.34 U
DP04D	10 - 11' bgs	Soil	11/20/2014	5.9	27.6	0.34 U
DP04E	14 - 15' bgs	Soil	11/20/2014	11	30.1	0.39 U

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.

Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.

Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:

U = Not detected above the laboratory method detection limit shown.

J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.

Data Validation Qualifier:

E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

Table 2c: Summary of Chromium and Arsenic Detections at DPP Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
November 17-20, 2014

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Soil Matrix**	**Date Sampled**			
DPP01IS	0 - 1' bgs	Fill	11/17/2014	27.7	12.9	0.28 U
DPP01ID	3 - 5' bgs	Soil	11/17/2014	7.4	22.4	0.45 J
DPP01ES	0 - 1' bgs	Fill	11/17/2014	16.5	14.5	0.30 U
DPP02IS	0 - 1' bgs	Fill	11/17/2014	127	67.9	1.6
DPP02ES	0 - 2' bgs	Fill	11/18/2014	76.4	62.4	0.38 J
DPP02ED	3 - 4' bgs	Soil	11/18/2014	8.4	23.8	0.35 U
DPP03IS	0 - 1' bgs	Fill	11/17/2014	103	64.7	3.3
DPP03ID	3 - 5' bgs	Soil	11/17/2014	5.1	28.6	0.36 U
DPP03ES	0 - 1' bgs	Fill	11/17/2014	83.8	54.3	0.93
DPP04IS	0 - 1' bgs	Fill	11/17/2014	43.6	36.6	4.2
DPP04ES	0 - 1' bgs	Fill	11/17/2014	35.3	28.5	2.1
DPP04ED	3 - 5' bgs	Soil	11/17/2014	9.0	22.4	0.34 U
DPP05IS	0 - 1' bgs	Fill	11/17/2014	66.3	33.6	1.8
DPP05ID	3 - 5' bgs	Soil	11/17/2014	7.8	26.3	0.68 J
DPP05ES	0 - 3' bgs	Fill	11/18/2014	40.4	37.1	0.65 J
DPP06IS	0 - 1' bgs	Fill	11/17/2014	47.9	27.3	0.6 J
DPP06ES	0 - 1' bgs	Fill	11/17/2014	78.8	57.3	0.29 U
DPP06ED	3 - 5' bgs	Soil	11/17/2014	9.7	26.2	0.38 J
DPP07IS	0 - 1' bgs	Fill	11/17/2014	206	91.7	4.8
DPP07ID	4 - 7' bgs	Soil	11/17/2014	35.7	47.3	0.48 J
DPP07ES	0 - 2' bgs	Fill	11/17/2014	23.8	18.2	0.29 U
DPP08IS	0 - 1' bgs	Fill	11/17/2014	46.4	38.6	0.30 U
DPP08ES	0 - 2' bgs	Fill	11/18/2014	46.3	40.5	1.1
DPP08ED	4 - 5' bgs	Soil	11/18/2014	8.2	27	0.35 U

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.
Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:
U = Not detected above the laboratory method detection limit shown.
J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an

Data Validation Qualifier:
E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

Table 2c: Summary of Chromium and Arsenic Detections at DPP Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
November 17-20, 2014

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Soil Matrix**	**Date Sampled**			
DPP09IS	1 - 3' bgs	Fill	11/20/2014	72.4	17.8	0.29 U
DPP09ID	4 - 5' bgs	Soil	11/20/2014	10.4	30.1	0.35 U
DPP09ES	1 - 3' bgs	Fill	11/20/2014	86.1	96.7	3.1
DPP09ED	4 - 5' bgs	Soil	11/20/2014	12.6	30.1	0.59 J
DPP10IS	1 - 3' bgs	Fill	11/19/2014	9.3	15.5	0.32 U
DPP10ED	4 - 5' bgs	Soil	11/19/2014	6.4	22.5	0.62 U
DPP10ES	1 - 3' bgs	Fill	11/19/2014	17.7	20.6	0.33 U
DPP11IS	1 - 2' bgs	Fill	11/18/2014	34.6	34.5	1.9
DPP11ID	4 - 5' bgs	Soil	11/18/2014	11.3 E	27 E	0.46 J
DPP11ES	1 - 2' bgs	Fill	11/19/2014	35.8	34.3	2.5
DPP12IS	1 - 3' bgs	Fill	11/18/2014	30.4	31.8	1.1
DPP12ES	1 - 3' bgs	Fill	11/18/2014	62.4	50.1	2.5
DPP12ED	4 - 5' bgs	Soil	11/18/2014	11.1	27.5	0.37 U
DPP13IS	1 - 3' bgs	Fill	11/19/2014	24.6	28.4	0.90 J
DPP13ID	4 - 5' bgs	Soil	11/19/2014	9.1	25.1	0.33 U
DPP13ES	1 - 3' bgs	Fill	11/19/2014	28.9	32.9	0.32 U
DPP14IS	1 - 2' bgs	Fill	11/17/2014	24	23.4	1.7
DPP14ES	3 - 5' bgs	Fill	11/17/2014	52.9	34.6	0.33 J
DPP14ED	4 - 5' bgs	Soil	11/17/2014	7.0	30.3	0.35 U
DPP15IS	1 - 2' bgs	Fill	11/17/2014	104	77.2	1.6
DPP15ID	3 - 5' bgs	Soil	11/17/2014	6.7	30.6	2.0
DPP15ES	1 - 2' bgs	Fill	11/17/2014	7.9	17.9	0.32 J
DPP16IS	1 - 2' bgs	Fill	11/17/2014	35.8	37.3	0.82 J
DPP16ES	0 - 2' bgs	Fill	11/18/2014	46.5	41.7	0.82 J
DPP16ED	3 - 4' bgs	Soil	11/18/2014	7.4	26.6	0.36 U

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.
Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:
U = Not detected above the laboratory method detection limit shown.
J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an

Data Validation Qualifier:
E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

Table 2d: Summary of Chromium and Arsenic Detections at Site Permiter Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**			
SP01S	1 - 4' bgs	Fill	11/18/2014	18.7	10.3	0.70 J
SP01D	4 - 5' bgs	Soil	11/18/2014	6.2	23.8	0.36 U
SP02S	0 - 2' bgs	Fill	11/18/2014	19.1	17.4	0.29 U
SP02D	3 - 4' bgs	Soil	11/18/2014	3.8	32.7	0.37 U
SP03S	0 - 2' bgs	Fill	11/18/2014	27	26.8	0.29 U
SP03D	3 - 4' bgs	Soil	11/18/2014	6.7	23.6	0.36 U
SP04S	0 - 2' bgs	Fill	11/18/2014	10.5	16.8	0.28 U
SP04D	4 - 5' bgs	Soil	11/18/2014	8.9	30	0.35 U
SP05S	0 - 2' bgs	Fill	11/18/2014	13.1	13.7	0.28 U
SP05D	4 - 6' bgs	Soil	11/18/2014	7.7	30.7	0.35 U
SP06S	1 - 4' bgs	Fill	11/19/2014	18.8	26.6	1.2
SP06D	4 - 5' bgs	Soil	11/19/2014	6.5	23.5	0.29 U
SP07	0 - 1' bgs	Fill/Soil	01/22/2015	44.4	51.4 E	0.35 U
SP08	0 - 0.5' bgs	Fill/Soil	01/22/2015	9.7	32.5 E	0.36 U
SP09	0 - 1' bgs	Soil	01/22/2015	8.3	21.8 E	0.35 U
SP10	0 - 1' bgs	Soil	01/22/2015	6.1	0.28 U	0.35 U
SP11	0.5 - 1' bgs	Fill	01/22/2015	8.8	7.3 E	0.28 U
SP12	0.5 - 1' bgs	Fill	01/22/2015	9.0	7.6 E	0.28 U

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.

Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.

Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:

U = Not detected above the laboratory method detection limit shown.

J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.

Data Validation Qualifier:

E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

Table 2d: Summary of Chromium and Arsenic Detections at Site Permiter Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**			
SP-13	0 - 1'	Soil	4/15/2015	24	28	0.2 U R
SP-13S	0 - 2"	Soil	4/15/2015	29	35	0.19 U R
SP-14	0 - 1'	Soil	4/15/2015	17	29	0.21 U R
SP-14S	0 - 2"	Soil	4/15/2015	18	29	0.21 U R
SP-15	0 - 1'	Soil	4/15/2015	16	27	0.22 U R
SP-15S	0 - 2"	Soil	4/15/2015	19	22	0.25 U R
SP-16	0 - 1'	Soil	4/15/2015	14	26 E	0.22 U
SP-16S	0 - 2"	Soil	4/15/2015	8.3	21 E	0.22 U
SP-17	0 - 1'	Soil	4/15/2015	20	22 E	0.2 U
SP-17S	0 - 2"	Soil	4/20/2015	13	17 E	0.2 U
SP-18	0 - 1'	Soil	4/15/2015	16	28 E	0.21 U
SP-18S	0 - 2"	Soil	4/15/2015	19	20 E	0.21 U
SP-19	0 - 1'	Soil	4/15/2015	13	23 E	0.21 U
SP-19S	0 - 2"	Soil	4/15/2015	19	25 E	0.2 U
SP-20	0 - 1'	Soil	4/15/2015	6.8	20 E	0.23 U
SP-20S	0 - 2"	Soil	4/15/2015	20	21 E	0.18 U
SP-21	0 - 1'	Fill	4/15/2015	15	17 E	0.17 U E
SP-21S	0 - 2"	Fill	4/15/2015	9.4	9.7 E	0.16 U E
SP-22	0.5 - 1'	Fill	4/15/2015	13	11 E	0.17 U E
SP-23	0.5 - 1'	Fill	4/15/2015	9.9	23 E	0.17 U E
SP-24	0.5 - 1'	Fill	4/15/2015	12	8.1 E	0.17 U E
SP-25	0.5 - 1'	Fill	4/15/2015	9	26 E	0.17 U E
SP-26	0.5 - 1'	Soil	4/15/2015	12	29	0.23 U E
SP-26S	0 - 2"	Fill/Soil	4/20/2015	13	27	0.22 U E

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.

Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.

Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:

U = Not detected above the laboratory method detection limit shown.

J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.

Data Validation Qualifier:

E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

R = Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample. Supporting data or information is necessary to confirm the result.

Table 2e: Summary of Chromium and Arsenic Detections at Offsite Sample Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike, Town of Athens, New York
April 15, 2015

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**			
OSS-1	0 - 2"	Soil	4/15/2015	46	46 E	0.24 U E
OSS-2	0 - 2"	Soil	4/15/2015	50	45 E	0.25 U E
OSS-3	0 - 2"	Soil	4/15/2015	34	39 E	0.51 U E
OSS-4	0 - 2"	Soil	4/15/2015	27	31	0.28 U R
OSS-5	.5 - 1'	Soil	4/20/2015	16	27	0.23 U E
OSS-5S	0 - 2"	Soil	4/20/2015	17	28	0.25 U E
OSS-6	.5 - 1'	Soil	4/20/2015	16	22	0.22 U E
OSS-6S	0 - 2"	Soil	4/20/2015	23	27	0.24 U E
OSS-7	.5 - 1'	Soil	4/20/2015	9.5	21	0.23 U E
OSS-7S	0 - 2"	Soil	4/20/2015	24	31	0.94 J
OSS-8	.5 - 1'	Soil	4/20/2015	11	25	0.24 U E
OSS-8S	0 - 2"	Soil	4/20/2015	17	26	0.31 U E
OSS-9	.5 - 1'	Soil	4/20/2015	12	21	0.21 U
OSS-9S	0 - 2"	Soil	4/20/2015	35	35	0.22 U E
OSS-10	.5 - 1'	Soil	4/20/2015	7.7	15	0.22 U E
OSS-10S	0 - 2"	Soil	4/20/2015	14	19	0.25 U E
OSS-11	.5 - 1'	Soil	4/20/2015	9.1	21	0.24 U E
OSS-11S	0 - 2"	Soil	4/20/2015	11	22	0.25 U E
OSS-12	.5 - 1'	Soil	4/20/2015	11	22	0.22 U E
OSS-12S	0 - 2"	Soil	4/20/2015	20	28	0.26 U E
OSS-13	.5 - 1'	Soil	4/20/2015	9.3	20	0.35 J
OSS-13S	0 - 2"	Soil	4/20/2015	19	30	0.32 U E
OSS-15	.5 - 1'	Soil	4/20/2015	8.5	23	0.23 U
OSS-15S	0 - 2"	Soil	4/20/2015	11	24	0.3 U
OSS-16	.5 - 1'	Soil	4/20/2015	12	29	0.28 U
OSS-16S	0 - 2"	Soil	4/20/2015	12	26	0.35 U
OSS-17	.5 - 1'	Soil	4/20/2015	7.7	24	0.23 U
OSS-17S	0 - 2"	Soil	4/20/2015	7.4	20	0.32 U
OSS-18	.5 - 1'	Soil	4/20/2015	7.2	26	0.24 U
OSS-18S	0 - 2"	Soil	4/20/2015	7.7	21	0.24 U
OSS-19	.5 - 1'	Soil	4/20/2015	7.1	20	0.23 U
OSS-19S	0 - 2"	Soil	4/20/2015	9.2	21	0.27 U E

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.
Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:
U = Not detected above the laboratory method detection limit shown.
J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.

Data Validation Qualifier:
E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

R = Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample. Supporting data or information is necessary to confirm the result.

Table 2f: Summary of Chromium and Arsenic Detections at Catch Basin Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike, Town of Athens, New York
April 15 & 20, 2015

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Chromium, Hexavalent
			Units	mg/kg	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30	1
			Soil Cleanup Objectives (Commercial)	16	1,500	400
			Soil Cleanup Objectives (Industrial)	16	6,800	800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**			
CB-01	0 - 2"	Sediment	4/15/2015	28	30 E	0.25 U E
CB-02	0 - 2"	Soil	4/15/2015	35	43 E	0.21 J E
CB-03	0 - 2"	Soil	4/15/2015	40	36 E	0.2 U E
CB-04	0 - 2"	Soil	4/15/2015	24	41	0.21 U E
CB-05	0 - 2"	Soil	4/15/2015	27	28	0.2 U E
CB-06	0 - 2"	Soil	4/15/2015	26	33	0.22 U E
CB-07	0 - 2"	Sediment	4/15/2015	36	35	0.34 J
CB-08	0 - 2"	Sediment	4/20/2015	39	87	0.33 J E

Notes:

Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objectives.

Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.

Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Lab Qualifiers:

U = Not detected above the laboratory method detection limit shown.

J = Result is less than the laboratory reporting limit but greater than or equal to the method detection limit, and the concentration is an approximate value.

Data Validation Qualifier:

E = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

R = Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample. Supporting data or information is necessary to confimr the result.

Table 2g: Soil Sample Results - Total Recoverable Metals
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
June 23, 2014

			Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable
			Units	mg/kg	mg/kg
			Soil Cleanup Objectives (Unrestricted)	13	30
			Soil Cleanup Objectives (Commercial)	16	1,500
			Soil Cleanup Objectives (Industrial)	16	6,800
Sample ID	**Sample Depth Interval**	**Sample Matrix**	**Date Sampled**		
S-1A	1.0 - 2.0' bgs	Fill	6/23/2014	1430	1060
S-1B	2.0 - 3.0' bgs	Fill	6/23/2014	95.3	316
S-1C	3.0 - 4.0' bgs	Soil	6/23/2014	6.7	20.6
S-1D	4.0 - 5.0' bgs	Soil	6/23/2014	17.1	37.3
S-1E	5.0 - 6.0' bgs	Soil	6/23/2014	9.2	25.6
S-2A	1.0 - 2.0' bgs	Fill	6/23/2014	26.0	11.7
S-2B	2.0 - 3.0' bgs	Fill	6/23/2014	10.1	20.8
S-2C	3.0 - 4.0' bgs	Soil	6/23/2014	8.0	17.3
S-2D	4.0 - 5.0' bgs	Soil	6/23/2014	7.2	17.3
S-2E	5.0 - 6.0' bgs	Soil	6/23/2014	8.4	16.7
S-3A	1.0 - 2.0' bgs	Fill	6/23/2014	56.8	76.5
S-3B	2.0 - 3.0' bgs	Fill	6/23/2014	7.5	24.9
S-3C	3.0 - 4.0' bgs	Soil	6/23/2014	9.0	29.8
S-3D	4.0 - 5.0' bgs	Soil	6/23/2014	6.7	19.9
S-3E	5.0 - 6.0' bgs	Soil	6/23/2014	7.0	22.9
S-4A	1.0 - 2.0' bgs	Fill	6/23/2014	78.0	55.0
S-4B	2.0 - 3.0' bgs	Fill	6/23/2014	39.7	66.8
S-4C	3.0 - 4.0' bgs	Soil	6/23/2014	53.2	46.2
S-4D	4.0 - 5.0' bgs	Soil	6/23/2014	64.1	40.7
S-4E	5.0 - 6.0' bgs	Soil	6/23/2014	52.6	47.3

Notes:
Values highlighted in yellow indicate exceedance of Unrestricted Use Soil Cleanup Objective.
Values highlighted in blue indicate exceedance of Commercial Use Soil Cleanup Objectives.
Values highlighted in gray indicate exceedance of Industrial Use Soil Cleanup Objectives.

Table 2h: Drip Pad Concrete Sample Results - Total Recoverable Metals
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
June 23, 2014

		Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable
		Units	mg/kg	mg/kg
Sample ID	**Sample Matrix**	**Sample Depth Interval**		
C-1A	Concrete	0 - 3" bgs	7.6	262
C-1B	Concrete	3 - 6" bgs	740	1610
C-1C	Concrete	6 - 9" bgs	1290	726
C-2A	Concrete	0 - 3" bgs	7.4	20.0
C-2B	Concrete	3 - 6" bgs	8.6	15.5
C-2C	Concrete	6 - 9" bgs	6.7	13.1
C-3A	Concrete	0 - 3" bgs	9.1	257
C-3B	Concrete	3 - 6" bgs	48.7	61.0
C-3C	Concrete	6 - 9" bgs	88.5	96.0
C-4A	Concrete	0 - 3" bgs	8.5	299
C-4B	Concrete	3 - 6" bgs	198	111
C-4C	Concrete	6 - 9" bgs	448	237

Table 2i: Soil Sample Results - TCLP Metals
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
June 23, 2014

		Parameter	Arsenic (mg/L)	Chromium (mg/L)
		Determination Level	50	6
Sample ID	Sample Matrix	Sample Depth Interval		
S-1A	Fill	1.0 - 2.0' bgs	0.85 B	0.054 J B
S-1B	Fill	2.0 - 3.0' bgs	0.059 J B	0.080 J B
S-1C	Soil	3.0 - 4.0' bgs	0.0077 J B	0.0084 J B
S-1D	Soil	4.0 - 5.0' bgs	0.019 J B	0.0073 J B
S-1E	Soil	5.0 - 6.0' bgs	0.010 J B	0.0069 J B
S-2A	Fill	1.0 - 2.0' bgs	0.011 J B	0.0068 J B
S-2B	Fill	2.0 - 3.0' bgs	0.0078 J B	0.0072 J B
S-2C	Soil	3.0 - 4.0' bgs	0.0094 J B	0.0067 J B
S-2D	Soil	4.0 - 5.0' bgs	0.0075 J B	0.014 J B
S-2E	Soil	5.0 - 6.0' bgs	0.0068 J B	0.0064 J B
S-3A	Fill	1.0 - 2.0' bgs	0.011 J B	0.018 J B
S-3B	Fill	2.0 - 3.0' bgs	0.0047 J B	0.0074 J B
S-3C	Soil	3.0 - 4.0' bgs	0.0062 J B	0.0066 J B
S-3D	Soil	4.0 - 5.0' bgs	0.0083 J B	0.0074 J B
S-3E	Soil	5.0 - 6.0' bgs	0.0095 J B	0.0086 J B
S-4A	Fill	1.0 - 2.0' bgs	0.016 J B	0.0077 J B
S-4B	Fill	2.0 - 3.0' bgs	0.25 J B	0.032 J B
S-4C	Soil	3.0 - 4.0' bgs	0.17 J B	0.010 J B
S-4D	Soil	4.0 - 5.0' bgs	0.21 J B	0.013 J B
S-4E	Soil	5.0 - 6.0' bgs	0.27 J B	0.015 J B

Bold indicates Contained-in Determination Level exceedance.

B - Compound was found in the blank and sample.

J - Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

Table 2j: Concrete Sample Results - TCLP Metals
Northeast Treaters of New York, LLC
796 Schoharie Turnpike,Town of Athens, New York
June 23, 2014

		Parameter	Arsenic (mg/L)		Chromium (mg/L)	
		Debris Rule / Universal Treatment Standard	5		0.6	
Sample ID	**Sample Matrix**	**Sample Depth Interval**				
C-1A	Concrete	0 - 3" bgs	0.0062	J B	**5.7**	B
C-1B	Concrete	3 - 6" bgs	0.015	J B	**5.3**	B
C-1C	Concrete	6 - 9" bgs	0.034	J B	**0.83**	B
C-2A	Concrete	0 - 3" bgs	0.0054	J B	0.14	J B
C-2B	Concrete	3 - 6" bgs	0.0069	J B	0.058	J B
C-2C	Concrete	6 - 9" bgs	0.0073	J	0.077	J B
C-3A	Concrete	0 - 3" bgs	0.0058	J B	**4.3**	B
C-3B	Concrete	3 - 6" bgs	0.0060	J B	0.25	J B
C-3C	Concrete	6 - 9" bgs	0.013	J B	**0.88**	B
C-4A	Concrete	0 - 3" bgs	0.0063	J B	**6.9**	B
C-4B	Concrete	3 - 6" bgs	0.013	J B	0.073	J B
C-4C	Concrete	6 - 9" bgs	0.037	J B	0.12	J B

Bold indicates Debris Rule exceedance.

B - Compound was found in the blank and sample.

J - Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

Table 3a: Summary of Monitoring Well Locations and Groundwater Depths
Northeast Treaters of New York, LLC
796 Schoharie Turnpike, Town of Athens, New York

Well Characteristics	Monitoring Wells			
	MW-1	**MW-2**	**MW-3**	**MW-4**
Longitude	W073.838163	W073.838214	W073.838801	W073.838707
Latitude	N042.286563	N042.286030	N042.286307	N042.286666
Well Depth (ft)	6.50 (top of metal casing)	9.97 (top of stick-up)	6.00 (top of metal casing)	5.57 (top of metal casing)
Screened Interval (ft)	1.0-6.0	3.0-8.0	1.0-6.0	1.0-6.0
Screened Media	Fill/Clay	Clay	Fill/Clay	Fill/Clay
Depth to Groundwater (4/15/2015) (ft)	0.5	---	---	---
Depth to Groundwater (4/20/2015) (ft)	0.4	9.62	---	---
Depth to Groundwater (4/30/2015) (ft)	0.61	2.96	4.10	---
Depth to Groundwater (5/4/2015) (ft)	1.30	3.32	3.44	5.14

Notes:
--- = No water present at time of measurement.

Table 3b: Summary of Chromium and Arsenic at Groundwater Well Locations
Northeast Treaters of New York, LLC
796 Schoharie Turnpike, Town of Athens, New York

		Analyte	Arsenic, Total Recoverable	Chromium, Total Recoverable	Arsenic, Dissolved	Chromium, Dissolved
		Units	mg/L	mg/L	mg/L	mg/L
		NYSDEC Class GA Groundwater Standards	0.025	0.050	0.025	0.050
Sample ID	**Sample Matrix**	**Date Sampled**				
MW - 1	Water	4/15/2015	0.0051 E	0.0113 E	0.00036	0.00078

Notes:
Data Validation Qualifier:
E = Analyte is present. Reported values may be associated with a higher level of uncertainty than is normally expected with the analyical method.

Table 3c: Summary of Arsenic and Chromium Analytical Results at SPDES Outfall Location
Northeast Treaters of New York, LLC
796 Schoharie Turnpike, Athens, New York

		Analyte	Arsenic	Chromium
		Units	ug/l	mg/L
		NYSDEC Stormwater Standards Associated with Industrial Activity	150	1.8
Sample ID	**Sample Matrix**	**Date Sampled**		
Grab	Water	6/25/2014	8.0	< 0.005
Grab	Water	1/19/2015	< 5.0	0.0070

Table 4

Potential Exposure Pathways
Northeast Treaters of New York, LLC
Athens, New York

Potential Receptor	Exposure Route, Contaminated Media, and Point of Exposure	Pathway Selected for Evaluation (Yes/No)	Reason for Selection or Exclusion
Offsite Residential/Offsite Workers	Ingestion, inhalation or dermal contact with offsite soils.	Yes	Surface soils contain concentrations of chromium and arsenic above unrestricted use SCOs.
Offsite Residential/Offsite Workers	Ingestion of groundwater offsite.	No	Analytical data indicate that Site related contaminants have not impacted groundwater.
Onsite Residential	Ingestion, inhalation or dermal contact with onsite soils.	No	The Town of Athens does not permit residential development and use at the Site.
Onsite Residential	Ingestion of groundwater onsite.	No	Residential development and use is not permitted at the Site. Analytical data indicate that Site related contaminants have not impacted groundwater.
Onsite workers	Ingestion, inhalation or dermal contact with onsite soils.	Yes	Surface soils contain concentrations of chromium and arsenic above unrestricted use SCOs.
Onsite workers	Ingestion of groundwater onsite	No	Analytical data indicate that Site related contaminants have not impacted groundwater. The Site currently utilizes bottled water for drinking purposes.
Trespassers / Visitors	Ingestion, inhalation or dermal contact with onsite soils.	Yes	Surface soils contain concentrations of chromium and arsenic above unrestricted use SCOs. The Site is partially fenced in a rural area and therefore the potential for trespassers is unlikely.
Trespassers / Visitors	Ingestion of groundwater onsite	No	Analytical data indicate that Site related contaminants have not impacted groundwater.

Table 5

Standards, Criteria and Guidance
Northeast Treaters of New York, LLC
Athens, New York

Soil and Groundwater Standards

Standard	Hexavalent Chromium	Trivalent Chromium	Arsenic
NYS Groundwater Standard (Class GA) (ug/L)	50	50	25
NYS Soil Cleanup Objectives (Unrestricted Use) (mg/kg)	1	30	13
NYS Soil Cleanup Objectives (Commercial Use) (mg/kg)	400	1,500	16
NYS Soil Cleanup Objectives (Industrial Use) (mg/kg)	800	6,800	16

Exposure Limits in Worker Breathing Zone Air To Be Considered (T.B.C.)

Standard	Chromium			Arsenic
	Cr (metal)	Cr (VI) Soluble	Cr (VI) Insoluble	
NIOSH IDLH mg/m^3	-	15	-	5 Ca
NIOSH - REL/TWA mg/m^3	-	-	-	0.02 C
OSHA - PEL mg/m^3	-	0.1	-	0.010
ACGIH - TLV mg/m^3	0.5	0.05 A1	0.01 A1	0.01 A1

- = Not Available
IDLH = Immediate danger to life or health
REL = Recommended Exposure Limit
TWA = Time Weighted Average
PEL = Permissible Exposure Limit
ACGIH = American Conference of Governmental Industrial Hygienists
TLV = Threshold Limit Value
A1 = Confirmed Human Carcinogen
Ca = Potential Human Carcinogen
C = Ceiling

Table 6
Cost Estimate for Alternative 1:
No Action Alternative
Northeast Treaters of NY, LLC
BCP #C420029

Item #	Description	Estimated Quantity	Units	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
				Total Capital Cost:	$0.00
				Engineering Design, Permitting and Certification (25%):	$0.00
				Legal and Administration (5%):	$0.00
				Contingency (20%):	$0.00
				Subtotal Cost:	$0.00
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
1	Annual ECIC Certification	1	LS	$2,500.00	$2,500.00
				Total Annual O&M Cost:	$2,500.00
				Contingency (20%):	$500.00
				Subtotal Annual Cost:	$3,000.00
2	30-Year Total Present Worth Cost of O&M:				$37,227.12
				Total Estimated Cost:	$37,227.12

Notes:

- Cost estimate is based on STERLING's experience in the project area and vendor estimates using 2015 dollars.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding site investigation and the anticipated scope of the remedial alternative.
- Changes in cost estimates are likely to occur as a result of new information and data collected during progess of the remedial alternative.
- This cost estimate is expected to be within -20% to +50% of the actual project cost.
- Utilization of this cost estimate information beyond the stated purpose is not recommended.

Assumptions:

Item 1 Annual cost estimate includes all post monitoring and reporting.

Item 2 Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation). "Year zero" for present worth calculations is 2015.

Table 7
Cost Estimate for Alternative 2:
Capping and Institutional Controls
Northeast Treaters of NY, LLC
BCP #C420029

Item #	Description	Estimated Quantity	Units	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
Demolition of Office and Processing Buildings					
1	Demolition of Buildings	1	LS	LS	$108,300.00
Clearing and Grubbing of Trees and Brush					
2	Clearing and Grubbing	1	LS	LS	$50,000.00
Drip Pad Demolition and Disposal					
3	Sawcut Edges of Trench	56	ft	$8.00	$448.00
4	Demolition of Concrete Pad	1,680	sq. ft	$1.39	$2,335.20
5	Excavation/Loading of Concrete	77	ton	$5.00	$385.00
6	Transport of Concrete	4,880	mile	$3.50	$17,080.00
7	Disposal of Concrete	77	ton	$120.00	$9,240.00
Placement of Cap					
8	Cover Soil	169,500	CY	$16.00	$2,712,000.00
9	Topsoil	56,500	CY	$28.00	$1,582,000.00
10	Seed, Mulch, Erosion Control	LS	LS	LS	$15,000.00
				Total Capital Cost:	$4,496,788.20
				Engineering Design, Permitting and Certification (25%):	$1,124,197.05
				Legal and Administration (5%):	$224,839.41
				Contingency (20%):	$899,357.64
				Subtotal Cost:	$6,745,182.30
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
11	Annual ECIC Certification	1	LS	$2,500.00	$2,500.00
12	Mowing and Fertilization	4	LS	$250.00	$1,000.00
				Total Annual O&M Cost:	$3,500.00
				Contingency (20%):	$700.00
				Subtotal Annual Cost:	$4,200.00
13	30-Year Total Present Worth Cost of O&M:				$52,117.97
				Total Estimated Cost:	$6,797,300.27

Notes:

- Cost estimate is based on STERLING's experience in the project area and vendor estimates using 2015 dollars.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding site investigation and the anticipated scope of the remedial alternative.
- Changes in cost estimates are likely to occur as a result of new information and data collected during progess of the remedial alternative.
- This cost estimate is expected to be within -20% to +50% of the actual project cost.
- Utilization of this cost estimate information beyond the stated purpose is not recommended.

Table 7
Cost Estimate for Alternative 2:
Capping and Institutional Controls
Northeast Treaters of NY, LLC
BCP #C420029

Assumptions:

Item 1 Lump sum includes all labor, equipment and materials needed to carry out the demolition of the office and processing buildings.

Item 2 Clearing and grubbing includes all labor, equipment and materials needed to carry out task.

Item 3 Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the drip pad.

Item 4 Cost estimate includes all labor, equipment, and materials necessary to demolish concrete pad.

Item 5 Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the drip pad.

Item 6 Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.

Item 7 Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.

Item 8 Cover soil includes a 18 inch depth with no organics present.

Item 9 Topsoil includes a 6 inch depth with organics present.

Item 10 Cost estimate includes all labor, equipment and materials necessary for erosion control during remediation.

Item 11 Annual cost estimate includes all post construction monitoring and reporting.

Item 12 Cost estimate includes all labor, equipment and materials necessary for mowing and fertilizing four times a year.

Item 13 Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation). "Year zero" for present worth calculations is 2015.

Table 8
Cost Estimate for Alternative 3:
Excavation and Off-Site Disposal
Northeast Treaters of NY, LLC
BCP #C420029

Item #	Description	Estimated Quantity	Units	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
Demolition of Office and Processing Buildings					
1	Demolition of Buildings	1	LS	LS	$108,300.00
Demolition and Removal of Piers/Footers					
2	Sawcut Edges of Trench	352	ft	$8.00	$2,816.00
3	Break Up Concrete Pad Over Trench	776	sq. ft	$1.39	$1,078.64
4	Excavate and Load Contaminated Concrete	36	ton	$5.00	$180.00
5	Transport of Concrete	2,240	miles	$3.50	$7,840.00
6	Disposal of Concrete	36	ton	$120.00	$4,320.00
7	Excavate and Load Contaminated Soil	304	ton	$5.00	$1,520.00
8	Transport Contaminated Soil	17,080	miles	$3.50	$59,780.00
9	Disposal of Soil	304	ton	$80.00	$24,320.00
Demolition and Removal of Frost Walls					
10	Sawcut Edges of Trench	112	ft	$8.00	$896.00
11	Break Up Concrete Pad Over Trench	336	sq. ft	$1.39	$467.04
12	Excavate and Load Contaminated Concrete	15	ton	$5.00	$75.00
13	Transport of Concrete	1,220	miles	$3.50	$4,270.00
14	Disposal of Concrete	15	ton	$120.00	$1,800.00
15	Excavate and Load Contaminated Soil	112	ton	$5.00	$560.00
16	Transport Contaminated Soil	7,320	miles	$3.50	$25,620.00
17	Disposal of Soil	112	ton	$80.00	$8,960.00
Drip Pad Demolition and Disposal					
18	Sawcut Edges of Trench	56	ft	$8.00	$448.00
19	Demolition of Concrete Pad	1,680	sq. ft	$1.39	$2,335.20
20	Excavation/Loading of Concrete	77	ton	$5.00	$385.00
21	Transport of Concrete	4,880	mile	$3.50	$17,080.00
22	Disposal of Concrete	77	ton	$120.00	$9,240.00
23	Excavation and Loading of Soil	337	ton	$5.00	$1,685.00
24	Transport of Soil	19,520	mile	$3.50	$68,320.00
25	Disposal of Soil	337	ton	$80.00	$26,960.00
Total Excavation/Disposal of Soil					
26	Clearing and Grubbing				
27	Excavate and Load Soil	17,661	ton	$5.00	$88,305.00
28	Transport of Soil	979,383	mile	$3.50	$3,427,840.50
29	Soil Disposal Fee	17,661	ton	$80.00	$1,412,880.00
30	Confirmatory Samples of As, Cr	256	sample	$130.00	$33,280.00
31	Clean Backfill	22,076	CY	$16.00	$353,220.00
32	Cover Soil	4,260	CY	$16.00	$68,160.00
33	Topsoil	4,260	CY	$28.00	$119,280.00
34	Place, Grade, Compact	16,671	CY	$13.00	$216,723.00
35	Seed, Mulch, Erosion Control	LS	LS	LS	$15,000.00
				Total Capital Cost:	$6,113,944.38
				Engineering Design, CAMP, Permitting and Certification (25%):	$1,528,486.10
				Legal and Administration (5%):	$305,697.22
				Contingency (20%):	$1,222,788.88
				Subtotal Capital Cost:	$9,170,916.57
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
36	Mowing and Fertilization	4	LS	$250.00	$1,000.00
				Total Annual O&M Cost:	$1,000.00
				Contingency (20%):	$200.00
				Subtotal Annual Cost:	$1,200.00
37	30-Year Total Present Worth Cost of O&M:				$14,890.85
				Total Estimated Cost:	$9,185,807.42

Table 8 (Cont.)
Cost Estimate for Alternative No. 3:
Excavation and Off-Site Disposal
Northeast Treaters of NY, LLC
BCP #C420029

Notes:

- Cost estimate is based on STERLING's experience in the project area and vendor estimates using 2015 dollars.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding site investigation and the anticipated scope of the remedial alternative.
- Changes in cost estimates are likely to occur as a result of new information and data collected during progess of the remedial alternative.
- This cost estimate is expected to be within -20% to +50% of the actual project cost.
- Utilization of this cost estimate information beyond the stated purpose is not recommended.

Assumptions:

Item 1	Lump sum includes all labor, equipment, and materials to complete demolition of the office and processing buildings.
Item 2	Cost estimate includes all labor, equipment, and materials to complete the sawcutting the edges of the concrete trench for the piers and footers.
Item 3	Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the piers and footers.
Item 4	Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the piers and footers.
Item 5	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 6	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.
Item 7	Cost estimate includes all labor, equipment, and materials necessary to excavate and load contaminated soil associated with the piers and footers.
Item 8	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 9	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 10	Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the frost walls.
Item 11	Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the frost walls.
Item 12	Cost estimate is based on excavation and loading of concrete from drip pad. Cost estimate includes all labor, equipment, and materials necessary to facilitate excavation and loading of contaminated concrete from frost walls.
Item 13	Transport of concrete assumes delivery to Envirosafe Services of Ohio, Inc. at 876 Otter Creek Road, Oregon, Ohio. Cost estimate also assumes one load of concrete at 22 tons/load and a distance of 1,220 miles/load.
Item 14	Cost estimate is based on quote through Envirosafe Services of Ohio, Inc. Added 20% for Land Disposal Restrictions treatment.
Item 15	Excavation and loading of soil includes all labor, equipment, and materials necessary for completion of task. Cost estimate includes excavation and loading of soil under the 336 square foot wall at a depth of 4 feet.
Item 16	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 17	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 18	Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the drip pad.
Item 19	Cost estimate includes all labor, equipment, and materials necessary to demolish concrete pad.
Item 20	Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the drip pad.
Item 21	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 22	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.
Item 23	Cost estimate includes all labor, equipment, and materials necessary to excavate and load contaminated soil associated with the drip pad.
Item 24	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 25	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 26	
Item 27	Cost estimate includes all labor, equipment, and materials necessary to excavate and load contaminated soil associated with the entire remediation area.
Item 28	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil of the entire remediation area to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 29	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 30	Confirmatory samples of arsenic and chromium assume a collection of a sample every 900 square feet.
Item 31	Cost estimate includes all labor, equipment, and materials necessary to place clean backfill in excavated remediation area. Estimate assumes a 25% loose soil swelling rate.
Item 32	Cover soil includes a 6 inch depth with no organics present.
Item 33	Topsoil includes a 6 inch depth with organics present.
Item 34	Cost estimate includes all labor, equipment, and materials to place, grade, and compact cover and topsoil.
Item 35	Cost estimate includes all labor, equipment and materials necessary for erosion control during remediation.
Item 36	Cost estimate includes all labor, equipment and materials necessary for mowing and fertilizing four times a year.
Item 37	Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation). "Year zero" for present worth calculations is 2015.

Table 9
Cost Estimate for Alternative 4:
In-Situ Soil Treatment
Northeast Treaters of NY, LLC
BCP #C420029

Item #	Description	Estimated Quantity	Units	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
Demolition of Office and Processing Building					
1	Demolition of Buildings	1	LS	LS	$108,300.00
Demolition and Removal of Piers/Footers					
2	Sawcut Edges of Trench	352	ft	$8.00	$2,816.00
3	Break Up Concrete Pad Over Trench	776	sq. ft	$1.39	$1,078.64
4	Excavate and Load Contaminated Concrete	36	ton	$5.00	$180.00
5	Transport of Concrete	2,240	miles	$3.50	$7,840.00
6	Disposal of Concrete	36	ton	$120.00	$4,320.00
Demolition and Removal of Frost Walls					
7	Sawcut Edges of Trench	112	ft	$8.00	$896.00
8	Break Up Concrete Pad Over Trench	336	sq. ft	$1.39	$467.04
9	Excavate and Load Contaminated Concrete	15	ton	$5.00	$75.00
10	Transport of Concrete	1,220	miles	$3.50	$4,270.00
11	Disposal of Concrete	15	ton	$120.00	$1,800.00
Drip Pad Demolition and Disposal					
12	Sawcut Edges of Trench	112	ft	$8.00	$896.00
13	Demolition of Concrete Pad	1,680	sq. ft	$1.39	$2,335.20
14	Excavation/Loading of Concrete	77	ton	$5.00	$385.00
15	Transport of Concrete	4,880	mile	$3.50	$17,080.00
16	Disposal of Concrete	77	ton	$120.00	$9,240.00
Clearing and Grubbing of Trees and Brush					
17	Clearing and Grubbing				
In-Situ Soil Treatment					
18	Pilot Program and Test Panel Construction, Evaluation, and Monitoring	14,071	CY	$5.65	$79,501.15
19	Soil Stabilization	14,071	CY	$130.00	$1,829,230.00
20	Cover Soil	4,260	CY	$16.00	$68,160.00
21	Topsoil	4,260	CY	$28.00	$119,280.00
22	Seed, Mulch, Erosion Control	LS	LS	LS	$15,000.00
				Total Capital Cost:	$2,273,150.03
				Engineering Design, CAMP, Permitting and Certification (25%):	$568,287.51
				Legal and Administration (5%):	$113,657.50
				Contingency (20%):	$454,630.01
				Subtotal Capital Cost:	$3,409,725.05
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
23	Annual ECIC Certification	1	LS	$2,500.00	$2,500.00
24	Mowing and Fertilization	4	LS	$250.00	$1,000.00
				Total Annual O&M Cost:	$3,500.00
				Contingency (20%):	$700.00
				Subtotal Annual Cost:	$4,200.00
25	30-Year Total Present Worth Cost of O&M:				$52,117.97
				Total Estimated Cost:	$3,461,843.02

Notes:

- Cost estimate is based on STERLING's experience in the project area and vendor estimates using 2015 dollars.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding site investigation and the anticipated scope of the remedial alternative.
- Changes in cost estimates are likely to occur as a result of new information and data collected during progess of the remedial alternative.
- This cost estimate is expected to be within -20% to +50% of the actual project cost.
- Utilization of this cost estimate information beyond the stated purpose is not recommended.

Table 9 (Cont.)
Cost Estimate for Alternative No. 3:
In-Situ Soil Treatment
Northeast Treaters of NY, LLC
BCP #C420029

Assumptions:

Item 1 Lump sum includes all labor, equipment, and materials to complete demolition of the office and processing buildings.

Item 2 Cost estimate includes all labor, equipment, and materials to complete the sawcutting the edges of the concrete trench for the piers and footers.

Item 3 Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the piers and footers.

Item 4 Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the piers and footers.

Item 5 Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.

Item 6 Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.

Item 7 Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the frost walls.

Item 8 Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the

Item 9 Cost estimate is based on excavation and loading of concrete from drip pad. Cost estimate includes all labor, equipment, and materials necessary to facilitate excavation and loading of contaminated concrete from frost walls.

Item 10 Transport of concrete assumes delivery to Envirosafe Services of Ohio, Inc. at 876 Otter Creek Road, Oregon, Ohio. Cost estimate also assumes one load of concrete at 22 tons/load and a distance of 1,220 miles/load.

Item 11 Cost estimate is based on quote through Envirosafe Services of Ohio, Inc. Added 20% for Land Disposal Restrictions treatment.

Item 12 Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the drip pad.

Item 13 Cost estimate includes all labor, equipment, and materials necessary to demolish concrete pad.

Item 14 Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the drip pad.

Item 15 Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.

Item 16 Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.

Item 18 Cost estimate is based on prior project experience. Estimate includes all labor, equipment, and materials necessary to complete pilot testing.

Item 19 Soil stabilization cost estimate is based on the EPA's approximate cost of $60-$290 per ton of soil treated. This value may be significantly higher depending on the pilot test.

Item 20 Cover soil includes a 6 inch depth with no organics present.

Item 21 Topsoil includes a 6 inch depth with organics present.

Item 22 Cost estimate includes all labor, equipment and materials necessary for erosion control during remediation.

Item 23 Annual cost estimate includes all post construction monitoring and reporting.

Item 24 Cost estimate includes all labor, equipment, and materials necessary for mowing and fertilization four times a year.

Item 25 Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation). "Year zero" for present worth calculations is 2015.

Table 10
Cost Estimate for Alternative 5:
Capping Through Site Development and Institutional Controls
Northeast Treaters of NY, LLC
BCP #C420029

Item #	Description	Estimated Quantity	Units	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
Demolition of Office and Processing Buildings					
1	Demolition of Building	1	LS	LS	$108,300.00
Demolition and Removal of Piers/Footers					
2	Sawcut Edges of Trench	352	ft	$8.00	$2,816.00
3	Break Up Concrete Pad Over Trench	776	sq. ft	$1.39	$1,078.64
4	Excavate and Load Contaminated Concrete	36	ton	$5.00	$180.00
5	Transport of Concrete	2,240	miles	$3.50	$7,840.00
6	Disposal of Concrete	36	ton	$120.00	$4,320.00
7	Excavate and Load Contaminated Soil	304	ton	$5.00	$1,520.00
8	Transport Contaminated Soil	17,080	miles	$3.50	$59,780.00
9	Disposal of Soil	304	ton	$80.00	$24,320.00
Demolition and Removal of Frost Walls					
10	Sawcut Edges of Trench	112	ft	$8.00	$896.00
11	Break Up Concrete Pad Over Trench	336	sq. ft	$1.39	$467.04
12	Excavate and Load Contaminated Concrete	15	ton	$5.00	$75.00
13	Transport of Concrete	1,220	miles	$3.50	$4,270.00
14	Disposal of Concrete	15	ton	$120.00	$1,800.00
15	Excavate and Load Contaminated Soil	112	ton	$5.00	$560.00
16	Transport Contaminated Soil	7,320	miles	$3.50	$25,620.00
17	Disposal of Soil	112	ton	$80.00	$8,960.00
Clearing and Grubbing of Trees and Brush					
18					
Capping					
19	Asphalt Pavement	113,000	sq. ft	$3.50	$395,500.00
20	Erosion Control	LS	LS	LS	$15,000.00
				Total Capital Cost:	$663,302.68
				Engineering Design, CAMP, Permitting and Certification (25%):	$165,825.67
				Legal and Administration (5%):	$33,165.13
				Contingency (20%):	$132,660.54
				Subtotal Capital Cost:	$994,954.02
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
21	Annual ECIC Certification	1	LS	$2,500.00	$2,500.00
22	Bi-Annual Asphalt Sealing	52,300	sq. ft	$0.25	$13,075.00
				Total Annual O&M Cost:	$2,500.00
				Contingency (20%):	$500.00
				Subtotal Annual Cost:	$3,000.00
23	30-Year Total Present Worth Cost of O&M:				$156,313.10
				Total Estimated Cost:	$1,151,267.12

Notes:

- Cost estimate is based on STERLING's experience in the project area and vendor estimates using 2015 dollars.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding site investigation and the anticipated scope of the remedial alternative.
- Changes in cost estimates are likely to occur as a result of new information and data collected during progess of the remedial alternative.
- This cost estimate is expected to be within -20% to +50% of the actual project cost.
- Utilization of this cost estimate information beyond the stated purpose is not recommended.

Table 10 (Cont)
Cost Estimate for Alternative No. 5:
Capping Through Site Development and Institutional Controls
Northeast Treaters of NY, LLC
BCP #C420029

Assumptions:

Item 1	Lump sum includes all labor, equipment, and materials to complete demolition of the office and processing buildings.
Item 2	Cost estimate includes all labor, equipment, and materials to complete the sawcutting the edges of the concrete trench for the piers and footers.
Item 3	Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the piers and footers.
Item 4	Cost estimate includes all labor, equipment, and materials necessary to excavate and load concrete associated with the piers and footers.
Item 5	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated concrete to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 6	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees. 20% was added to incorporate Land Disposal Restriction fees.
Item 7	Cost estimate includes all labor, equipment, and materials necessary to excavate and load contaminated soil associated with the
Item 8	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil to Envirosafe Services of Ohio, Inc. for disposal. Estimate assumes 22 tons and 1,220 miles per load.
Item 9	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 10	Cost estimate includes all labor, equipment, and materials necessary to sawcut trench associated with the frost walls.
Item 11	Cost estimate includes all labor, equipment, and materials necessary to facilitate breaking up concrete pad over trench for the frost walls.
Item 12	Cost estimate is based on excavation and loading of concrete from drip pad. Cost estimate includes all labor, equipment, and materials necessary to facilitate excavation and loading of contaminated concrete from frost walls.
Item 13	Transport of concrete assumes delivery to Envirosafe Services of Ohio, Inc. at 876 Otter Creek Road, Oregon, Ohio. Cost estimate also assumes one load of concrete at 22 tons/load and a distance of 1,220 miles/load.
Item 14	Cost estimate is based on quote through Envirosafe Services of Ohio, Inc. Added 20% for Land Disposal Restrictions
Item 15	Excavation and loading of soil includes all labor, equipment, and materials necessary for completion of task. Cost estimate includes excavation and loading of soil under the 336 square foot wall at a depth of 4 feet.
Item 16	Cost estimate includes all labor, equipment, and materials necessary to transport contaminated soil to Envirosafe Services of
Item 17	Cost estimate was aquired from Envriosafe Solutions of Ohio, Inc. and incorporates all disposal fees.
Item 18	
Item 19	Cost estimate includes all labor, equipment, and materials necessary to pave the area of impacted soil.
Item 20	Cost estimate includes all labor, equipment and materials necessary for erosion control during remediation.
Item 21	Annual cost estimate includes all post construction monitoring and reporting.
Item 22	Cost estimate includes all labor, equipment, and materials necessary to bi-annually seal the pavement of the area of impacted soil.
Item 23	Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation). "Year zero" for present worth calculations is 2015.

Table 11

Subjective Ranking and Evaluation of Alternatives
Northeast Treaters of New York, LLC
Athens, New York

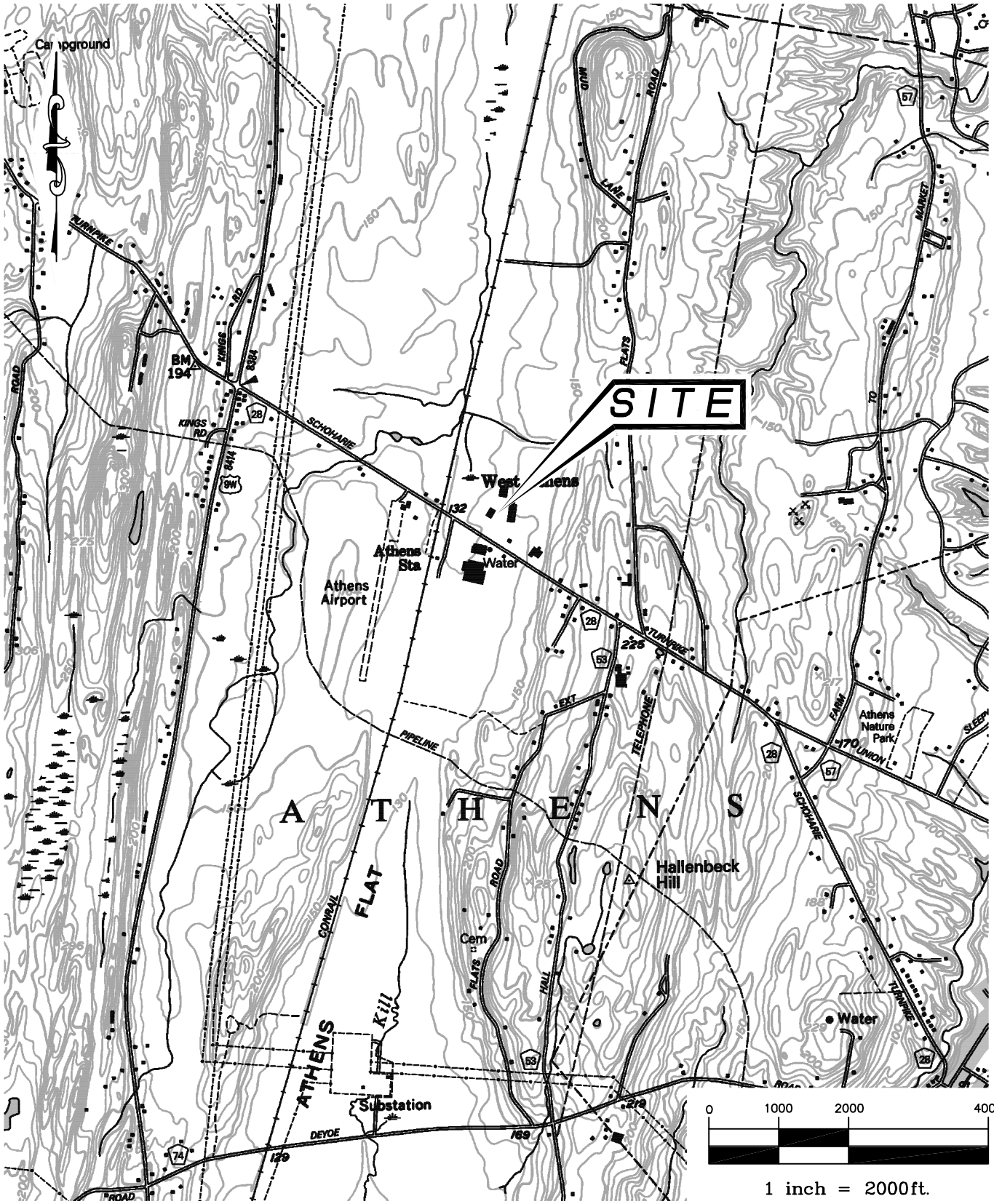
	Remedial Alternative No.				
Evaluation Criteria	**1**	**2**	**3**	**4**	**5**
Protection of Human Health and the Environment	1	2	3	2	2
Standards, Criteria, and Guidance (SCGs)	1	2	3	2	2
Long-Term Effectiveness and Permanence	1	2	3	2	3
Reduction of Toxicity, Mobility and Volume of Contamination	1	2	3	2	2
Short-Term Impact and Effectiveness	1	3	2	2	3
Implementability	3	2	1	1	3
Cost Effectiveness	2	2	1	1	3
Land Use	2	2	2	2	3
TOTALS	**12**	**17**	**18**	**14**	**21**

1 = does not meet the indicated evaluation criteria.

2 = meets most, but not all of the indicated evaluation criteria.

3 = meets or exceeds the indicated evaluation criteria.

FIGURES



MAP REFERENCE: NYSDOT HUDSON NORTH QUADRANGLE, 1995.

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SITE LOCATION MAP

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 5/1/15	SCALE: 1" = 2000'	DWG. NO. 2014-08022	FIGURE 1

LEGEND:

APPROXIMATE PROPERTY BOUNDARY

0 100 200 400

1 inch = 200 ft.

MAP REFERENCE: NEW YORK STATEWIDE DIGITAL ORTHOIMAGERY PROGRAM, PHOTOGRAPHY CIRCA 2013

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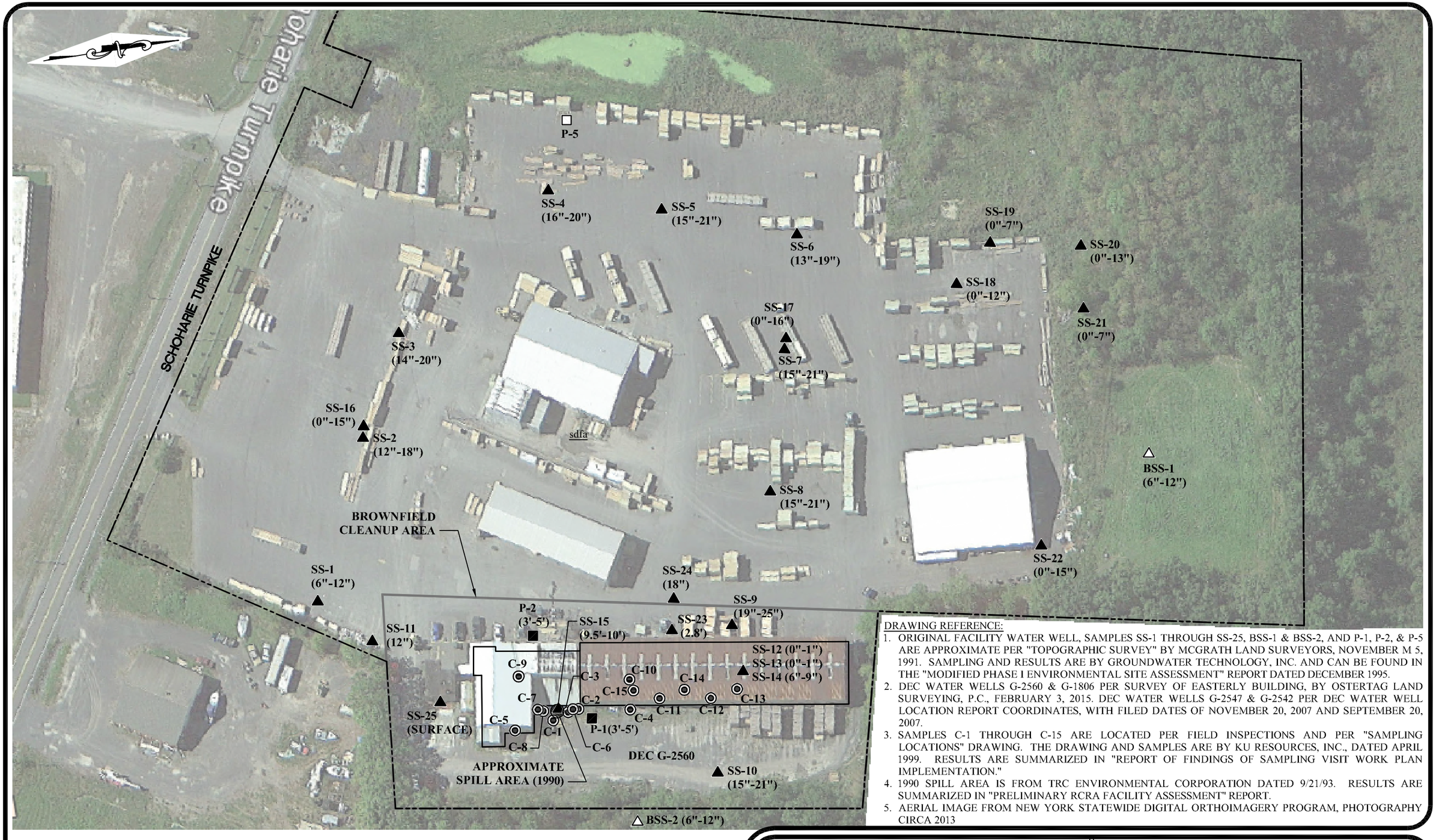
SUBJECT PROPERTY AND SITE MAP

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 5/1/15	SCALE: 1" = 200'	DWG. NO. 2014-08023	FIGURE 2



DRAWING REFERENCE:

1. ORIGINAL FACILITY WATER WELL, SAMPLES SS-1 THROUGH SS-25, BSS-1 & BSS-2, AND P-1, P-2, & P-5 ARE APPROXIMATE PER "TOPOGRAPHIC SURVEY" BY MCGRATH LAND SURVEYORS, NOVEMBER M 5, 1991. SAMPLING AND RESULTS ARE BY GROUNDWATER TECHNOLOGY, INC. AND CAN BE FOUND IN THE "MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT" REPORT DATED DECEMBER 1995.
2. DEC WATER WELLS G-2560 & G-1806 PER SURVEY OF EASTERLY BUILDING, BY OSTERTAG LAND SURVEYING, P.C., FEBRUARY 3, 2015. DEC WATER WELLS G-2547 & G-2542 PER DEC WATER WELL LOCATION REPORT COORDINATES, WITH FILED DATES OF NOVEMBER 20, 2007 AND SEPTEMBER 20, 2007.
3. SAMPLES C-1 THROUGH C-15 ARE LOCATED PER FIELD INSPECTIONS AND PER "SAMPLING LOCATIONS" DRAWING. THE DRAWING AND SAMPLES ARE BY KU RESOURCES, INC., DATED APRIL 1999. RESULTS ARE SUMMARIZED IN "REPORT OF FINDINGS OF SAMPLING VISIT WORK PLAN IMPLEMENTATION."
4. 1990 SPILL AREA IS FROM TRC ENVIRONMENTAL CORPORATION DATED 9/21/93. RESULTS ARE SUMMARIZED IN "PRELIMINARY RCRA FACILITY ASSESSMENT" REPORT.
5. AERIAL IMAGE FROM NEW YORK STATEWIDE DIGITAL ORTHOIMAGERY PROGRAM, PHOTOGRAPHY CIRCA 2013

LEGEND:

▲ SS-1 (6"-12")	SURFACE SOIL SAMPLE (ZONE OF SAMPLE)
△ BSS-1 (6"-12")	BACKGROUND SURFACE SOIL SAMPLE (ZONE OF SAMPLE)
■ P-1(3'-5')	GEOPROBE SOIL SAMPLING LOCATION (SOIL DESCRIPTION & ANALYTICAL DATA
□ P-5	GEOPROBE SOIL SAMPLING LOCATION (SOIL DESCRIPTION ONLY)
◉ C-1	SOIL SAMPLE LOCATIONS
——--——	PROPERTY BOUNDARY

0 40 80 160

1 inch = 80 ft.

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HISTORICAL SAMPLING LOCATIONS
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014-08	5/1/15	1" = 60'	2014-08024	3

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LEGEND:

OSS-01	OFF-SITE SAMPLE LOCATIONS (OSS-01 - OSS-04 SAMPLED 4/15/2015 OSS-05 - OSS-19 SAMPLED 4/20/15)
SUMP-01	SUMP SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
DP-01	DRIP PAD SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
DPP-01	DRIP PAD PERIMETER SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
SP-01	SITE PERIMETER SAMPLE LOCATIONS (SP-01 - SP-06 SAMPLED 11/17-20/2014: SP-07 - SP-12 SAMPLED 1/22/15 SP-13 - SP-25 SAMPLED 4/15/15 SP-26 SAMPLED 4/20/15)
S,C-01	DRIP PAD SAMPLE LOCATION (SAMPLED 6/23/14)
CB	CATCH BASIN (CB-01 -CB-07 SAMPLED 4/15/15 (CB-08 SAMPLED 4/20/15)
- - - - - -	STORMWATER LINE
—— - - ——	PROPERTY BOUNDARY

0 30 60 120

1 inch = 60 ft.

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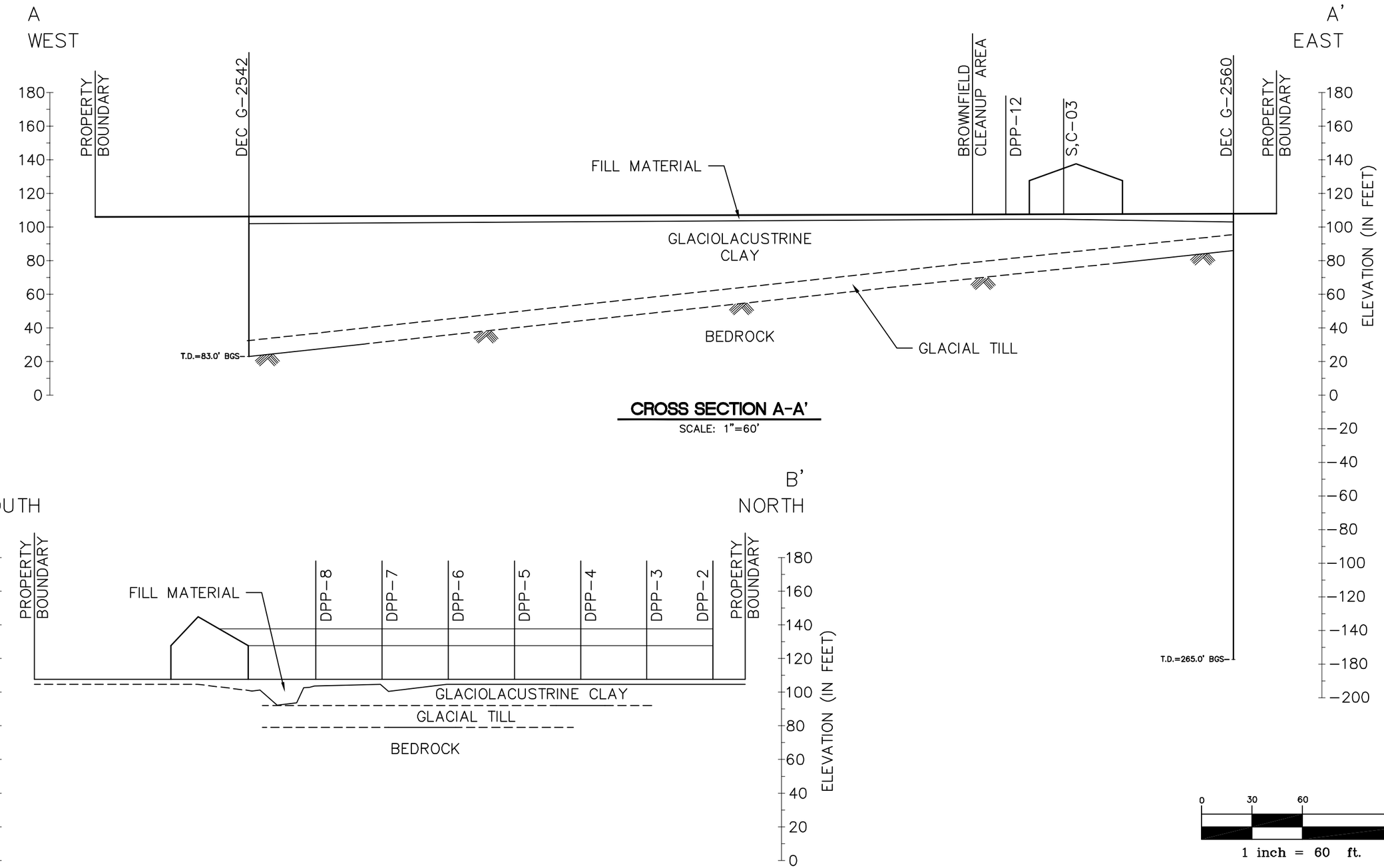
RECENT SAMPLING LOCATIONS
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014-08	5/1/15	1" = 60'	2014-08025	4



CROSS SECTION A-A'
SCALE: 1"=60'

CROSS SECTION B-B'
SCALE: 1"=60'

0 30 60 120

1 inch = 60 ft.

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CROSS SECTION
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 5/1/15	SCALE: 1" = 60'	DWG. NO. 2014-08027	FIGURE 5

LEGEND:

⊕MW-1	MONITORING WELL LOCATION
⊗DEC G-2560	WATER WELL LOCATIONS
——– – – ——–	PROPERTY BOUNDARY

0 50 100 200

1 inch = 100 ft.

WELL REFERENCES:

1. DEC WELLS G-2560 AND G-1806 ARE PLACED PER SURVEY OF EASTERLY BUILDING, BY OSTERTAG LAND SURVEYING, P.C., FEBRUARY 3, 2015.
2. DEC WELLS G-2547 AND G-2542 ARE PLACED PER DEC WATER WELL LOCATION REPORT COORDINATES, WITH FILED DATES OF NOVEMBER 20, 2007 AND SEPTEMBER 20, 2007.
3. ORIGINAL FACILITY WELL IS PLACED PER TOPOGRAPHIC SURVEY BY MCGRATH LAND SURVEYORS, NOVEMBER 5, 1991.

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WELL LOCATION MAP
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014–08	5/1/15	1" = 100'	2014–08027	6

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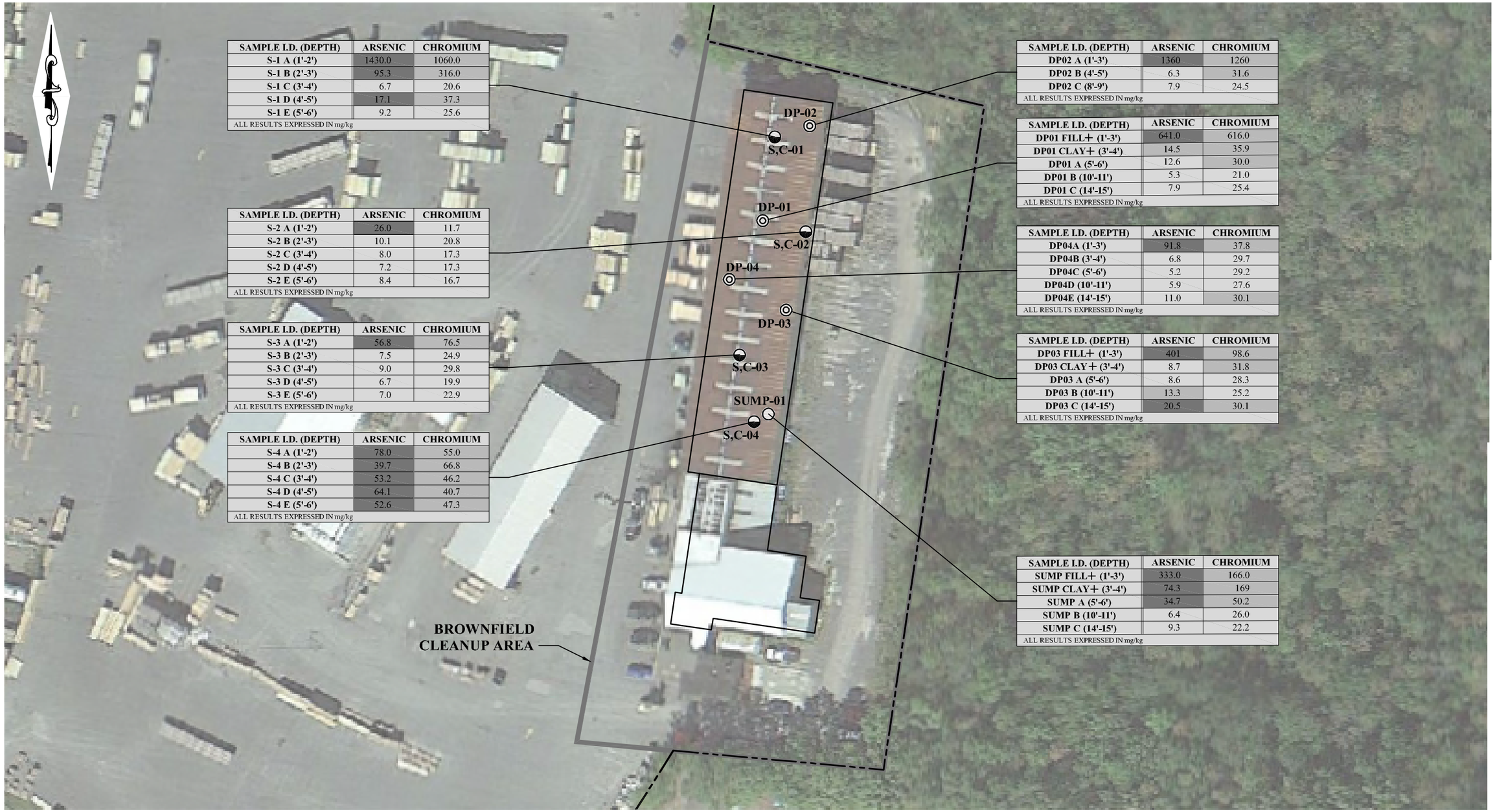

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
S-1 A (1'-2')	1430.0	1060.0
S-1 B (2'-3')	95.3	316.0
S-1 C (3'-4')	6.7	20.6
S-1 D (4'-5')	17.1	37.3
S-1 E (5'-6')	9.2	25.6
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
S-2 A (1'-2')	26.0	11.7
S-2 B (2'-3')	10.1	20.8
S-2 C (3'-4')	8.0	17.3
S-2 D (4'-5')	7.2	17.3
S-2 E (5'-6')	8.4	16.7
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
S-3 A (1'-2')	56.8	76.5
S-3 B (2'-3')	7.5	24.9
S-3 C (3'-4')	9.0	29.8
S-3 D (4'-5')	6.7	19.9
S-3 E (5'-6')	7.0	22.9
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
S-4 A (1'-2')	78.0	55.0
S-4 B (2'-3')	39.7	66.8
S-4 C (3'-4')	53.2	46.2
S-4 D (4'-5')	64.1	40.7
S-4 E (5'-6')	52.6	47.3
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DP02 A (1'-3')	1360	1260
DP02 B (4'-5')	6.3	31.6
DP02 C (8'-9')	7.9	24.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DP01 FILL+ (1'-3')	641.0	616.0
DP01 CLAY+ (3'-4')	14.5	35.9
DP01 A (5'-6')	12.6	30.0
DP01 B (10'-11')	5.3	21.0
DP01 C (14'-15')	7.9	25.4
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DP04A (1'-3')	91.8	37.8
DP04B (3'-4')	6.8	29.7
DP04C (5'-6')	5.2	29.2
DP04D (10'-11')	5.9	27.6
DP04E (14'-15')	11.0	30.1
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DP03 FILL+ (1'-3')	401	98.6
DP03 CLAY+ (3'-4')	8.7	31.8
DP03 A (5'-6')	8.6	28.3
DP03 B (10'-11')	13.3	25.2
DP03 C (14'-15')	20.5	30.1
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SUMP FILL+ (1'-3')	333.0	166.0
SUMP CLAY+ (3'-4')	74.3	169
SUMP A (5'-6')	34.7	50.2
SUMP B (10'-11')	6.4	26.0
SUMP C (14'-15')	9.3	22.2
ALL RESULTS EXPRESSED IN mg/kg		

LEGEND:

○ SUMP-01	SUMP SAMPLE LOCATION (NOVEMBER 17-20, 2014)
◎ DP-01	DRIP PAD SAMPLE LOCATION (NOVEMBER 17-20, 2014)
◒ S,C-01	DRIP PAD SAMPLE LOCATION (JUNE 23, 2014)
— - - —	PROPERTY BOUNDARY

+ Analyzed for all parameters identified in 6NYCRR PART 375-6.8

0 30 60 120

1 inch = 60 ft.

ARSENIC	CHROMIUM
13 mg/kg	30 mg/kg
16 mg/kg	1500 mg/kg

- SHADED VALUES INDICATE EXCEEDANCE OF RESPECTIVE SOIL CLEANUP OBJECTIVES:
- UNRESTRICTED USE
- INDUSTRIAL USE

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SUMMARY OF CHROMIUM AND ARSENIC DETECTIONS AT DRIP PAD SAMPLE LOCATIONS
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014-08	5/1/15	1" = 60'	2014-08028	7

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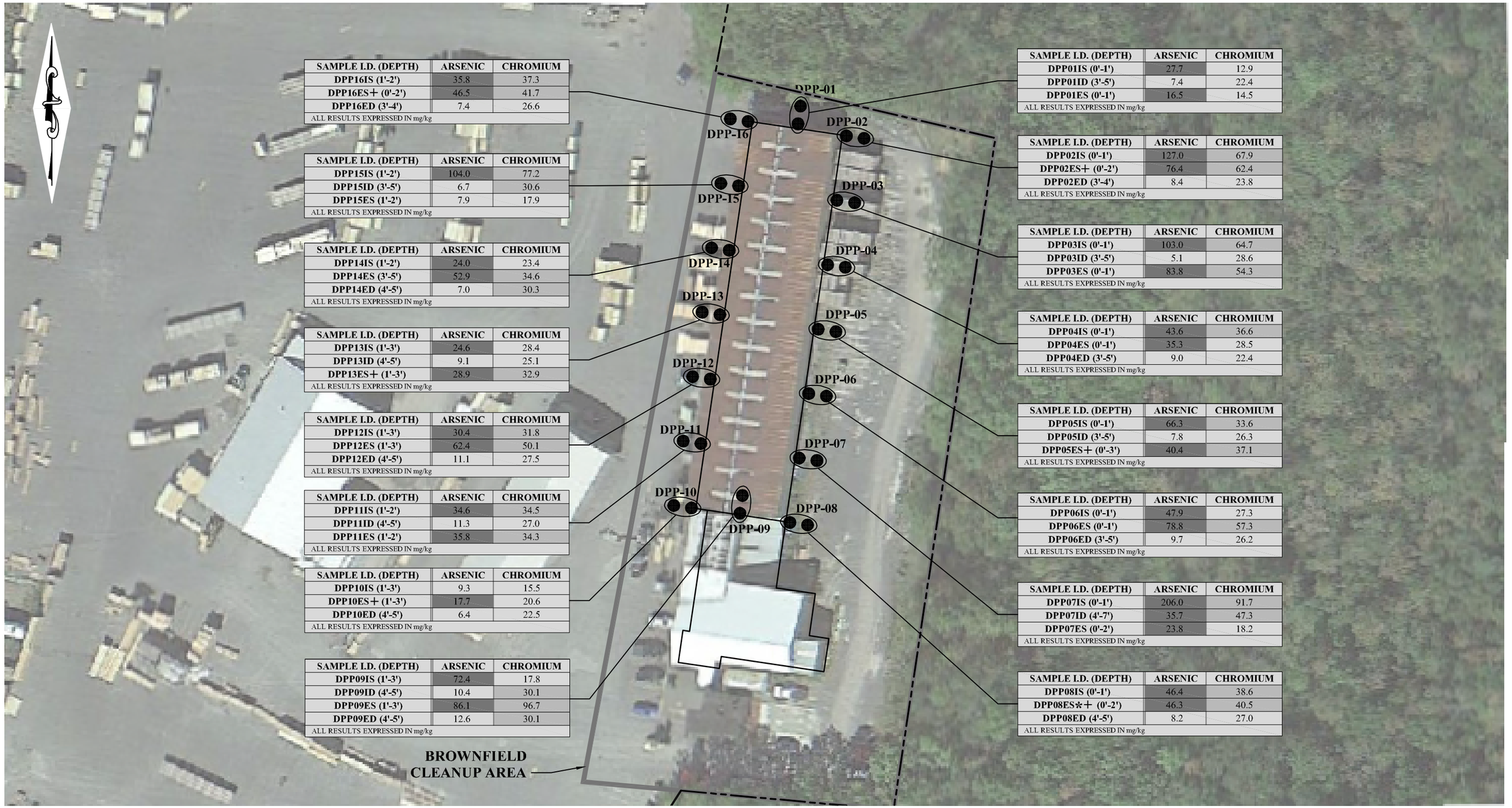

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP16IS (1'-2')	35.8	37.3
DPP16ES+ (0'-2')	46.5	41.7
DPP16ED (3'-4')	7.4	26.6
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP15IS (1'-2')	104.0	77.2
DPP15ID (3'-5')	6.7	30.6
DPP15ES (1'-2')	7.9	17.9
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP14IS (1'-2')	24.0	23.4
DPP14ES (3'-5')	52.9	34.6
DPP14ED (4'-5')	7.0	30.3
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP13IS (1'-3')	24.6	28.4
DPP13ID (4'-5')	9.1	25.1
DPP13ES+ (1'-3')	28.9	32.9
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP12IS (1'-3')	30.4	31.8
DPP12ES (1'-3')	62.4	50.1
DPP12ED (4'-5')	11.1	27.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP11IS (1'-2')	34.6	34.5
DPP11ID (4'-5')	11.3	27.0
DPP11ES (1'-2')	35.8	34.3
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP10IS (1'-3')	9.3	15.5
DPP10ES+ (1'-3')	17.7	20.6
DPP10ED (4'-5')	6.4	22.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP09IS (1'-3')	72.4	17.8
DPP09ID (4'-5')	10.4	30.1
DPP09ES (1'-3')	86.1	96.7
DPP09ED (4'-5')	12.6	30.1
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP01IS (0'-1')	27.7	12.9
DPP01ID (3'-5')	7.4	22.4
DPP01ES (0'-1')	16.5	14.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP02IS (0'-1')	127.0	67.9
DPP02ES+ (0'-2')	76.4	62.4
DPP02ED (3'-4')	8.4	23.8
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP03IS (0'-1')	103.0	64.7
DPP03ID (3'-5')	5.1	28.6
DPP03ES (0'-1')	83.8	54.3
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP04IS (0'-1')	43.6	36.6
DPP04ES (0'-1')	35.3	28.5
DPP04ED (3'-5')	9.0	22.4
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP05IS (0'-1')	66.3	33.6
DPP05ID (3'-5')	7.8	26.3
DPP05ES+ (0'-3')	40.4	37.1
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP06IS (0'-1')	47.9	27.3
DPP06ES (0'-1')	78.8	57.3
DPP06ED (3'-5')	9.7	26.2
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP07IS (0'-1')	206.0	91.7
DPP07ID (4'-7')	35.7	47.3
DPP07ES (0'-2')	23.8	18.2
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
DPP08IS (0'-1')	46.4	38.6
DPP08ES*+ (0'-2')	46.3	40.5
DPP08ED (4'-5')	8.2	27.0
ALL RESULTS EXPRESSED IN mg/kg		

LEGEND:

● DPP-01 DRIP PAD PERIMETER SAMPLE LOCATION (NOVEMBER 17-20, 2014)

PROPERTY BOUNDARY

* Semi-Volatile Compounds: Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, and Chrysene were detected at DPP08ES above Unrestricted-Use SCOs.

+ Analyzed for all parameters identified in 6NYCRR PART 375-6.8

0 30 60 120

1 inch = 60 ft.

ARSENIC	CHROMIUM	
13 mg/kg	30 mg/kg	- UNRESTRICTED USE
16 mg/kg	1500 mg/kg	- INDUSTRIAL USE

- SHADED VALUES INDICATE EXCEEDANCE OF RESPECTIVE SOIL CLEANUP OBJECTIVES:

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SUMMARY OF CHROMIUM AND ARSENIC DETECTIONS AT DRIP PAD PERIMETER SAMPLE LOCATIONS
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014-08	5/1/15	1" = 60'	2014-08029	8

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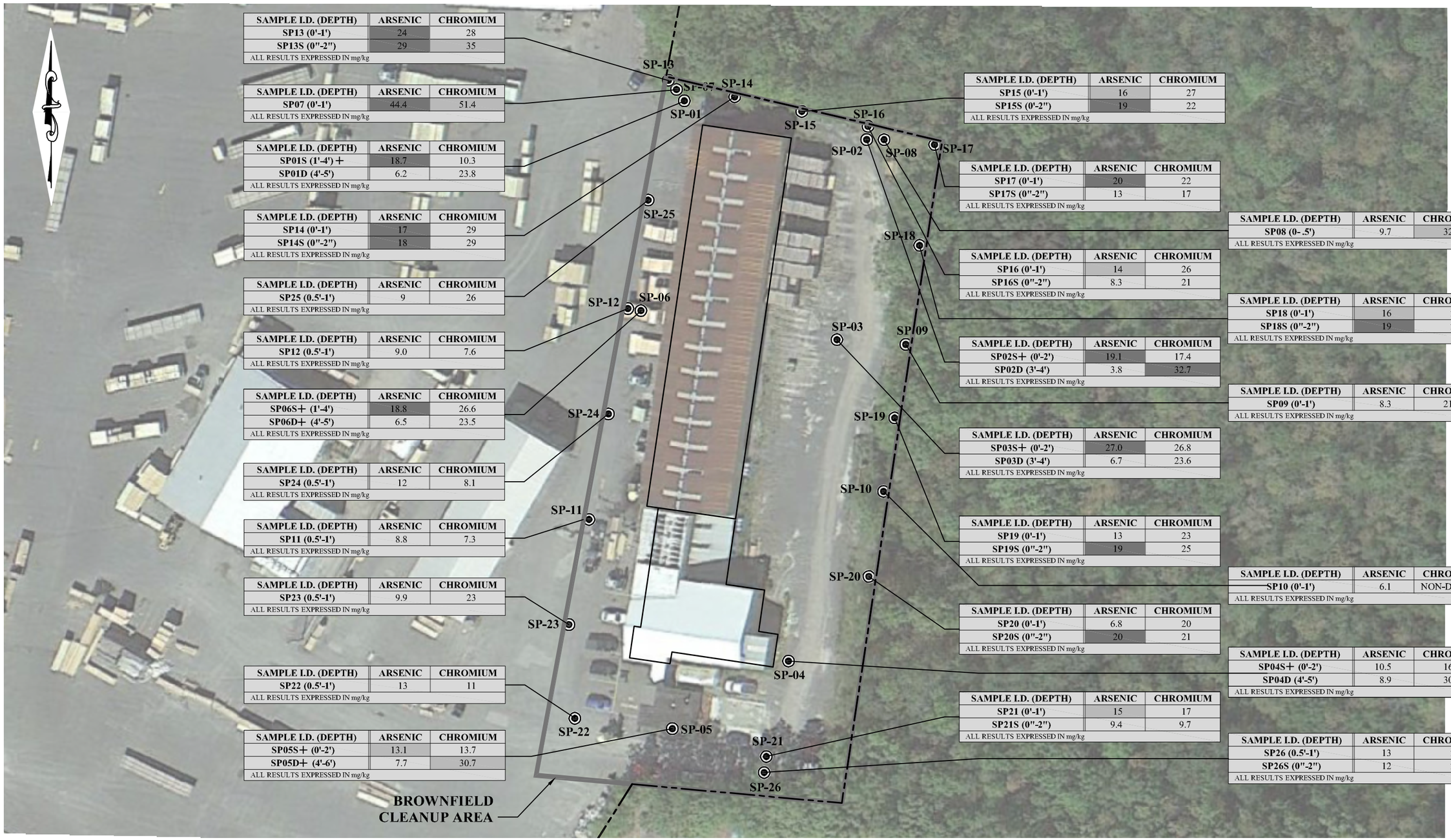

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP13 (0'-1')	24	28
SP13S (0"-2")	29	35
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP07 (0'-1')	44.4	51.4
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP01S (1'-4') +	18.7	10.3
SP01D (4'-5')	6.2	23.8
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP14 (0'-1')	17	29
SP14S (0"-2")	18	29
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP25 (0.5'-1')	9	26
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP12 (0.5'-1')	9.0	7.6
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP06S + (1'-4')	18.8	26.6
SP06D + (4'-5')	6.5	23.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP24 (0.5'-1')	12	8.1
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP11 (0.5'-1')	8.8	7.3
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP23 (0.5'-1')	9.9	23
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP22 (0.5'-1')	13	11
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP05S + (0'-2')	13.1	13.7
SP05D + (4'-6')	7.7	30.7
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP15 (0'-1')	16	27
SP15S (0'-2")	19	22
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP17 (0'-1')	20	22
SP17S (0"-2")	13	17
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP08 (0- .5')	9.7	32.5
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP16 (0'-1')	14	26
SP16S (0"-2")	8.3	21
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP18 (0'-1')	16	28
SP18S (0"-2")	19	20
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP02S + (0'-2')	19.1	17.4
SP02D (3'-4')	3.8	32.7
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP09 (0'-1')	8.3	21.8
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP03S + (0'-2')	27.0	26.8
SP03D (3'-4')	6.7	23.6
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP19 (0'-1')	13	23
SP19S (0"-2")	19	25
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP10 (0'-1')	6.1	NON-DETECT
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP20 (0'-1')	6.8	20
SP20S (0"-2")	20	21
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP04S + (0'-2')	10.5	16.8
SP04D (4'-5')	8.9	30.0
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP21 (0'-1')	15	17
SP21S (0"-2")	9.4	9.7
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
SP26 (0.5'-1')	13	29
SP26S (0"-2")	12	27
ALL RESULTS EXPRESSED IN mg/kg		

LEGEND:

◉ SP-01 — SITE PERIMETER SAMPLE LOCATION (NOVEMBER 17-20, 2014 AND JANUARY 22, 2015)

PROPERTY BOUNDARY

0 30 60 120

1 inch = 60 ft.

\+ Analyzed for all parameters identified in 6NYCRR PART 375-6.8

ARSENIC	CHROMIUM	
13 mg/kg	30 mg/kg	- SHADED VALUES INDICATE EXCEEDANCE OF RESPECTIVE SOIL CLEANUP OBJECTIVES:
16 mg/kg	1500 mg/kg	- UNRESTRICTED USE - INDUSTRIAL USE

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SUMMARY OF CHROMIUM AND ARSENIC DETECTIONS AT SITE PERIMETER SAMPLE LOCATIONS

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 5/1/15	SCALE: 1" = 60'	DWG. NO. 2014-08030	FIGURE 9

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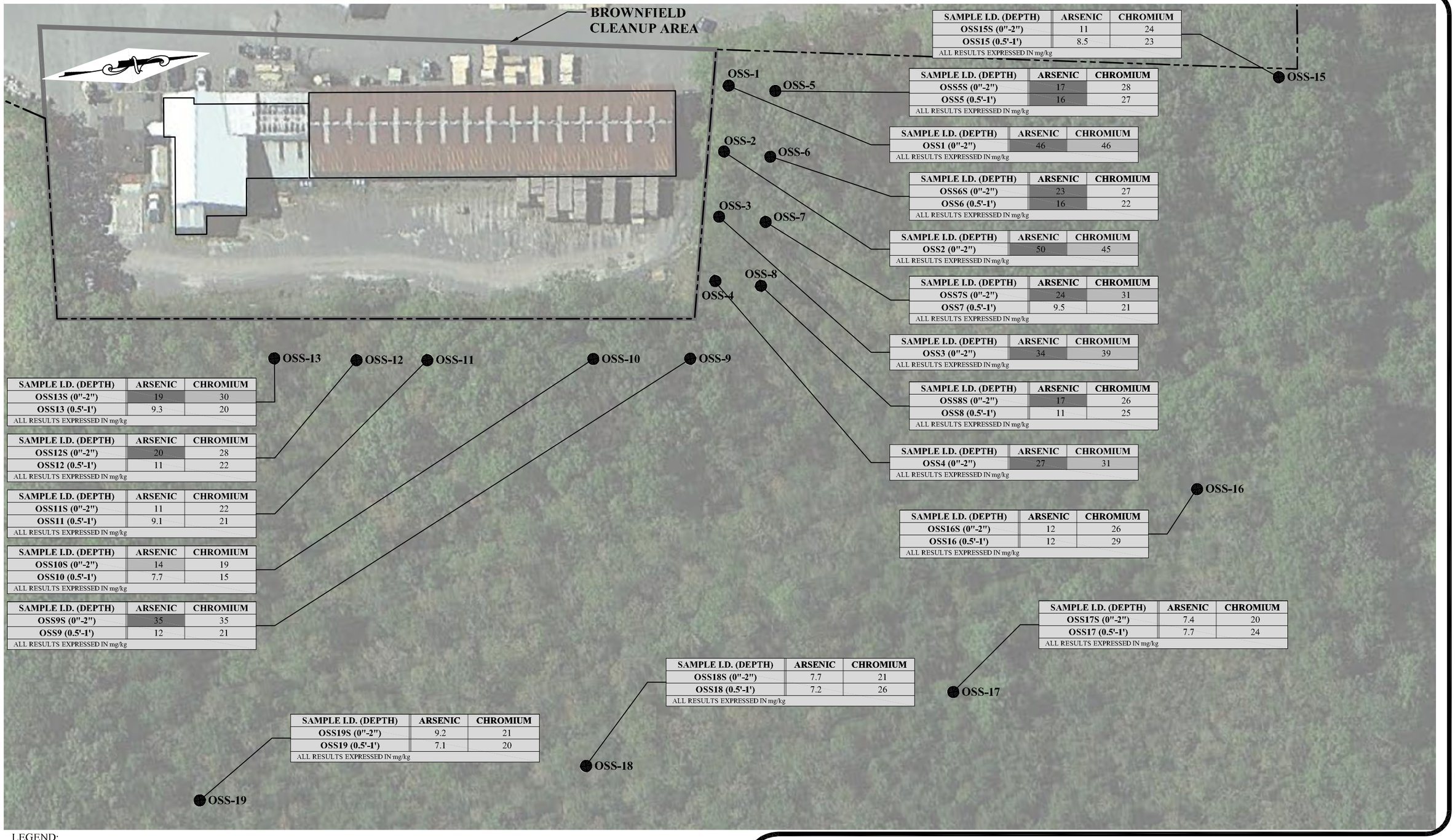

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS15S (0"-2")	11	24
OSS15 (0.5'-1')	8.5	23

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS5S (0"-2")	17	28
OSS5 (0.5'-1')	16	27

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS1 (0"-2")	46	46

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS6S (0"-2")	23	27
OSS6 (0.5'-1')	16	22

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS2 (0"-2")	50	45

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS7S (0"-2")	24	31
OSS7 (0.5'-1')	9.5	21

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS3 (0"-2")	34	39

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS8S (0"-2")	17	26
OSS8 (0.5'-1')	11	25

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS4 (0"-2")	27	31

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS13S (0"-2")	19	30
OSS13 (0.5'-1')	9.3	20

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS12S (0"-2")	20	28
OSS12 (0.5'-1')	11	22

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS11S (0"-2")	11	22
OSS11 (0.5'-1')	9.1	21

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS10S (0"-2")	14	19
OSS10 (0.5'-1')	7.7	15

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS9S (0"-2")	35	35
OSS9 (0.5'-1')	12	21

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS16S (0"-2")	12	26
OSS16 (0.5'-1')	12	29

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS17S (0"-2")	7.4	20
OSS17 (0.5'-1')	7.7	24

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS18S (0"-2")	7.7	21
OSS18 (0.5'-1')	7.2	26

ALL RESULTS EXPRESSED IN mg/kg

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
OSS19S (0"-2")	9.2	21
OSS19 (0.5'-1')	7.1	20

ALL RESULTS EXPRESSED IN mg/kg

LEGEND:

OSS-5 SAMPLE LOCATIONS (APRIL 15, 2015 AND APRIL 20, 2015)

PROPERTY BOUNDARY

0 30 60 120

1 inch = 60 ft.

ARSENIC	CHROMIUM
13 mg/kg	30 mg/kg
16 mg/kg	1500 mg/kg

- SHADED VALUES INDICATE EXCEEDANCE OF RESPECTIVE SOIL CLEANUP OBJECTIVES:
- UNRESTRICTED USE
- INDUSTRIAL USE

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SUMMARY OF CHROMIUM AND ARSENIC DETECTIONS AT OFF-SITE SAMPLE LOCATIONS

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 5/1/15	SCALE: 1" = 60'	DWG. NO. 2014-08031	FIGURE 10

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SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB07 (0"-2")	36	35
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB06 (0"-2")	26	33
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB08 (0"-2")	39	87
ALL RESULTS EXPRESSED IN mg/kg		

CB-08

CB-07

CB-06

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB05 (0"-2")	27	28
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB02 (0"-2")	35	43
ALL RESULTS EXPRESSED IN mg/kg		

BROWNFIELD CLEANUP AREA

EDGE OF PAVEMENT

CB-02

CB-05

CB-03

CB-01

CB-04

EDGE OF PAVEMENT

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB01 (0"-2")	28	30
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB03 (0"-2")	40	36
ALL RESULTS EXPRESSED IN mg/kg		

SAMPLE I.D. (DEPTH)	ARSENIC	CHROMIUM
CB04 (0"-2")	24	41
ALL RESULTS EXPRESSED IN mg/kg		

LEGEND:

- ■ CB-01 — PROPOSED SEDIMENT AND SURFACE SAMPLE LOCATIONS
- □ CB — CATCH BASIN
- – – – – – STORMWATER LINE
- —— – —— PROPERTY BOUNDARY

0 30 60 120

1 inch = 60 ft.

ARSENIC	CHROMIUM	
13 mg/kg	30 mg/kg	- UNRESTRICTED USE
16 mg/kg	1500 mg/kg	- INDUSTRIAL USE

- SHADED VALUES INDICATE EXCEEDANCE OF RESPECTIVE SOIL CLEANUP OBJECTIVES:

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SUMMARY OF CHROMIUM AND ARSENIC DETECTIONS AT CATCH BASIN SAMPLE LOCATIONS

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
2014-08	5/1/15	1" = 60'	2014-08032	11

LEGEND:

- UNRESTRICTED USE SOIL CLEANUP OBJECTIVE EXCEEDANCE FOR ARSENIC (13 mg/kg)
- INDUSTRIAL USE SOIL CLEANUP OBJECTIVE EXCEEDANCE FOR ARSENIC (16 mg/kg)
- ANTICIPATED SITE PROTECTIVE COVER
- OSS-01 — OFF-SITE SAMPLE LOCATIONS (OSS-01 - OSS-04 SAMPLED 4/15/2015 OSS-05 - OSS-19 SAMPLED 4/20/15)
- SUMP-01 — SUMP SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
- DP-01 — DRIP PAD SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
- DPP-01 — DRIP PAD PERIMETER SAMPLE LOCATIONS (SAMPLED 11/17-20/2014)
- SP-01 — SITE PERIMETER SAMPLE LOCATIONS (SP-01 - SP-06 SAMPLED 11/17-20/2014: SP-07 - SP-12 SAMPLED 1/22/15 SP-13 - SP-25 SAMPLED 4/15/15 SP-26 SAMPLED 4/20/15)
- S,C-01 — DRIP PAD SAMPLE LOCATION (SAMPLED 6/23/14)
- PROPERTY BOUNDARY

0 30 60 120

1 inch = 60 ft.

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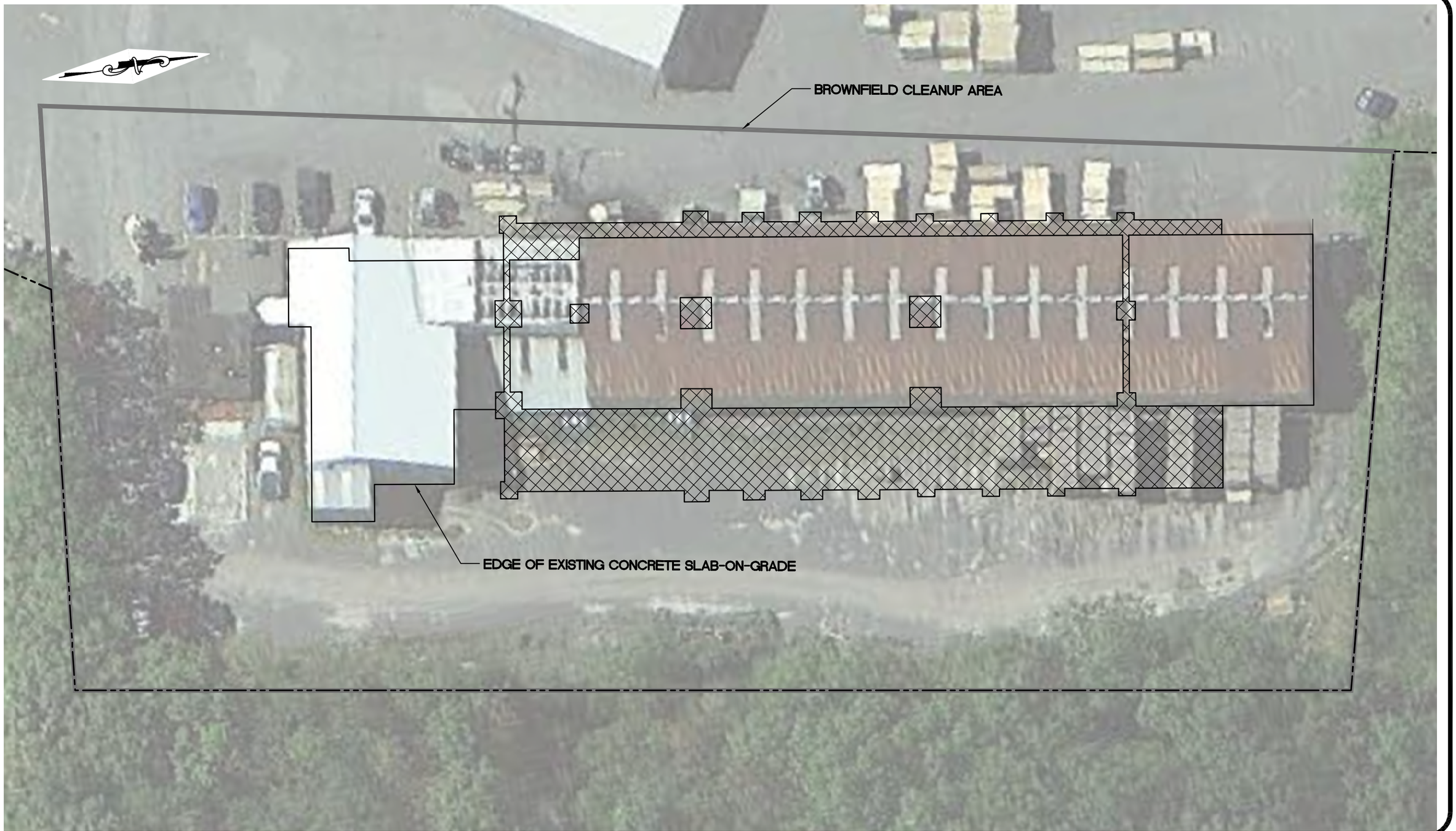
ESTIMATED AREA OF IMPACTED SURFACE SOILS
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014-08	DATE: 6/1/15	SCALE: 1" = 60'	DWG. NO. 2014-08025	FIGURE 12



LEGEND:

CONSTRUCTION-SPECIFIC EXCAVATION AREAS

PROPERTY BOUNDARY

0 15 30 60

1 inch = 30 ft.

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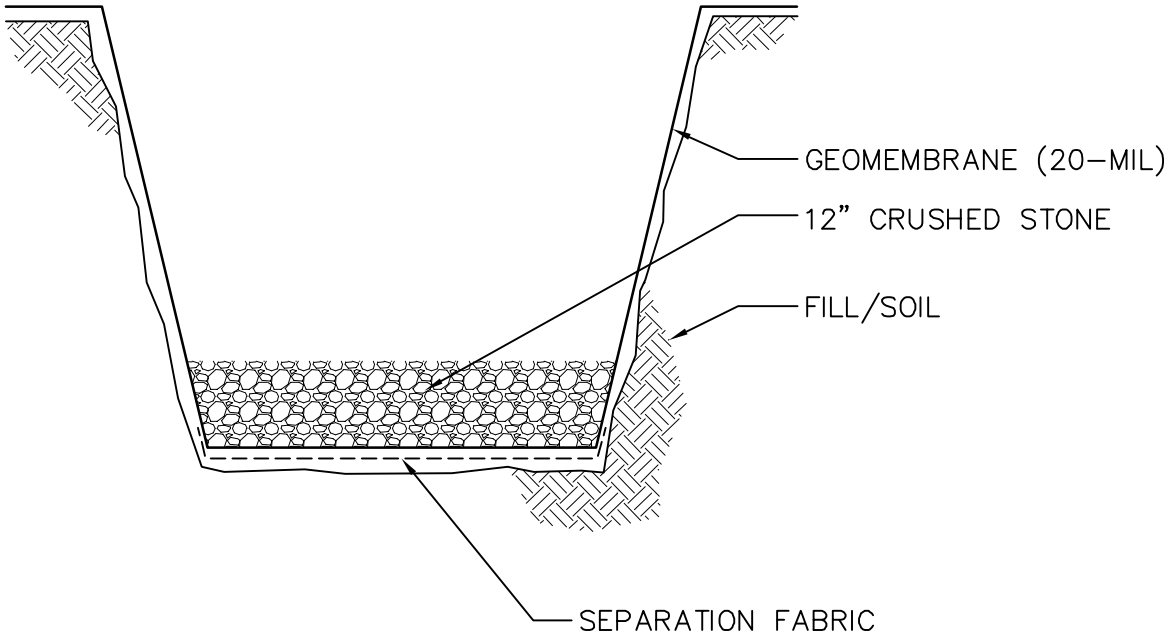
CONSTRUCTION–SPECIFIC EXCAVATION AREAS

NORTHEAST TREATERS

SCHOHARIE TURNPIKE

TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014–08	DATE: 5/1/15	SCALE: 1" = 30'	DWG. NO. 2014–08032	FIGURE 13



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PROTECTIVE MEMBRANE PROFILE
NORTHEAST TREATERS
SCHOHARIE TURNPIKE
TOWN OF ATHENS GREENE CO., N.Y.

PROJ. No.: 2014–08	DATE: 5/1/15	SCALE: NOT TO SCALE	DWG. NO. 2014–08033	FIGURE 14

APPENDIX A

TOWN OF ATHENS ZONING ORDINANCE ATTACHMENTS

180 Attachment 1

Town of Athens

Table 1
Permitted Uses

KEY:
P = Permitted with no Planning Board or ZBA review
SP = Site plan approval by Planning Board required
SUP = Special use permit by Planning Board required

	District*									
Use	**Rr**	**Ru**	**Ru-1**	**MUC**	**LI-1**	**LI-2**	**Ag**	**OS**	**H**	**Ru-385**
Residential Uses										
Accessory apartment not in principal building	SUP	SUP	SUP	SP/SUP			SUP	SUP	SUP	SUP
Accessory apartment in principal building	P	P	P	SP/SUP			P	P	P	P
Customary residential accessory	P	P	P	P	P	P	P	P	P	P
Dwelling, multifamily	SP/SUP		SP/SUP						SP/SUP	
Dwelling, single-family	P	P	P	SP/SUP			P	P	P	P
Dwelling, two-family	P	P	P				P	P	P	SP/SUP
Manufactured home	P	P	P				P	P	P	P
Senior citizen housing	SP/SUP	SP/SUP	SP/SUP						SP/SUP	SP/SUP
Townhouse	SP/SUP		SP/SUP						SP/SUP	
Business Uses										
Agriculture, forestry, or other natural resource use, not including mine or excavation	P	P			P	P	P	P		P
Adult establishment					SP/SUP	SP/SUP				
Agribusiness	P	P	SP/SUP	SUP	SUP	SUP	P	P	P	P
Auto, boat, mobile home, trailer or RV sales/rental				SP/SUP	SP/SUP	SP/SUP				
Autobody or major repair shop				SP/SUP	SP/SUP	SP/SUP			SP/SUP	

	District*									
Use	**Rr**	**Ru**	**Ru-1**	**MUC**	**LI-1**	**LI-2**	**Ag**	**OS**	**H**	**Ru-385**
Bank				SP/SUP					SP/SUP	
Bed-and-breakfast inn	SP/SUP	SP/SUP	SP				SP/SUP	SP/SUP	SP/SUP	SP/SUP
Camp/campground	SP/SUP	SP/SUP						SP/SUP		
Car wash				SP/SUP	SP/SUP	SP/SUP				
Cell tower	SP/SUP	SP/SUP			SP/SUP	SP/SUP	SP/SUP	SP/SUP		SP/SUP
Customary business accessory		P	SP	P	P	P	P		P	P
Day-care home, family	P	P	P				P	P	P	P
Day care, group	SP/SUP	SP/SUP	SP	SP					SP/SUP	SP/SUP
Easting or drinking establishment				SP/SUP					SP/SUP	
Educational facility		SP	SP/SUP	SP/SUP					SP/SUP	
Equipment or material storage					SP/SUP	SP/SUP				
Excavation and mining, see § 180-41		SP/SUP					SP/SUP	SP/SUP		
Fueling station				SP/SUP	SP/SUP	SP/SUP			SP/SUP	
Golf course		SP/SUP								
Home occupation, major	SP/SUP	SP/SUP	SP	SP	SP/SUP	SP/SUP	SP/SUP	SP/SUP	SP/SUP	SP/SUP
Home occupation, low-impact	P	P	P	P	P	P	P	P	P	P
Hotel/motel			SP/SUP	SP/SUP					SP/SUP	
Horse boarding operation		P					P	P		P
Junkyard, see § 180-44					SP/SUP	SP/SUP				
Kennel			SP/SUP	SP/SUP			SP/SUP	SP/SUP		SP/SUP
Laundromat, dry cleaning, laundry pickup				SP						
Light industrial					SP	SP				
Medical clinic or office			SP	SP					SP/SUP	
Motor vehicle or scrap junkyard					SP/SUP	SP/SIP				
Nature interpretive centers	P	P	P	P	P	P	P	P	P	P
Personal service establishment			SP	SP					SP	
Professional, government, business office			SP	SP					SP/SUP	
Recreational use, indoor	SP/SUP	SP/SUP		SP/SUP				SP/SUP ***		
Recreational use, outdoor	SP/SUP	SP/SUP		SP/SUP				SP/SUP ***		
Religious facility			SP	SP					SP	
Resort		SP/SUP								

	District*									
Use	**Rr**	**Ru**	**Ru-1**	**MUC**	**LI-1**	**LI-2**	**Ag**	**OS**	**H**	**Ru-385**
		(1)								
Retail sales			SP	SP	SP/SUP	SP/SUP			SP	
Riding stable	SUP	P					P	P		P
Roadside stand	P	P	SP	P			P	P	P	P
Sign	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP
Sit-down eating or drinking establishment			SP	SP					SP	
Storage or deposition of soil, waste material, see § 180-41					SP/SUP	SP/SUP				
Swimming pool	P	P	P	P	P	P	P	P	P	P
Trailer rental/sales				SP/SUP	SP/SUP	SP/SUP				
Warehouse					SP/SUP	SP/SUP				
Water recreation	SP/SUP	SP/SUP					SP/SUP	SP/SUP		SP/SUP
Water storage facility	SP/SUP	SP/SUP		SP/SUP	SP/SUP	SP/SUP	SP/SUP	SP/SUP	SP/SUP	SP/SUP
Wind energy conversion system	SP/SUP	SP/SUP			SP/SUP	SP/SUP	SP/SUP	SP/SUP		SP/SUP

NOTES:

(1) Resorts in the Ru District allowed only as per § 180-59 (Planned Unit Development)

* Allowed uses for any of the Watershed Overlay Districts shall be the same as the base district, except where noted in § 180-30.

*** Recreation use allowed only as defined as passive recreation

180 Attachment 2

Town of Athens

Table 2
Density and Dimensions

Use	Utility Class	Residential Density (number of acres or square feet per dwelling required)*	Lot Area Required Per Nonresidential Use	Minimum Lot Width (feet)	Minimum Front Yard Setback (feet)	Maximum Front Yard Setback (feet)	Minimum Lot Depth (feet)	Minimum Each Side Yard (feet)	Minimum Rear Yard (feet)	Maximum Building Height (feet)	Maximum Percent Parcel Coverage (all lots)
Rr	Class 1	15,100 square feet	20,000 square feet	100	25	N/A	100	15	25	35	30
	Class 2	30,000 square feet	20,000 square feet	125	25	N/A	100	40	25	35	30
	Class 3	65,000 square feet	1 acre	150	25	N/A	100	40	25	35	30
Ru	Class 1	1 DU per 3 acres	20,000 square feet	100	50	N/A	120	30	50	35	30
	Class 2	1 DU per 3 acres	20,000 square feet	100	50	N/A	120	30	50	35	30
	Class 3	1 DU per 3 acres	1 acre	100	50	N/A	120	30	50	35	30
Ru-1	Any class	1 DU per 1 acre	1 acre	75	25	N/A	100	30	50	35	30
MUC	Class 3	130,000 square feet**	1 acre	200	40	N/A	150	25	50	35	60
LI-1	Any class	No residential uses allowed	2 acres	50	100	N/A	200	50	50	45	50
LI-2	Any class	No residential uses allowed	2 acres	50	100	N/A	200	50	50	45	50
Ag	Class 3	1 DU per 10 acres	1 acre	200	75	N/A	150	50	50	35	25
OS	Class 3	1 DU per 5 acres	1 acre	250	75	N/A	175	50	50	35	25

Use	Utility Class	Residential Density (number of acres or square feet per dwelling required)*	Lot Area Required Per Nonresidential Use	Minimum Lot Width (feet)	Minimum Front Yard Setback (feet)	Maximum Front Yard Setback (feet)	Minimum Lot Depth (feet)	Minimum Each Side Yard (feet)	Minimum Rear Yard (feet)	Maximum Building Height (feet)	Maximum Percent Parcel Coverage (all lots)
H	Class 1	10,000 square feet	20,000 square feet	80	25	35	80	20	25	25	40
	Class 2	20,000 square feet	20,000 square feet	80	25	35	80	20	25	25	40
	Class 3	31,500 square feet	1 acre	80	25	35	80	20	25	25	40
Ru-385	Class 1	1 DU per 3 acres	20,000 square feet	100	75	N/A	100	50	50	35	30
	Class 2	1 DU per 3 acres	20,000 square feet	100	75	N/A	100	50	50	35	30
	Class 3	1 DU per 3 acres	1 acre	100	75	N/A	100	50	50	35	30
HLW	Class 3	1 DU per 5 acres	2 acres	200	75	N/A	120	50	50	35	15
GLW	Class 3	1 DU per 5 acres	2 acres	200	75	N/A	120	50	50	35	15
BLW	Class 3	1 DU per 5 acres	2 acres	200	75	N/A	120	50	50	35	15

NOTES:

* Unless the Planning Board allows for application of an average lot size as per § 180-12C, this shall be the minimum lot size.

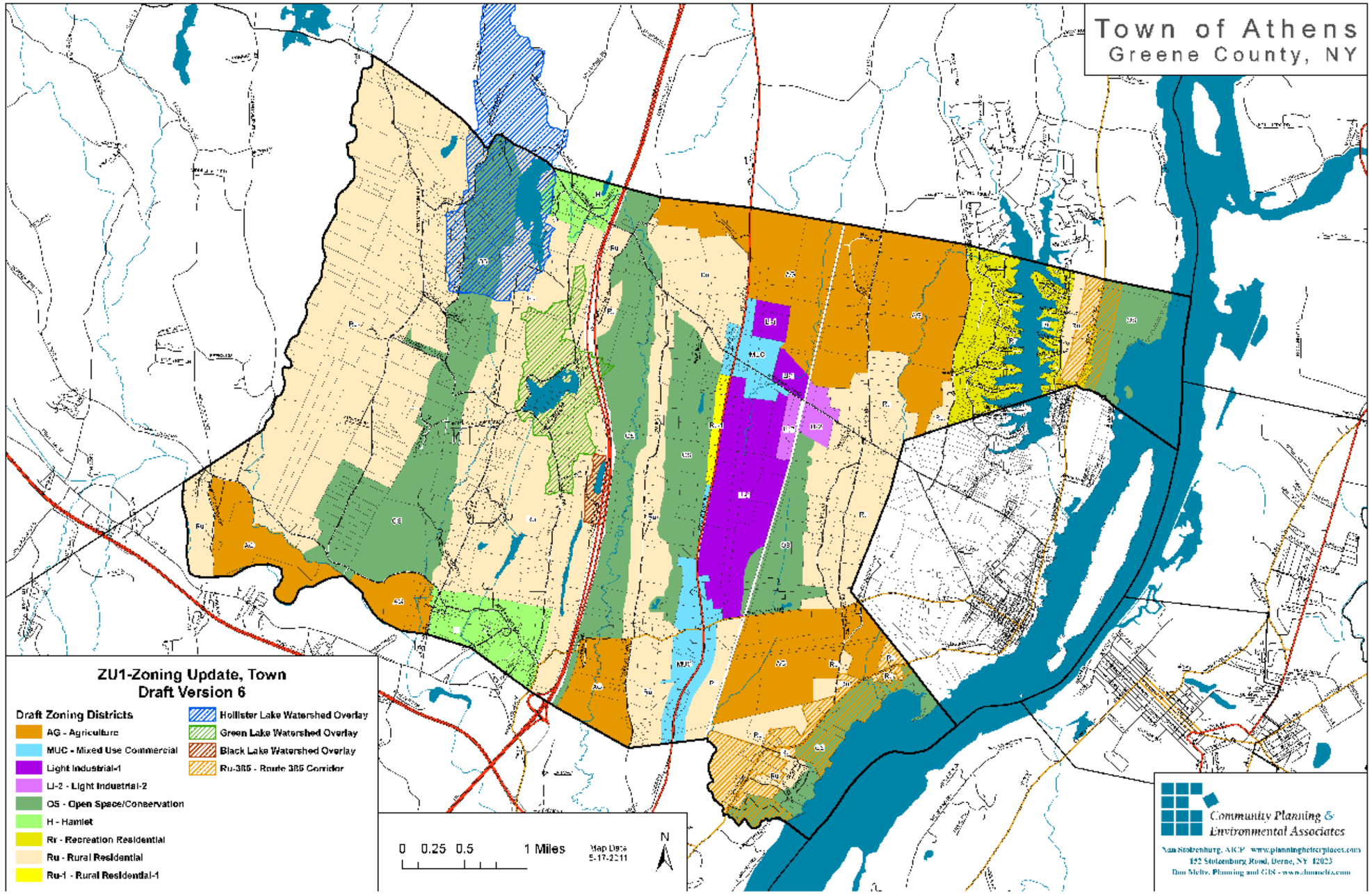
** Residential uses are allowed as per Table 2, but not encouraged in the Highway Commercial District.

Class 1 = Public utility provided, water and sewer

Class 2 = Either public water or sewer

Class 3 = On-lot water and sewage disposal

N/A = Not applicable


Town of Athens
Greene County, NY
ZU1-Zoning Update, Town
Draft Version 6
Draft Zoning Districts
AG - Agriculture
MUC - Mixed Use Commercial
Light Industrial-1
LI-2 - Light Industrial-2
OS - Open Space/Conservation
H - Hamlet
Rr - Recreation Residential
Ru - Rural Residential
Ru-1 - Rural Residential-1
Hollister Lake Watershed Overlay
Green Lake Watershed Overlay
Black Lake Watershed Overlay
Ru-385 - Route 385 Corridor
0 0.25 0.5 1 Miles
Map Date
5-17-2011
N
Community Planning & Environmental Associates
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APPENDIX B

CUSTOM SOIL RESOURCE REPORT FOR GREENE COUNTY, NEW YORK

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Greene County, New York

796 Schoharie Turnpike, Town of Athens, New York

September 26, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Greene County, New York
Survey Area Data: Version 12, Dec 16, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2010—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Greene County, New York (NY039)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Co	Covington and Madalin soils	127.5	34.1%
KrA	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	131.6	35.2%
KrB	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	28.0	7.5%
NrC	Nassau channery silt loam, rolling, very rocky	6.6	1.8%
VdB	Valois-Nassau complex, undulating	37.2	10.0%
VdD	Valois-Nassau complex, hilly	37.5	10.0%
W	Water	3.6	1.0%
Wa	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	1.4	0.4%
Totals for Area of Interest		**373.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the

contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Greene County, New York

Co—Covington and Madalin soils

Map Unit Setting

National map unit symbol: 9sg1
Elevation: 50 to 1,000 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Covington and similar soils: 45 percent
Madalin and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Covington

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous clayey glaciolacustrine deposits or glaciomarine deposits

Typical profile

H1 - 0 to 7 inches: silty clay
H2 - 7 to 28 inches: clay
H3 - 28 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D

Description of Madalin

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: silty clay
H3 - 30 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

Minor Components

Rhinebeck

Percent of map unit: 5 percent

Vergennes

Percent of map unit: 5 percent
Landform: Depressions

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions

Hudson

Percent of map unit: 5 percent
Landform: Depressions

Kingsbury

Percent of map unit: 5 percent

KrA—Kingsbury and Rhinebeck soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9sgx
Elevation: 80 to 1,000 feet

Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Kingsbury and similar soils: 40 percent
Rhinebeck and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kingsbury

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous, clayey glaciomarine deposits or glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 14 inches: silty clay loam
H3 - 14 to 36 inches: clay
H4 - 36 to 70 inches: stratified silty clay loam to silt loam to very fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D

Description of Rhinebeck

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: silt loam

H2 - 7 to 19 inches: silty clay loam
H3 - 19 to 32 inches: silty clay
H4 - 32 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Minor Components

Hudson

Percent of map unit: 5 percent

Shaker

Percent of map unit: 5 percent
Landform: Depressions

Covington

Percent of map unit: 5 percent
Landform: Depressions

Madalin

Percent of map unit: 5 percent
Landform: Depressions

Elmridge

Percent of map unit: 5 percent

Vergennes

Percent of map unit: 5 percent

KrB—Kingsbury and Rhinebeck soils, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9sgy
Elevation: 80 to 1,000 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Kingsbury and similar soils: 45 percent
Rhinebeck and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kingsbury

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous, clayey glaciomarine deposits or glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 14 inches: silty clay loam
H3 - 14 to 36 inches: clay
H4 - 36 to 70 inches: stratified silty clay loam to silt loam to very fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D

Description of Rhinebeck

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 19 inches: silty clay loam
H3 - 19 to 32 inches: silty clay
H4 - 32 to 60 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Minor Components

Elmridge

Percent of map unit: 5 percent

Covington

Percent of map unit: 5 percent
Landform: Depressions

Hudson

Percent of map unit: 5 percent

Madalin

Percent of map unit: 5 percent
Landform: Depressions

Vergennes

Percent of map unit: 5 percent

NrC—Nassau channery silt loam, rolling, very rocky

Map Unit Setting

National map unit symbol: 9sj6
Elevation: 600 to 1,800 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Nassau and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nassau

Setting

Landform: Benches, till plains, ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 4 inches: channery silt loam
H2 - 4 to 19 inches: extremely channery silt loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Lordstown

Percent of map unit: 5 percent

Arnot

Percent of map unit: 5 percent

Tuller

Percent of map unit: 5 percent

Oquaga

Percent of map unit: 5 percent

VdB—Valois-Nassau complex, undulating

Map Unit Setting

National map unit symbol: 9skq
Elevation: 600 to 1,800 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Valois and similar soils: 50 percent
Nassau and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, end moraines, valley sides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 34 inches: gravelly loam
H3 - 34 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Description of Nassau

Setting

Landform: Benches, till plains, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 4 inches: channery silt loam
H2 - 4 to 19 inches: extremely channery silt loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D

Minor Components

Chenango

Percent of map unit: 5 percent

Manlius

Percent of map unit: 5 percent

Mardin

Percent of map unit: 5 percent

Wellsboro

Percent of map unit: 5 percent

VdD—Valois-Nassau complex, hilly

Map Unit Setting

National map unit symbol: 9skr
Elevation: 600 to 1,800 feet

Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Nassau and similar soils: 40 percent
Valois and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting

Landform: Lateral moraines, end moraines, valley sides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 34 inches: gravelly loam
H3 - 34 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Description of Nassau

Setting

Landform: Benches, till plains, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 4 inches: channery silt loam
H2 - 4 to 19 inches: extremely channery silt loam

H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Minor Components

Mardin

Percent of map unit: 5 percent

Rock outcrop

Percent of map unit: 5 percent

Lordstown

Percent of map unit: 5 percent

Chenango

Percent of map unit: 5 percent

W—Water

Map Unit Setting

National map unit symbol: 9sl3
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Wa—Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgt
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent
Wayland, very poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam
Bg - 9 to 21 inches: silt loam
Cg1 - 21 to 28 inches: silt loam
Cg2 - 28 to 47 inches: silt loam
Cg3 - 47 to 54 inches: silt loam
Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 9 inches: mucky silt loam
Bg - 9 to 21 inches: silt loam
Cg1 - 21 to 28 inches: silt loam
Cg2 - 28 to 47 inches: silt loam
Cg3 - 47 to 54 inches: silt loam
Cg4 - 54 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 13.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D

Minor Components

Holderton

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change

in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age,

the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of

streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth’s surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown.

The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth’s crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they

form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,” “very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds

and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents

the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated
Prismatic: Vertically elongated and having flat tops
Columnar: Vertically elongated and having rounded tops
Angular blocky: Having faces that intersect at sharp angles (planes)
Subangular blocky: Having subrounded and planar faces (no sharp angles)
Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand
Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth’s surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

APPENDIX C

WATER WELL COMPLETION REPORTS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) County Greene

(2) Town Athens

(3) DEC Well Number G 1806

WELL COMPLETION REPORT

(4) OWNER
Northeast Treaters of NY, LLC

(5) ADDRESS
796 Schoharie Turnpike, Athens, NY 12015

(6) LOCATION OF WELL (See Instructions On Reverse)
Show Lat/Long if available and method used: 796 Schoharie Turnpike, Athens, NY
☒ GPS ☐ DEC Website ☐ Map Interpolation N 42° 17.341' W073° 50.153'

LOG *

Ground Surface EL. 1716 ft. above sea level

Top Of Casing is located +2' ft.above (+) or below (-) ground surface

(7) DEPTH OF WELL BELOW LAND SURFACE (Feet): 802 feet

(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (Feet): 19'4" DATE MEASURED: 8/24/04

CASINGS

(9) DIAMETER: 6" Steel casing in. | in. | in. | in.

(10) LENGTH: 60 ft. | ft. | ft. | in.

(11) GROUT TYPE / SEALING: Bentonite grout & drive shoe

(12) GROUT / SEALING INTERVAL (Feet) FROM 60' TO 20'

SCREENS

(13) MAKE & MATERIAL

(14) OPENINGS

(15) DIAMETER: in. | in. | in. | in.

(16) LENGTH: ft. | ft. | ft. | in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE: 8/24/04

(19) DURATION OF TEST: 4 hours

(20) LIFT METHOD ☒ Pump ☐ Air Lift ☐ Bail

(21) STABILIZED DISCHARGE (GPM): 2 GPM

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing): 19' 4"

(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing): 300 feet

(24) RECOVERY (Time in hours/minutes): 4 hours

(25) Was the water produced during test discharged away from immediate area? Yes X No ___

PUMP INSTALLATION

(26) PUMP INSTALLED? YES X NO ___

(27) DATE: 8/20/04

(28) PUMP INSTALLER: Hanson Well Drilling & Pump Co., Inc.

(29) TYPE: submersible

(30) MAKE: Gould

(31) MODEL: 5GS20412

(32) MAXIMUM CAPACITY (GPM): 9 GPM

(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet): 760'

(34) METHOD OF DRILLING ☒ Rotary ☐ Cable Tool ☐ Other ___

(35) USE OF WATER (see instructions for choices): Domestic

(36) DATE DRILLING WORK STARTED: 8/18/04

(37) DATE DRILLING WORK COMPLETED: 8/19/04

(38) DATE REPORT FILED: 8/26/04

(39) DRILLER & COMPANY: Brian R. Wilcox, Hanson Well Drilling & Pump Co., Inc.

(40) DEC REGISTRATION NO.: 10005

TOP OF WELL

0'to 20' Clay

20'to55' Gravel

55'to460' Gray shale

460'to802' Black & gray Shale

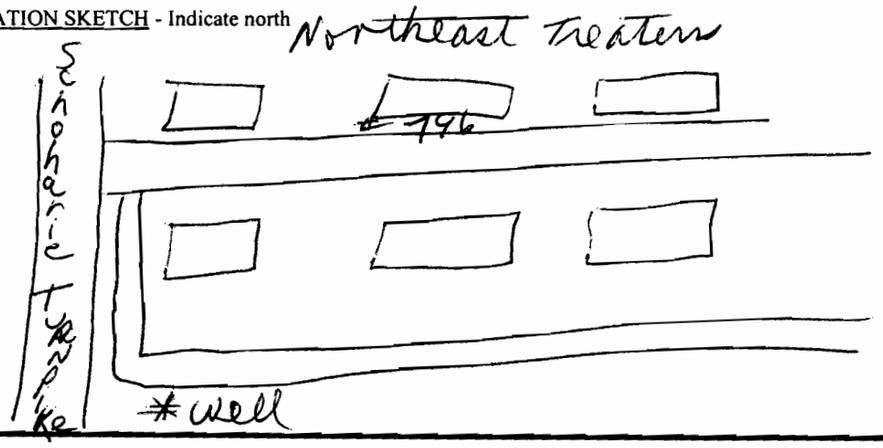
802 Feet
BOTTOM OF HOLE

* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.

See further instructions titled "Instructions for New York State Well Completion Report".

NYSDEC COPY

LOCATION SKETCH - Indicate north



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Well #1

(1) COUNTY Greene

(2) TOWN Athens

(3) DEC Well Number G2542

WATER WELL COMPLETION REPORT

(4) OWNER: Northeast Treaters Of N.Y. L.C.C

(5) ADDRESS: 696 Schoharie Turnpike Athens, N.Y.

(6) LOCATION OF WELL (See Instructions On Reverse)
Show Lat/Long if available and method used: 42' 17.20N, 073' 50.42W
☒ GPS ☐ Map Interpolation

(7) DEPTH OF WELL BELOW LAND SURFACE (feet): 83

(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (feet): 2 DATE MEASURED: 8-14-07

CASINGS

(9) DIAMETER	in. | 6	in. |	in. |	in.
(10) LENGTH	ft. | 80' 6"	ft. |	ft. |	in.

(11) GROUT TYPE / SEALING: Bentionite

(12) GROUT / SEALING INTERVAL (feet) FROM 20 TO 5

SCREENS

(13) MAKE & MATERIAL

(14) OPENINGS

(15) DIAMETER	in. |	in. |	in. |	in.
(16) LENGTH	ft. |	ft. |	ft. |	in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE: 8-15-07

(19) DURATION OF TEST: 6 hrs.

(20) LIFT METHOD ☒ Pump ☐ Air Lift ☐ Bail

(21) STABILIZED DISCHARGE (GPM): 15+

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing): 2

(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing): 7.6

(24) RECOVERY (Time in hours/minutes): overnite

(25) Was the water produced during the test discharged away from immediate area? Yes ___ No X

PUMP INSTALLATION

(26) PUMP INSTALLED? YES ___ NO ___

(27) DATE

(28) PUMP INSTALLER

(29) TYPE

(30) MAKE

(31) MODEL

(32) MAXIMUM CAPACITY (GPM)

(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet)

(34) METHOD OF DRILLING ☐ Rotary ☒ Cable Tool ☐ Other ___

(35) USE OF WATER (See instructions for choices): Domestic

(36) DATE DRILLING WORK STARTED: 8-12-07

(37) DATE DRILLING WORK COMPLETED: 8-14-07

(38) DATE REPORT FILED: 9-20-07

(39) REGISTERED COMPANY: L.H. Heimburge

(40) DEC REGISTRATION NO.: NYRD 10186

(41) CERTIFIED DRILLER (Print name): L.H. Heimburge

(42) CERTIFIED DRILLER SIGNATURE: L.H. Heimburge

* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.

LOG *

Ground Surface EL. 106 ft. above sea level

Top Of Casing is located 1+ ft. above (+) or below (-) ground surface

TOP OF WELL

fill		4
black clay		10
brown sticky clay		20
light gray clay		45
dark gray clay soft		60
tough light gray clay		76
H20 large sandstone slab broken quartz shale layers shale gravel		83
bedrock	???	
		83

BOTTOM OF HOLE

NYSDEC COPY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) COUNTY Greene

(2) TOWN Athens

(3) DEC Well Number G 2547

WATER WELL COMPLETION REPORT

(4) OWNER Northeast Treaters Of N.Y. L.L.C.

(5) ADDRESS 696 Schoharie Turnpike Athens N.Y.

(6) LOCATION OF WELL (See Instructions On Reverse) Show Lat/Long if available and method used: 43' 17.23N, 073' 50.41W

☒ GPS ☐ Map Interpolation

(7) DEPTH OF WELL BELOW LAND SURFACE (feet) 210

(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (feet) 4 DATE MEASURED 8-31-07

CASINGS

(9) DIAMETER in. | 6 | in. | | in. | | in.

(10) LENGTH ft. | 86 | ft. | | ft. | | in.

(11) GROUT TYPE / SEALING Bentionite & clay

(12) GROUT / SEALING INTERVAL (feet) FROM 30 TO 5

SCREENS

(13) MAKE & MATERIAL

(14) OPENINGS

(15) DIAMETER in. | | in. | | in. | | in.

(16) LENGTH ft. | | ft. | | ft. | | in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE 9-4-07

(19) DURATION OF TEST 8

(20) LIFT METHOD ☒ Pump ☐ Air Lift ☐ Bail

(21) STABILIZED DISCHARGE (GPM) 20

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) 4

(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing)

(24) RECOVERY (Time in hours/minutes) overnite

(25) Was the water produced during the test discharged away from immediate area? Yes X No

PUMP INSTALLATION

(26) PUMP INSTALLED? YES X NO

(27) DATE 10-07-07

(28) PUMP INSTALLER L.Heimburge

(29) TYPE submersible

(30) MAKE goulds

(31) MODEL 10GS05

(32) MAXIMUM CAPACITY (GPM) 20

(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet) 60

(34) METHOD OF DRILLING ☐ Rotary ☒ Cable Tool ☐ Other

(35) USE OF WATER (See instructions for choices) Industrial

(36) DATE DRILLING WORK STARTED 8-20-07

(37) DATE DRILLING WORK COMPLETED 8-31-07

(38) DATE REPORT FILED 11-20-07

(39) REGISTERED COMPANY L.H. Heimburge Wesll Drilling

(40) DEC REGISTRATION NO. NYRD 10186

(41) CERTIFIED DRILLER (Print name) L.H. Heimburge

(42) CERTIFIED DRILLER SIGNATURE * L.H. Heimburge

* By signing this document I hereby affirm that: (1) I am certified to supervise water well drilling activities as defined by Environmental Conservation Law §15-1502; (2) this water well was constructed in accordance with water well standards promulgated by the New York State Department of Health; (3) under the penalty of perjury the information provided in this Well Completion Report is true, accurate and complete, and I understand that any false statement made herein is punishable as a class A Misdemeanor under Penal Law §210.45.

(43) LOG

Ground Surface EL. 101 ft. above sea level

Top Of Casing is located _____ ft. above (+) or below (-) ground surface

TOP OF WELL

fill	5
brown sticky clay	20
tough light gray clay	30
soft dark gray clay	50
tough sticky dark gray clay	
large angular shale gravel w/ fine coarse gravel w/ clay streaks	84
fractured bedrock sandstone & shale w/ quartz layers (NORMANSKILL FORMATION)	210

BOTTOM OF HOLE

NYSDEC COPY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) COUNTY Greene

(2) TOWN Athens

(3) DEC Well Number G 2560

WATER WELL COMPLETION REPORT

(4) OWNER
Northeast Treaters Of N.Y. L.L.C.

(5) ADDRESS
696 Schoharie Turnpike, Athens, N.Y.

(6) LOCATION OF WELL (See Instructions On Reverse)
Show Lat/Long if available and method used:
☒ GPS ☐ Map Interpolation 42° 17.18 N, 073° 50.30 W

(7) DEPTH OF WELL BELOW LAND SURFACE (feet) 265

(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (feet) 8 DATE MEASURED 9-20-07

CASINGS

(9) DIAMETER	in. | 6	in. |	in. |	in.
(10) LENGTH	ft. | 26	ft. |	ft. |	in.

(11) GROUT TYPE / SEALING
Bentionite

(12) GROUT / SEALING INTERVAL (feet) FROM 4 TO 22

SCREENS

(13) MAKE & MATERIAL

(14) OPENINGS

(15) DIAMETER	in. |	in. |	in. |	in.
(16) LENGTH	ft. |	ft. |	ft. |	in.

(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)

YIELD TEST

(18) DATE 9-20-07

(19) DURATION OF TEST 2 hrs.

(20) LIFT METHOD ☐ Pump ☐ Air Lift ☒ Bail

(21) STABILIZED DISCHARGE (GPM) 2-3 g.p.m.

(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) 10

(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing) 260

(24) RECOVERY (Time in hours/minutes) overnite

(25) Was the water produced during the test discharged away from immediate area? Yes X No

PUMP INSTALLATION

(26) PUMP INSTALLED? YES X NO

(27) DATE oct. 2007

(28) PUMP INSTALLER L.Heimburge

(29) TYPE Submersible

(30) MAKE Goulds

(31) MODEL 7GSo5412L

(32) MAXIMUM CAPACITY (GPM) 9 g.p.m.

(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet) 255

(34) METHOD OF DRILLING ☐ Rotary ☒ Cable Tool ☐ Other

(35) USE OF WATER (See instructions for choices) Industrial

(36) DATE DRILLING WORK STARTED 9-5-07

(37) DATE DRILLING WORK COMPLETED 9-20-07

(38) DATE REPORT FILED 11-20-07

(39) REGISTERED COMPANY L.H.Heimburge Well Drilling

(40) DEC REGISTRATION NO. NYRD 10186

(41) CERTIFIED DRILLER (Print name) L.H.Heimburge

(42) CERTIFIED DRILLER SIGNATURE* L.H.Heimburge

* By signing this document I hereby affirm that: (1) I am certified to supervise water well drilling activities as defined by Environmental Conservation Law §15-1502; (2) this water well was constructed in accordance with water well standards promulgated by the New York State Department of Health; (3) under the penalty of perjury the information provided in this Well Completion Report is true, accurate and complete, and I understand that any false statement made herein is punishable as a class A Misdemeanor under Penal Law §210.45.

(43) LOG

Ground Surface EL. 108 ft. above sea level

Top Of Casing is located 3 ft. above (+) or below (-) ground surface

TOP OF WELL

FILL		5
BROWN CLAY		12
GRAY CLAY		19
BROKEN SHALE COBBLES & HARDPAN		22
BEDROCK SANDSTONE & SHALE		35
	85	
	90	fractured shale & quartz
	150	fractured
	160	shale & quartz
	265	

BOTTOM OF HOLE

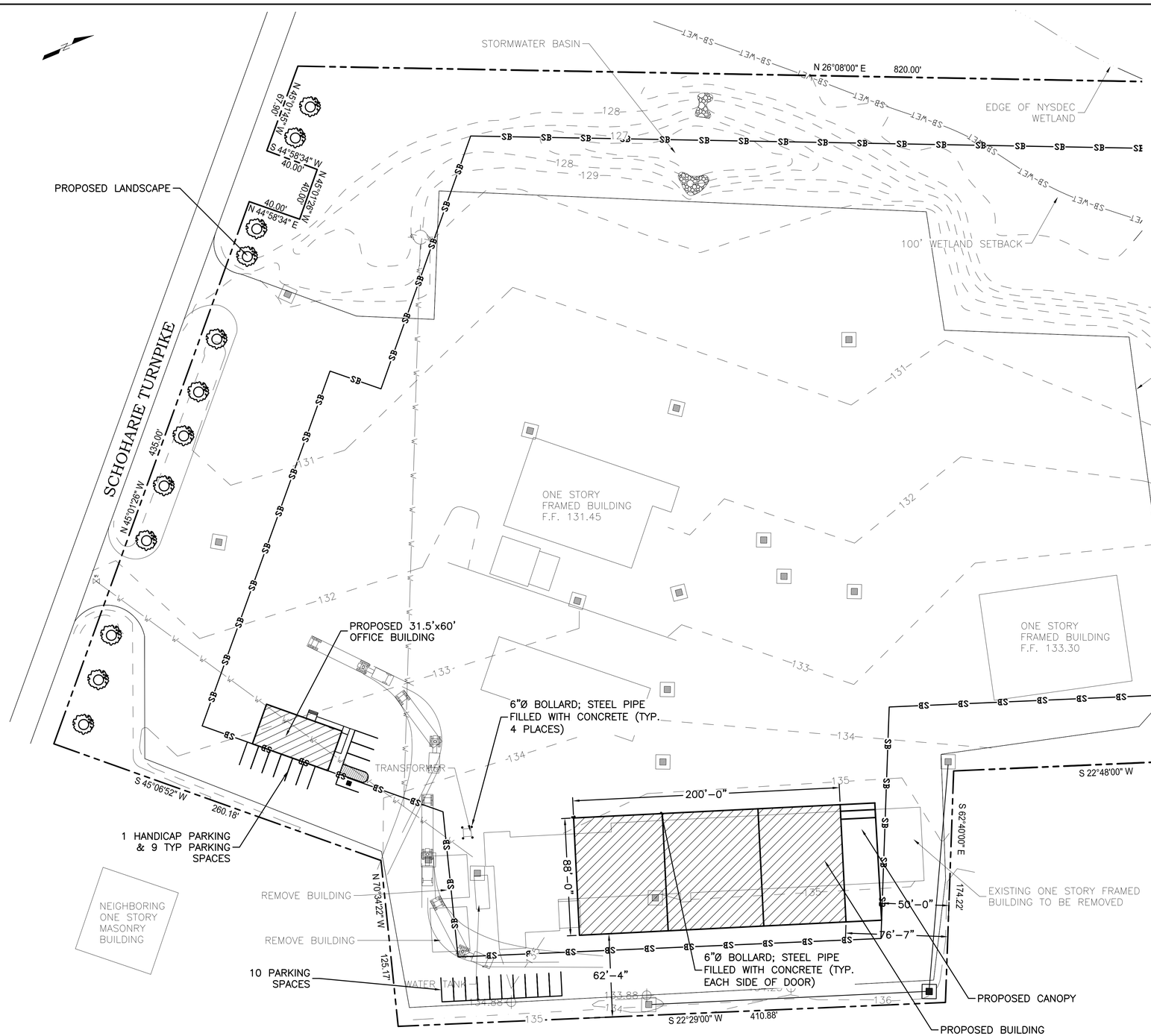
NYSDEC COPY

APPENDIX D

ANALYTICAL REPORTS
(PROVIDED ON CD)

APPENDIX E

SITE PLAN DRAWINGS



SITE AND ZONING REQUIREMENTS					
ZONING DESIGNATION	LI–2	LIGHT INDUSTRIAL – 2			
LOT AREA	13.1± ACRES	570,136± SF			
TAX MAP NUMBER	104.00–4–30				

REGULATION		REQUIRED	EXISTING	PROPOSED TREATMENT BLDG	PROPOSED OFFICE
MINIMUM LOT AREA (ACRES)		2	13±	13±	13±
SETBACKS					
FRONT (FT)		100	325	385±	298
REAR (FT)		50	19±	77	327
SIDE (FT)		50	92±	62	118
MINIMUM LOT WIDTH (FT)		50	420	420	420
MINIMUM LOT DEPTH (FT)		200	835	835	835
MAXIMUM LOT COVERAGE (%)		50	62	62	62
BUILDING HEIGHT (FT)		45		LESS THAN 45	LESS THAN 45

GENERAL NOTES:

G–1) PLAN BASED ON SURVEY MAP BY THE CHAZEN COMPANIES ENTITLED "EXISTING CONDITIONS" DATED 09/17/97 & "GRADING AND EROSION CONTROL PLAN" DATED 06/23/98. PROJECT NO. 39741.00.

G–2) CONTRACTOR TO LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION; CONTACT DIG SAFELY NEW YORK (1–800–962–7962) AND RECORD FILE #. VERIFY BUILDING CONNECTIONS, LOCATION AND ELEVATION, PRIOR TO INITIATING CONSTRUCTION; CONFLICTS OR DISCREPANCIES SHALL BE REPORTED TO THE OWNER OR ENGINEER IMMEDIATELY. NOTIFY ENGINEER IMMEDIATELY IF SITE CONDITIONS ARE NOT AS INDICATED.

G–3) THERE ARE NO STREAMS ON THE PROPERTY.

G–4) THE AREA OF SOIL TOO BE DISTURBED IS LESS THAN ONE ACRE.

LEGEND:

EXISTING / BY OTHERS:
NEW / PROPOSED:
PROPERTY LINE:
PROPERTY LINE SETBACK: SB SB SB SB
EXISTING CONTOUR LINE: 100
EXISTING WATER LINE: W W W W W

NOTE REFERENCE TAG: NOTE: C1–1 / DWG: C1 — NOTE # — SEE DRAWING # FOR NOTE

DETAIL REFERENCE TAG: DTL: 1 / DWG: D1 — DETAIL # — SEE DRAWING # FOR DETAIL

SECTION REFERENCE TAG: SEC: A / DWG: D1 — SECTION LETTER — SECTION CUT DIRECTION — SEE DRAWING # FOR SECTION

GRAPHIC SCALE
40' 0 20' 40' 80' 160'
SCALE: 1" = 40'–0"

1 SITE PLAN
SCALE: SEE GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING	TSM	KAM
06/30/14	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING: **C1**

SITE PLAN

NOVEMBER 2013 | PRO # 13-019 | SHEET: 1 OF 6

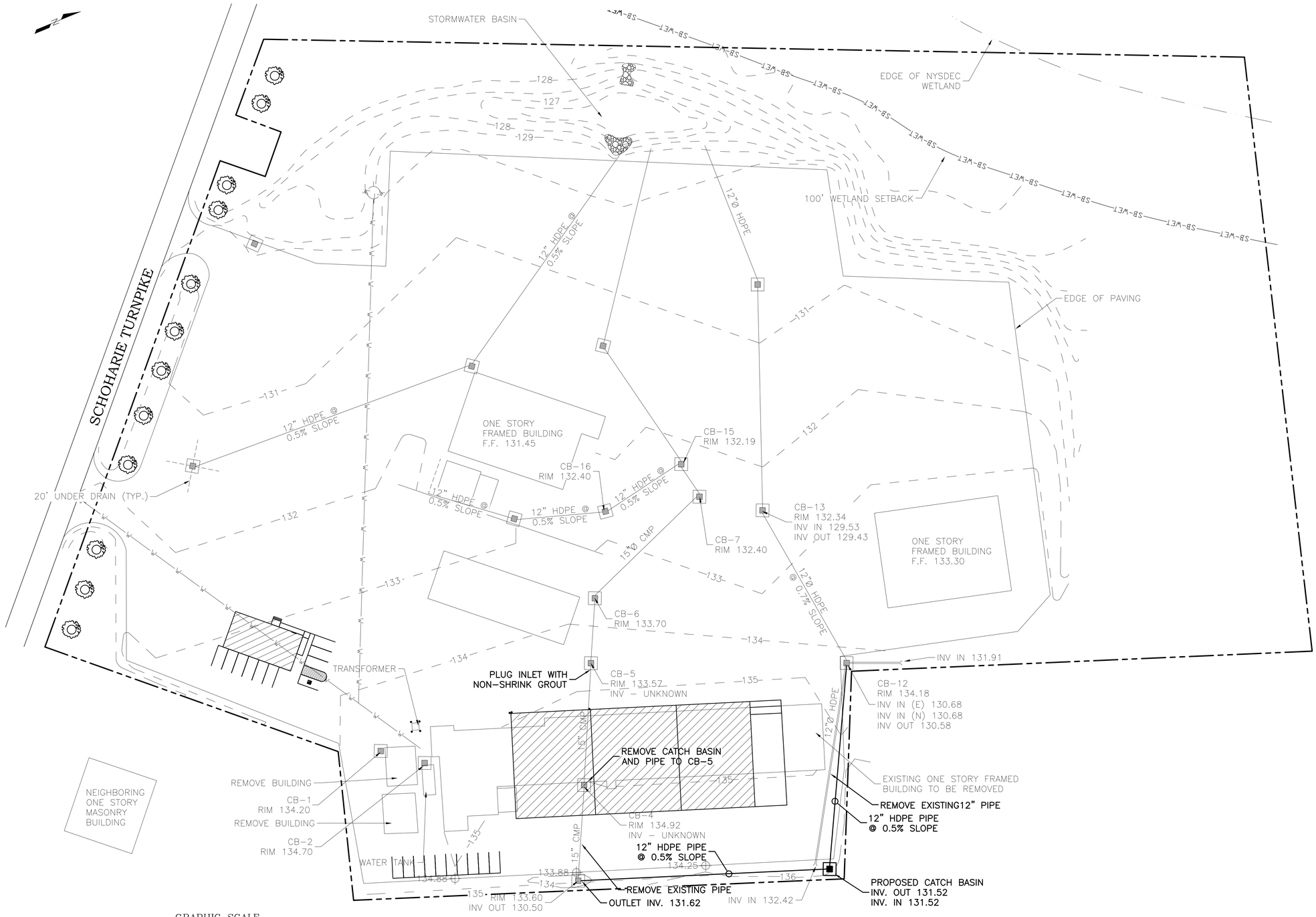
PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
PROFESSIONAL ENGINEERING
412 NORTHERN PINES ROAD
GANSEVOORT, N.Y. 12831
PHONE: (518) 886-8291
FAX: (518) 886-8291

STATE OF NEW YORK — KENNETH A. MARTIN — No. 074334 — PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

FILE:Z:\KAM Engr\2013 Projects\13-019 NE Treater Bldg\E Submissions\140418 SP REVIEW\SOURCE FILES\13019 140416 SITE PRELIMINARY.DWG



GRAPHIC SCALE

40' 0 20' 40' 80' 160'

SCALE: 1" = 40'-0"

2 STORMWATER PLAN

SCALE: SEE GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING (NO CHANGES THIS DRAWING)	TSM	KAM
06/30/14	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING: **C2**

STORMWATER PLAN

NOVEMBER 2013 PRO # 13-019 SHEET: 2 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
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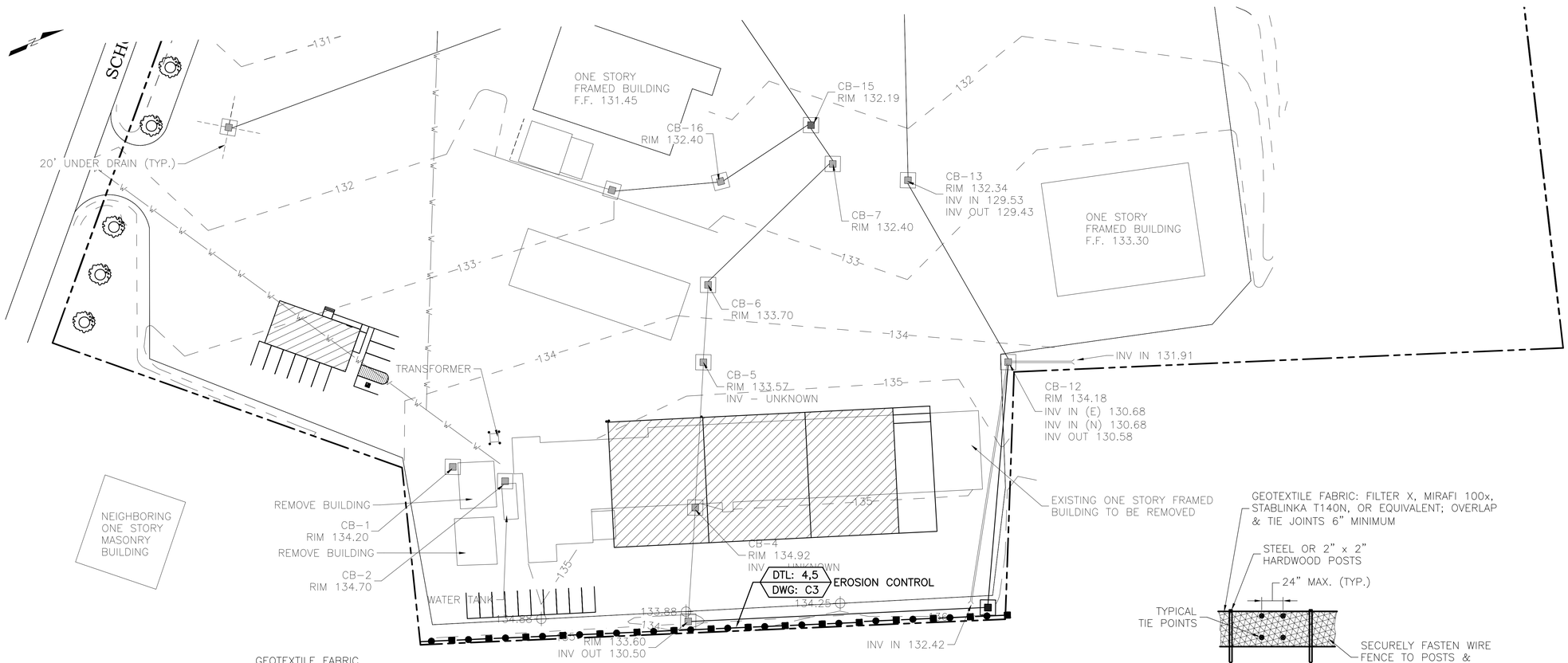
PHONE: (518) 886-8291
FAX: (518) 886-8291

STATE OF NEW YORK KENNETH A. MARTIN No. 074334 LICENSED PROFESSIONAL ENGINEER

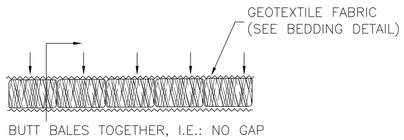
KENNETH A. MARTIN
P.E. # 074334

FILE:Z:\KAM Engr\2013 Projects\13-019 NE Treater Bldg\E Submissions\140418 SP REVIEW\SOURCE FILES\13019 140416 SITE PRELIMINARY.DWG

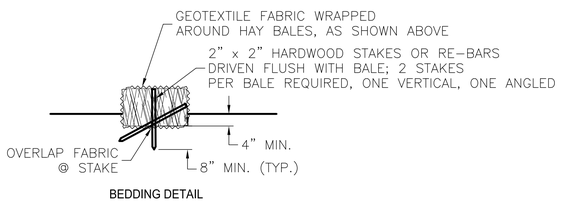


3 **EROSION CONTROL PLAN**
SCALE: SEE GRAPHIC SCALE

GRAPHIC SCALE
40' 0 20' 40' 80' 160'
SCALE:
1" = 40'-0"



LAYOUT FOR SHEET FLOW DRAINAGE



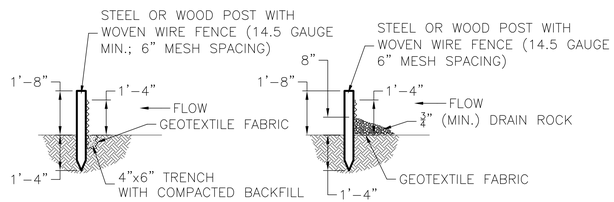
BEDDING DETAIL

NOTES:

THESE DETAILS ARE APPLICABLE TO SHEET FLOW DRAINAGE OR SHALLOW CONCENTRATED FLOW ON DISTURBED SOILS, HAY BALE DIKES ARE NOT SUITABLE FOR STREAM CHANNELS.

HAY BALE DIKES MAY BE USED FOR TEMPORARY (180 DAYS MAXIMUM) EROSION CONTROL.

DTL: 4
DWG: C3
STRAW BALE DIKE DETAIL
SCALE: N.T.S.



NOTE:

1. THIS DETAIL IS APPLICABLE TO SHEET FLOW DRAINAGE ON A TEMPORARY OR SEMI-PERMANENT BASIS (1 YEAR MAXIMUM) FOR EROSION CONTROL.

2. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

3. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT AS NEEDED; 9" (MAX.) RECOMMENDED STORAGE HEIGHT.

4. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

DTL: 5
DWG: C3
SILT FENCE DETAIL
SCALE: N.T.S.

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING (NO CHANGES THIS DRAWING)	TSM	KAM
06/30/14	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING:
C3

EROSION CONTROL
PLAN & DETAILS

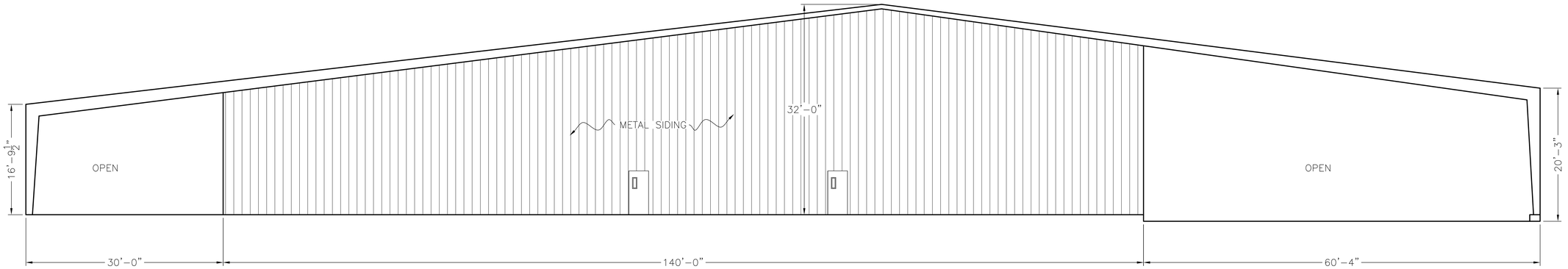
NOVEMBER 2013 PRO # 13-019 SHEET: 3 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
PROFESSIONAL ENGINEERING
412 NORTHERN PINES ROAD
GANSEVOORT, N.Y. 12831
PHONE: (518) 886-8291
FAX: (518) 886-8291

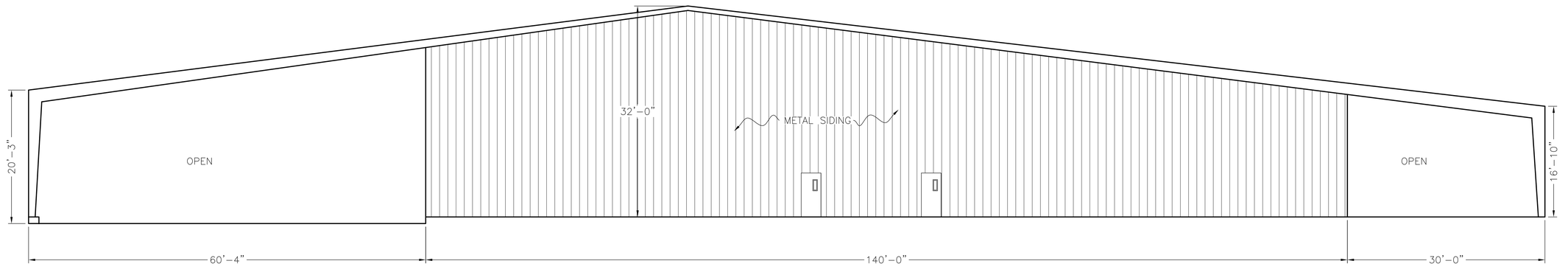
STATE OF NEW YORK
KENNETH A. MARTIN
No. 074334
LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334



6 WEST ELEVATION
SCALE: SEE GRAPHIC SCALE

GRAPHIC SCALE
4' 2' 0 2' 4' 8' 16'
3' 1'
SCALE
1/8" = 1'-0"



7 EAST ELEVATION
SCALE: SEE GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING (NO CHANGES THIS DRAWING)	TSM	KAM
06/30/2014	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING:
A1

PROCESS BUILDING ELEVATIONS

NOVEMBER 2013 PRO # 13-019 SHEET: 4 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
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412 NORTHERN PINES ROAD
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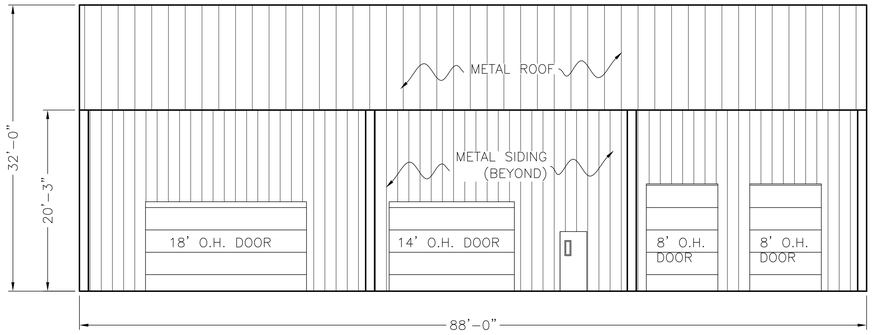
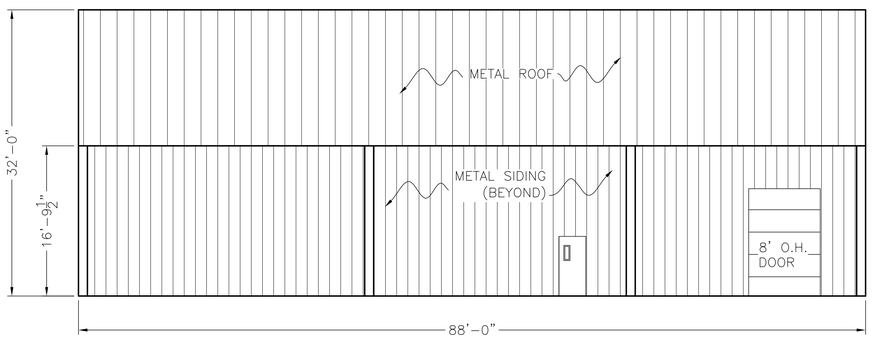
STATE OF NEW YORK KENNETH A. MARTIN No. 074334 LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

FILE:Z:\KAM Engr\2013 Projects\13-019 NE Treater Bldg\E Submissions\131115 CLIENT REVIEW\SOURCE FILES\13019 131114 NE TREATERS SITE DESIGN.DWG



8 SOUTH ELEVATION
SCALE: SEE GRAPHIC SCALE



9 NORTH ELEVATION
SCALE: SEE GRAPHIC SCALE

GRAPHIC SCALE
4" 2" 0 2' 4' 8' 16'
SCALE
1/8" = 1'-0"

GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING (NO CHANGES THIS DRAWING)	TSM	KAM
06/30/2014	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING:
A2

PROCESS BUILDING
ELEVATIONS

NOVEMBER 2013 PRO # 13-019 SHEET: 5 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
PROFESSIONAL ENGINEERING
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STATE OF NEW YORK
KENNETH A. MARTIN
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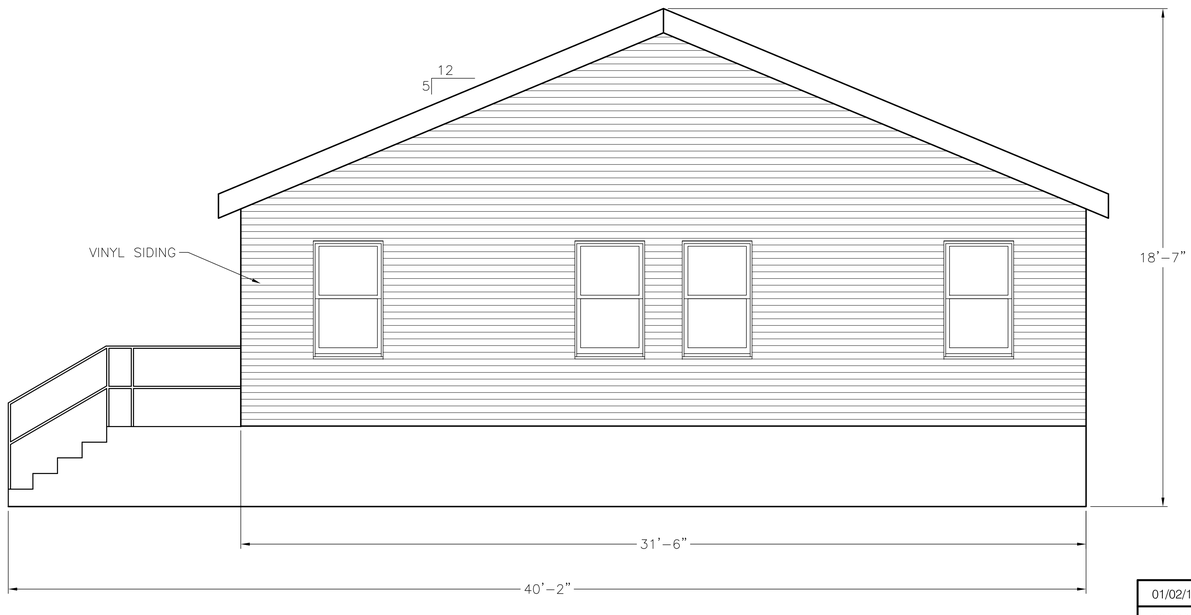
KENNETH A. MARTIN
P.E. # 074334

FILE:Z:\KAM Engr\2013 Projects\13-019 NE Treater Bldg\E Submissions\131115 CLIENT REVIEW\SOURCE FILES\13019 131114 NE TREATERS SITE DESIGN.DWG

10 WEST ELEVATION
SCALE: SEE GRAPHIC SCALE

GRAPHIC SCALE
1' 0 6" 1' 2' 4'
SCALE
3/8" = 1'-0"



11 SOUTH ELEVATION
SCALE: SEE GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING	TSM	KAM
06/30/2014	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING:
A3

OFFICE BUILDING
ELEVATIONS

NOVEMBER 2013 PRO # 13-019 SHEET: 6 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

K A MARTIN ENGINEER, PLLC
PROFESSIONAL ENGINEERING
412 NORTHERN PINES ROAD
GANSEVOORT, N.Y. 12831
PHONE: (518) 886-8291
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STATE OF NEW YORK
KENNETH A. MARTIN
No. 074334
LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

FILE:Z:\KAM Engr\2013 Projects\13-019 NE Treater Bldg\E Submissions\131115 CLIENT REVIEW\SOURCE FILES\13019 131114 NE TREATERS SITE DESIGN.DWG

NORTHEAST TREATERS

ATHENS NY

TREATMENT BUILDING UPGRADE

DRAWING LIST			
DRAWING NUMBER	DRAWING NAME	PAGE NUMBER	NOTES
C0	COVER SHEET	1 OF 13	
C1	SITE PLAN	2 OF 13	
C2	OVERALL PLAN	3 OF 13	
C3	TANK FARM PLAN	4 OF 13	
C4	ELEVATIONS @ CYLINDERS	5 OF 13	
C5	CYLINDER PIER SDETAILS	6 OF 13	
C6	SECTIONS	7 OF 13	
C7	TANK FARM SECTIONS	8 OF 13	
C8	CONCRETE DETAILS	9 OF 13	
C9	TRUCK UNLOADING PAD	10 OF 13	
C10	PREFORMED SUMP BOX DETAILS	11 OF 13	
C11	CONCRETE NOTES	12 OF 13	
C12	ADDITIONAL SECTIONS AND DETAILS	13 OF 13	SHEET ADDED 8/28/14

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
09/02/14	3	ADDED SUMPS AND WELL WATER TANK	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

FILE:

DRAWING:
7789 C0

COVER PAGE

MARCH 2014 | PRO # 13-019 | SHEET: 1 OF 13

TREATMENT BUILDING UPGRADE
NORTHEAST TREATERS
OF NEW YORK, LLC
SCHOHARIE TURNPIKE
ATHENS, NEW YORK

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412 NORTHERN PINES ROAD
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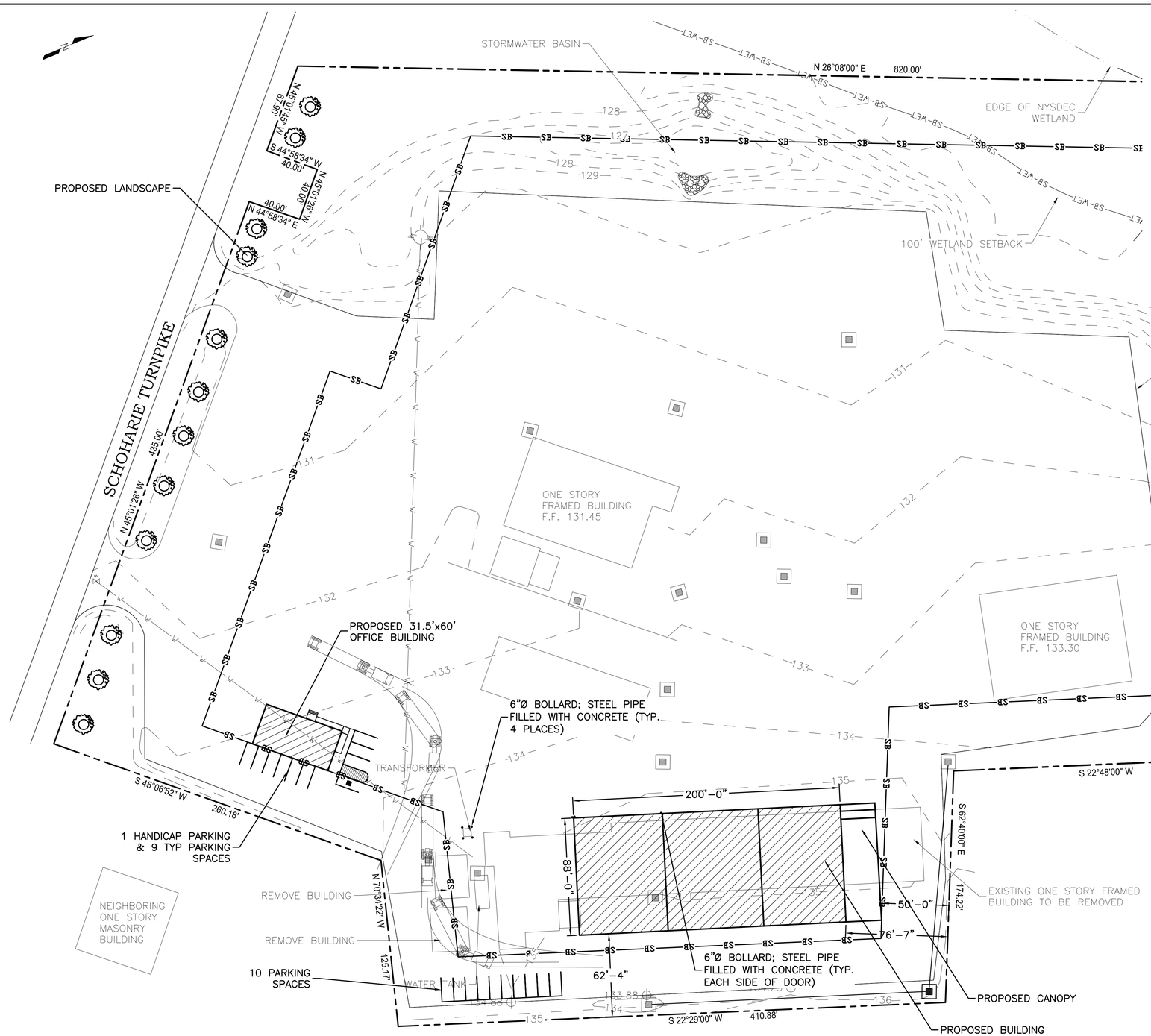
STATE OF NEW YORK
KENNETH A. MARTIN
No. 074334
LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334



SITE AND ZONING REQUIREMENTS					
ZONING DESIGNATION	LI–2	LIGHT INDUSTRIAL – 2			
LOT AREA	13.1± ACRES	570,136± SF			
TAX MAP NUMBER	104.00–4–30				

REGULATION		REQUIRED	EXISTING	PROPOSED TREATMENT BLDG	PROPOSED OFFICE
MINIMUM LOT AREA (ACRES)		2	13±	13±	13±
SETBACKS					
FRONT (FT)		100	325	385±	298
REAR (FT)		50	19±	77	327
SIDE (FT)		50	92±	62	118
MINIMUM LOT WIDTH (FT)		50	420	420	420
MINIMUM LOT DEPTH (FT)		200	835	835	835
MAXIMUM LOT COVERAGE (%)		50	62	62	62
BUILDING HEIGHT (FT)		45		LESS THAN 45	LESS THAN 45

GENERAL NOTES:

G–1) PLAN BASED ON SURVEY MAP BY THE CHAZEN COMPANIES ENTITLED "EXISTING CONDITIONS" DATED 09/17/97 & "GRADING AND EROSION CONTROL PLAN" DATED 06/23/98. PROJECT NO. 39741.00.

G–2) CONTRACTOR TO LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION; CONTACT DIG SAFELY NEW YORK (1–800–962–7962) AND RECORD FILE #. VERIFY BUILDING CONNECTIONS, LOCATION AND ELEVATION, PRIOR TO INITIATING CONSTRUCTION; CONFLICTS OR DISCREPANCIES SHALL BE REPORTED TO THE OWNER OR ENGINEER IMMEDIATELY. NOTIFY ENGINEER IMMEDIATELY IF SITE CONDITIONS ARE NOT AS INDICATED.

G–3) THERE ARE NO STREAMS ON THE PROPERTY.

G–4) THE AREA OF SOIL TOO BE DISTURBED IS LESS THAN ONE ACRE.

LEGEND:

EXISTING / BY OTHERS:
NEW / PROPOSED:
PROPERTY LINE:
PROPERTY LINE SETBACK: SB SB SB SB
EXISTING CONTOUR LINE: 100
EXISTING WATER LINE: W W W W W

NOTE REFERENCE TAG: NOTE: C1–1 / DWG: C1 — NOTE # / SEE DRAWING # FOR NOTE

DETAIL REFERENCE TAG: DTL: 1 / DWG: D1 — DETAIL # / SEE DRAWING # FOR DETAIL

SECTION REFERENCE TAG: SEC: A / DWG: D1 — SECTION LETTER / SECTION CUT DIRECTION / SEE DRAWING # FOR SECTION

GRAPHIC SCALE
40' 0 20' 40' 80' 160'
SCALE: 1" = 40'–0"

1 SITE PLAN
SCALE: SEE GRAPHIC SCALE

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
01/02/15	C	MODIFIED OFFICE BUILDING	TSM	KAM
06/30/14	B	SUBMITTED FOR PLANNING BOARD APPROVAL	TSM	KAM
11/15/13	A	SUBMITTED FOR CLIENT REVIEW	TSM	KAM

DRAWING: **C1**

SITE PLAN

NOVEMBER 2013 | PRO # 13-019 | SHEET: 1 OF 6

PROPOSED TREATMENT BUILDING
NORTHEAST TREATERS
OF NEW YORK, LLC
796 SCHOHARIE TURNPIKE
ATHENS, NEW YORK

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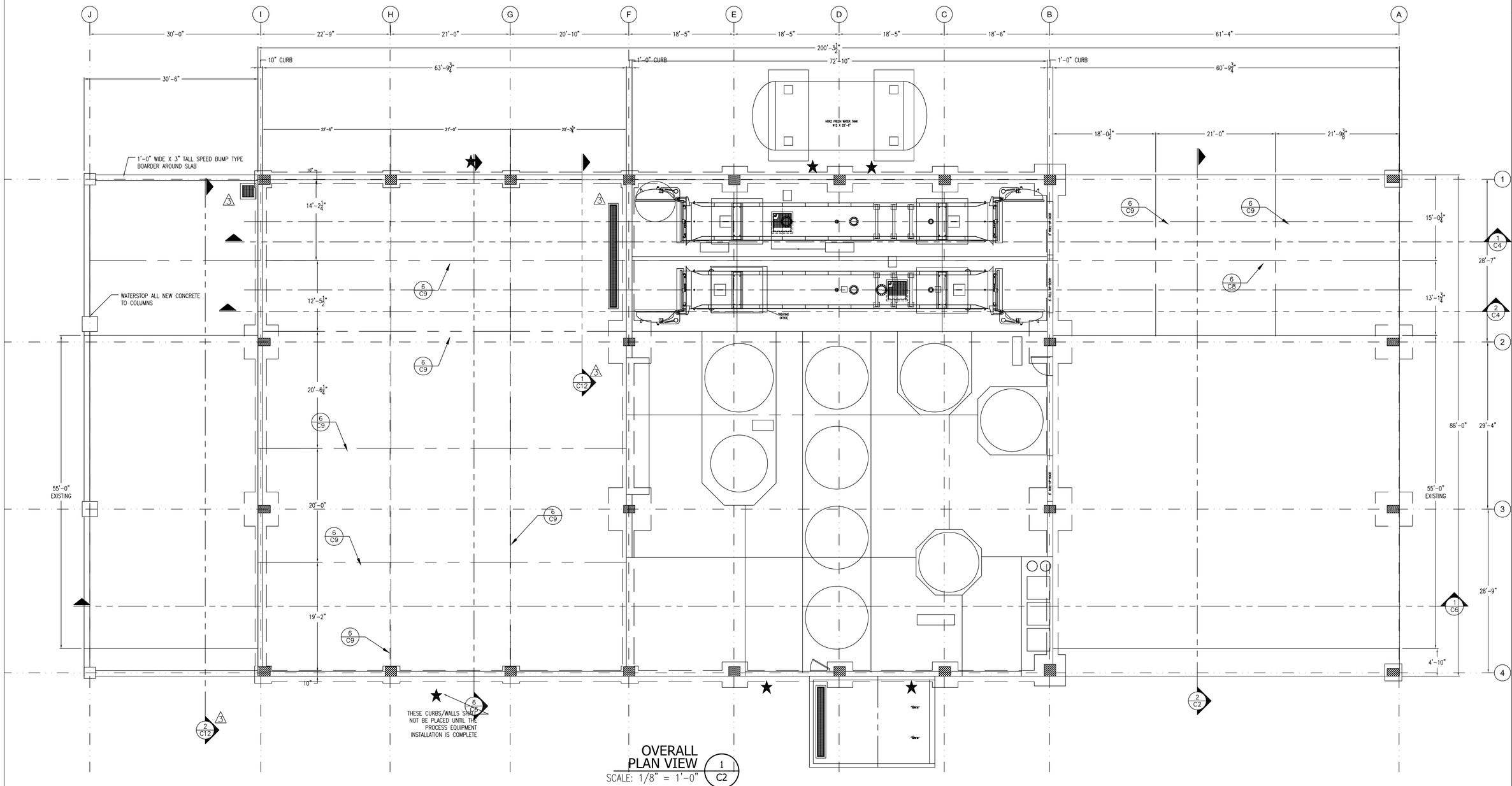

OVERALL PLAN VIEW (1 / C2)

SCALE: 1/8" = 1'-0"

FOOTING SCHEDULE : SIZE (LxWxD) / REINF. (TOP STL - BTM STL)

COLUMN	A	B	C	D	E	F	G	H	I	J
1	36x36x15 / #4 @ 12" E.W. – (6) #5 E.W.	66x66x18 / #4 @ 12" E.W. – (7) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x15 / #4 @ 12" E.W. – (6) #5 E.W.	24x24x12 / #4 @ 12" E.W. – (3) #5 E.W.
2	72x78x21 / #4 @ 12" E.W. – (9) #6 E.W.	90x90x15 / #4 @ 12" E.W. – (9) #6 E.W.				90x90x15 / #4 @ 12" E.W. – (9) #6 E.W.			72x72x15 / #4 @ 12" E.W. – (8) #6 E.W.	32x32x12 / #4 @ 12" E.W. – (4) #5 E.W.
3	72x78x21 / #4 @ 12" E.W. – (9) #6 E.W.	90x90x15 / #4 @ 12" E.W. – (9) #6 E.W.				90x90x15 / #4 @ 12" E.W. – (9) #6 E.W.			72x72x15 / #4 @ 12" E.W. – (8) #6 E.W.	32x32x12 / #4 @ 12" E.W. – (4) #5 E.W.
4	36x36x15 / #4 @ 12" E.W. – (6) #5 E.W.	66x66x18 / #4 @ 12" E.W. – (7) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	54x54x15 / #4 @ 12" E.W. – (5) #6 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x12 / #4 @ 12" E.W. – (5) #5 E.W.	36x36x15 / #4 @ 12" E.W. – (6) #5 E.W.	24x24x12 / #4 @ 12" E.W. – (3) #5 E.W.

DIMENSIONS SHOWN ARE IN INCHES

PIER SCHEDULE : SIZE (WxD) / REINF.

COLUMN	A	B	C	D	E	F	G	H	I	J
1	14x16 / (6)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	14x16 / (6)–#6 w/#3 TIES @12" OC	
2	14x16 / (6)–#6 w/#3 TIES @12" OC	14x16 / (6)–#6 w/#3 TIES @12" OC				14x16 / (6)–#6 w/#3 TIES @12" OC			14x16 / (6)–#6 w/#3 TIES @12" OC	
3	14x16 / (6)–#6 w/#3 TIES @12" OC	14x16 / (6)–#6 w/#3 TIES @12" OC				14x16 / (6)–#6 w/#3 TIES @12" OC			14x16 / (6)–#6 w/#3 TIES @12" OC	
4	14x16 / (6)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	12x12 / (4)–#6 w/#3 TIES @12" OC	14x16 / (6)–#6 w/#3 TIES @12" OC	

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS & WATER TANK	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:

7789 C2

COVER PAGE

SHEET: 3 OF 13

PRO # 13-019

MARCH 2014

TREATMENT BUILDING UPGRADE
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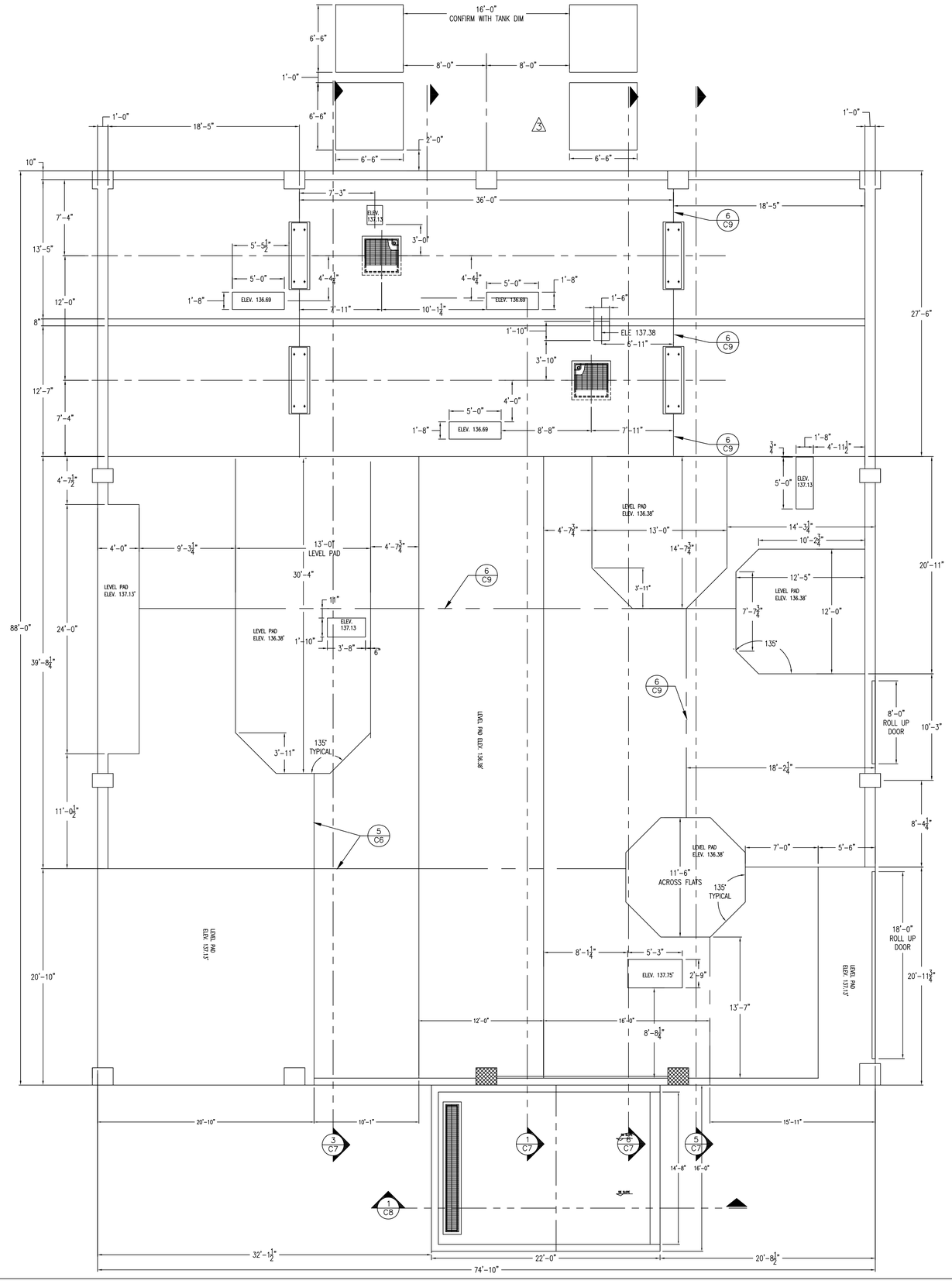
KENNETH A. MARTIN
P.E. # 074334

FILE:



DRAWING:

7789 C3

TANK FARM
ENLARGED PLAN

MARCH 2014 | PRO # 13-019 | SHEET: 4 OF 13

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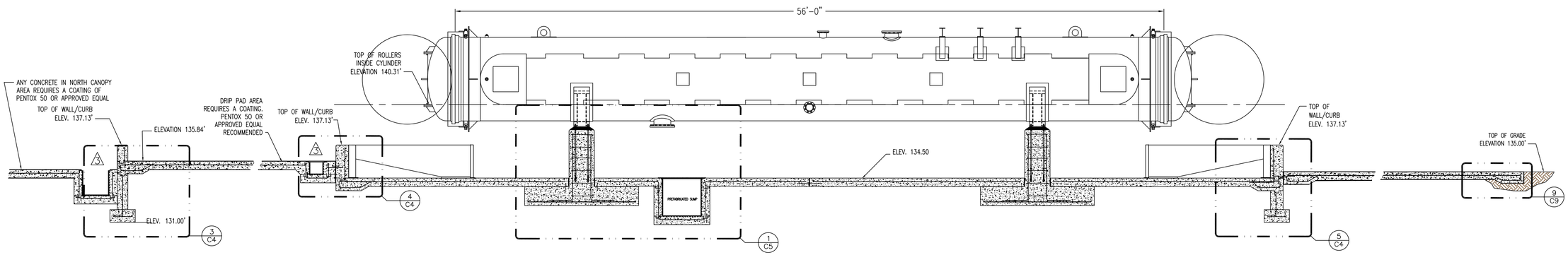
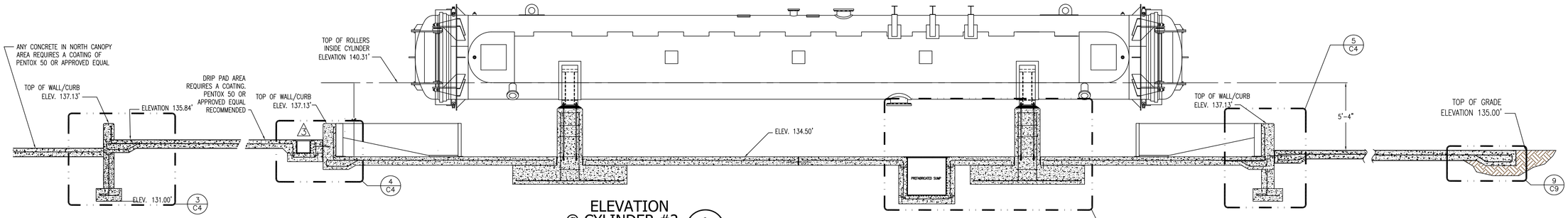
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

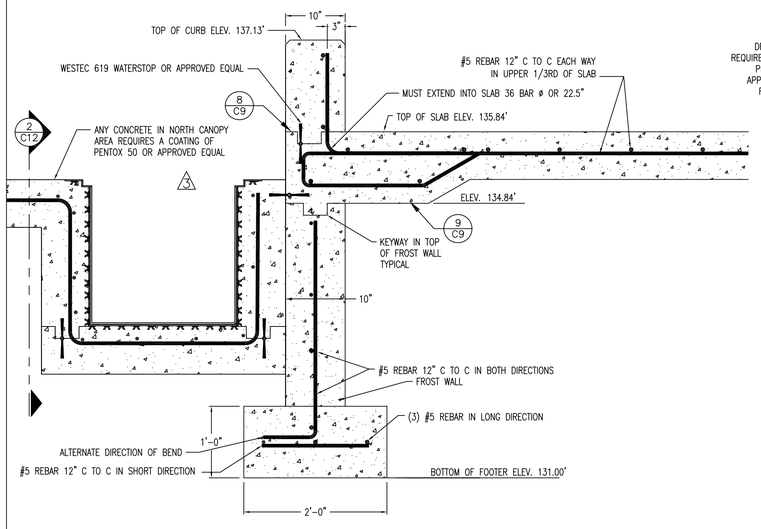
FILE:



ELEVATION
@ CYLINDER #1
SCALE: 1/4" = 1'-0"



ELEVATION
@ CYLINDER #2
SCALE: 1/4" = 1'-0"



ENLARGED DETAIL
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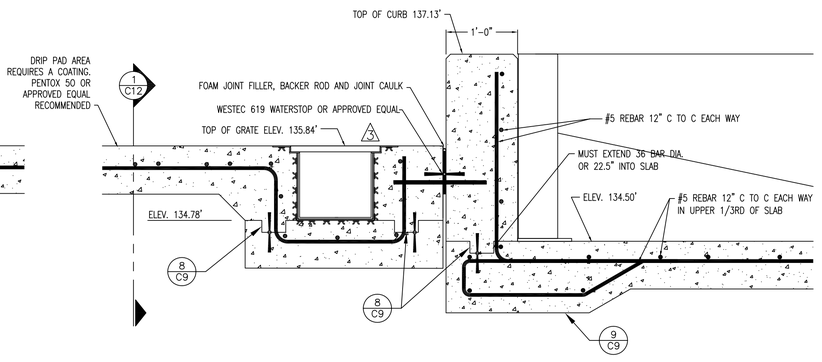

ENLARGED DETAIL
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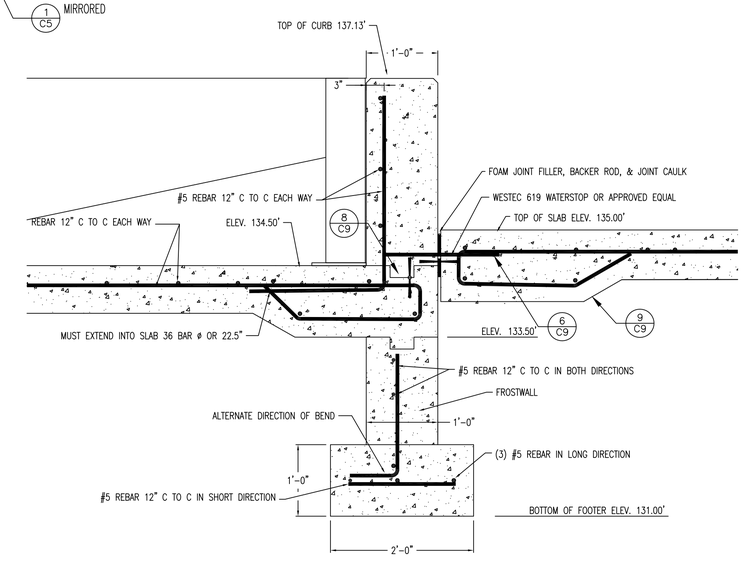

ENLARGED DETAIL
SCALE: 1" = 1'-0"

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:
7789 C4

ELEVATIONS AND DETAILS @ EACH CYLINDER

MARCH 2014 | PRO # 13-019 | SHEET: 5 OF 13

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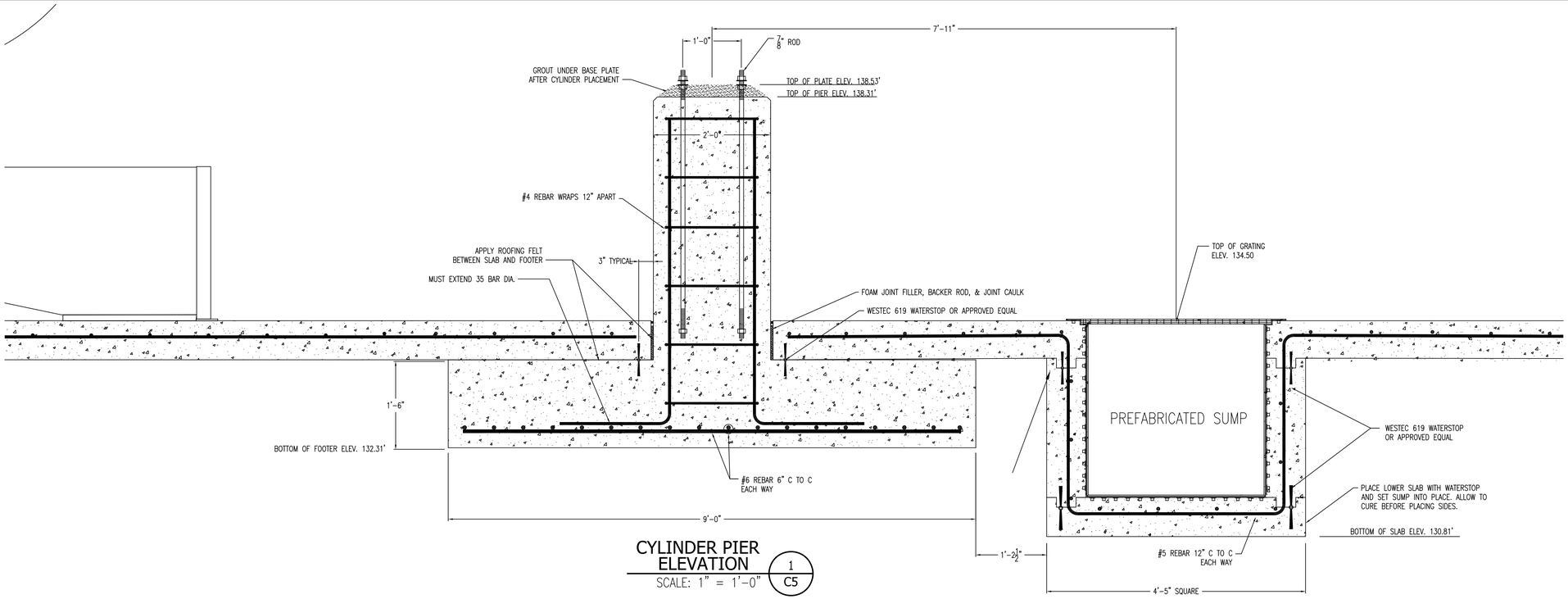

CYLINDER PIER ELEVATION 1 / C5
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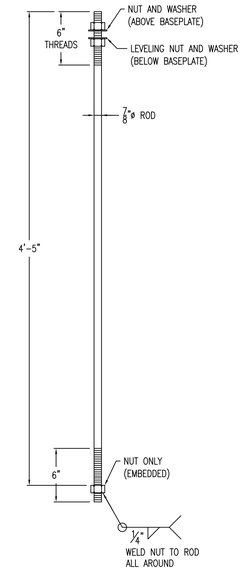
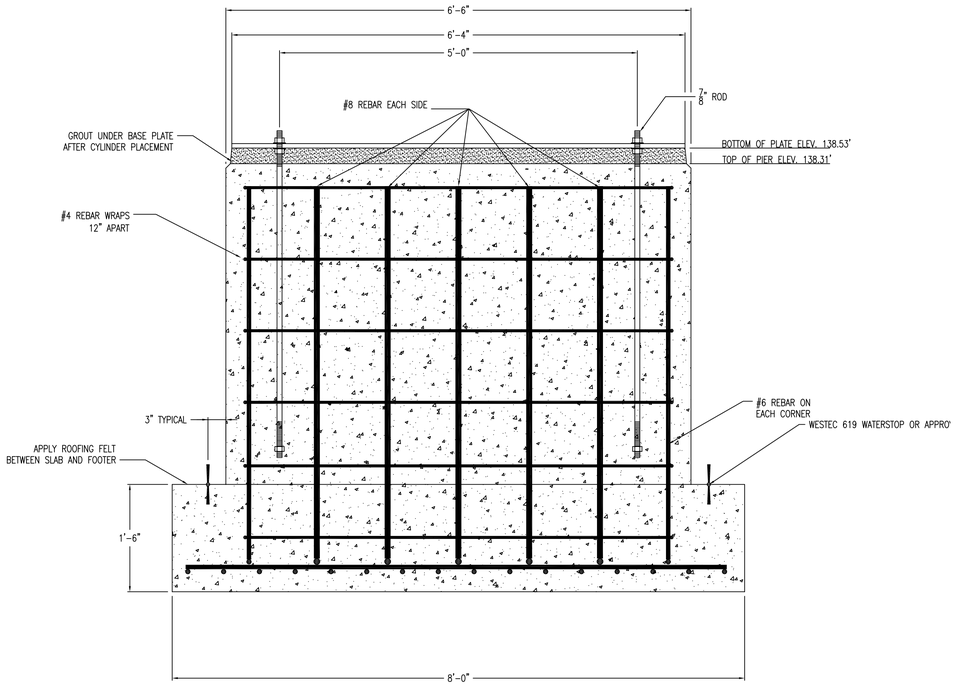


ANCHOR BOLT DETAIL 4 / C5
SCALE: 1" = 1'-0"



CYLINDER PIER ELEVATION /SECTION 2 / C5
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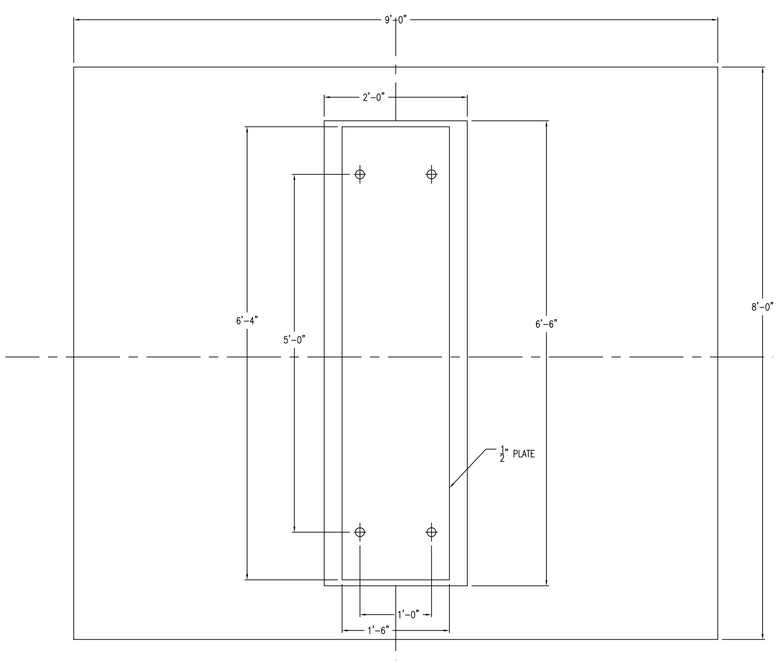

CYLINDER PIER PLAN VIEW 3 / C5
SCALE: 1" = 1'-0"

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
1/13/15	4	CHANGED TYPE OF ANCHOR BOLTS	TAH	KAM
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/14	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:
7789 C5

CYLINDER PIER ELEVATIONS & DETAILS

MARCH 2014 | PRO # 13-019 | SHEET: 6 OF 13

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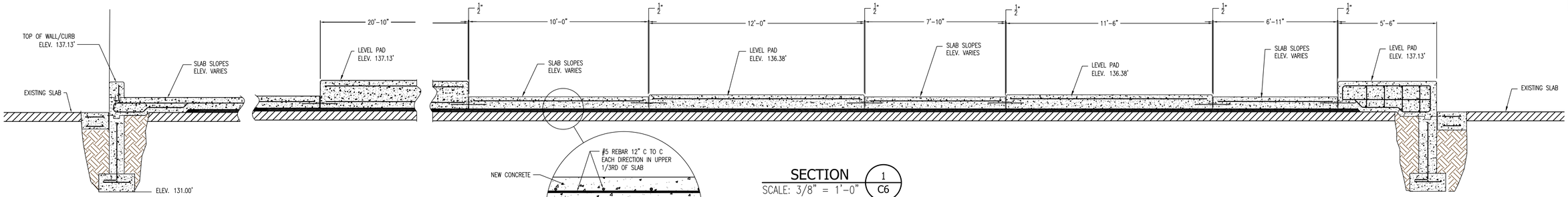
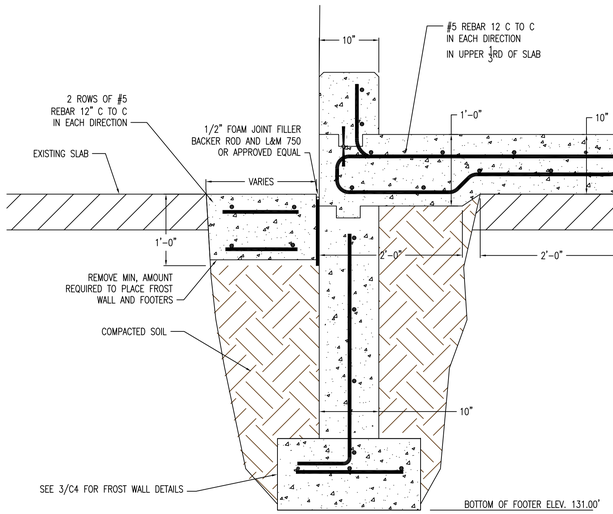
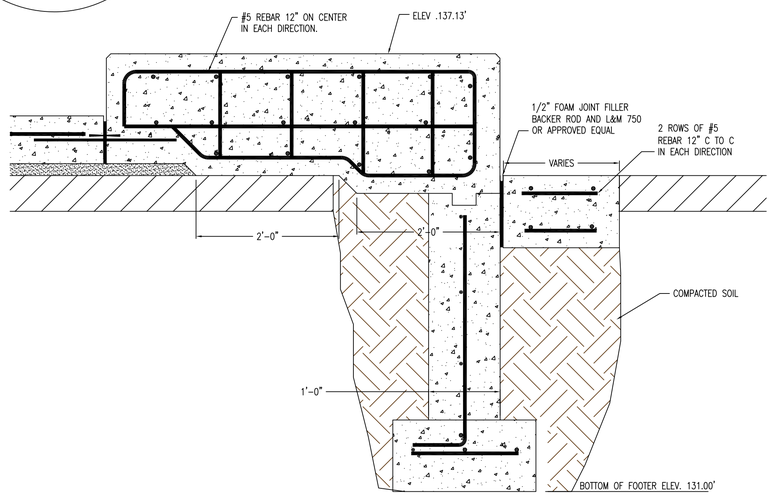


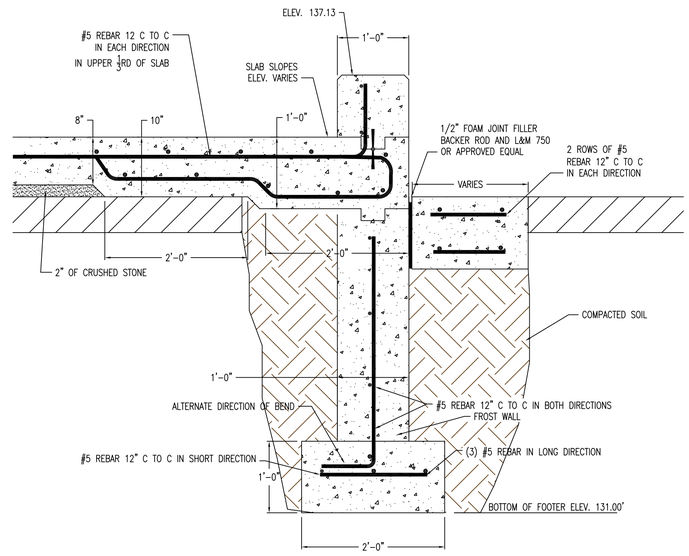
SECTION 1/C6
SCALE: 3/8" = 1'-0"



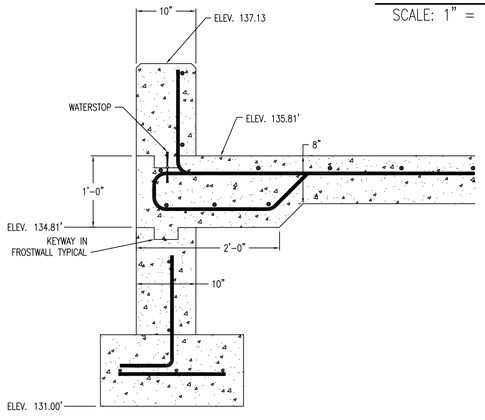
ENLARGED SECTION 2/C6
SCALE: 1" = 1'-0"



ENLARGED SECTION WITH LEVEL PAD 3/C6
SCALE: 1" = 1'-0"



ENLARGED SECTION WITH WALL/CURB 4/C6
SCALE: 1" = 1'-0"



ENLARGED SECTION 5/C6
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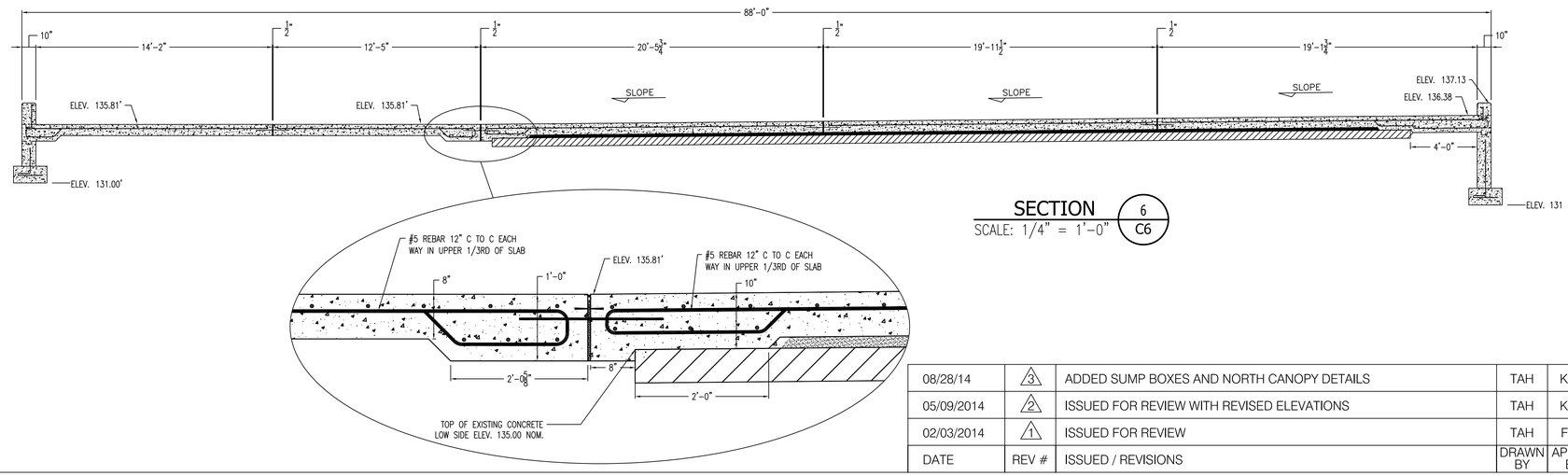

SECTION 6/C6
SCALE: 1/4" = 1'-0"

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:
7789 C6

SECTIONS

SHEET: 7 OF 13
PRO # 13-019
MARCH 2014

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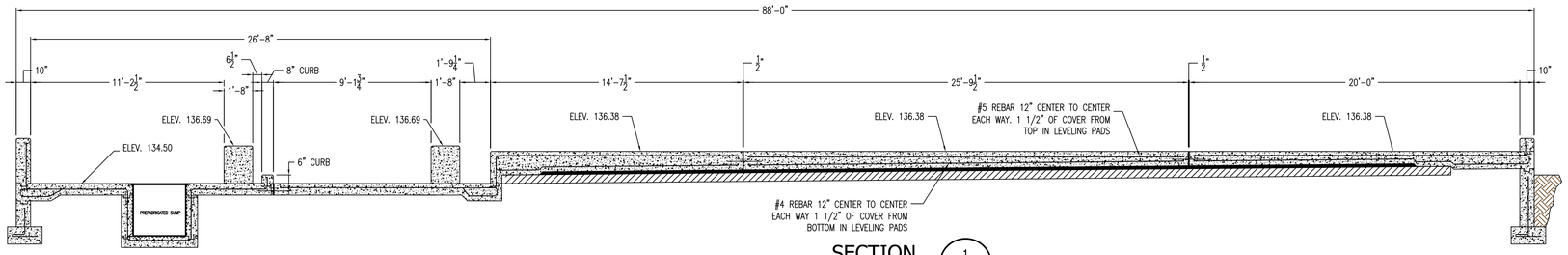
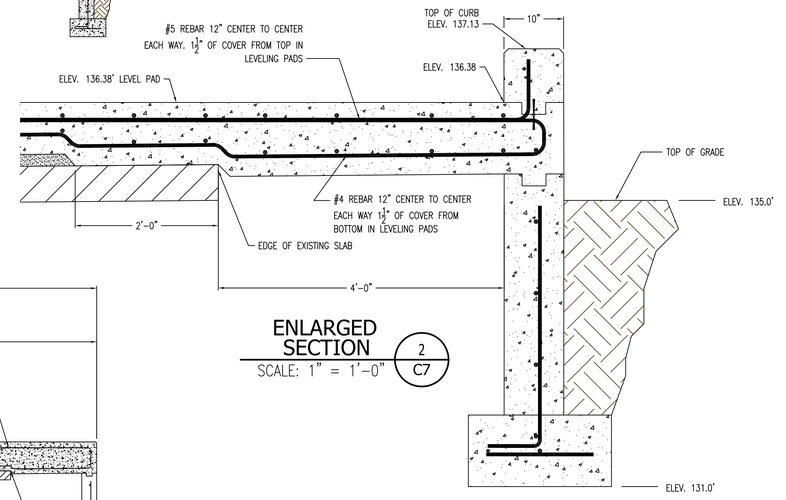
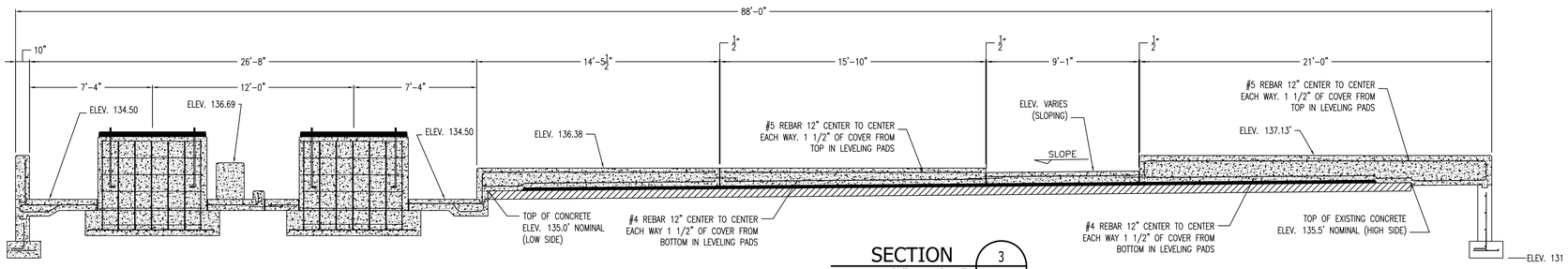


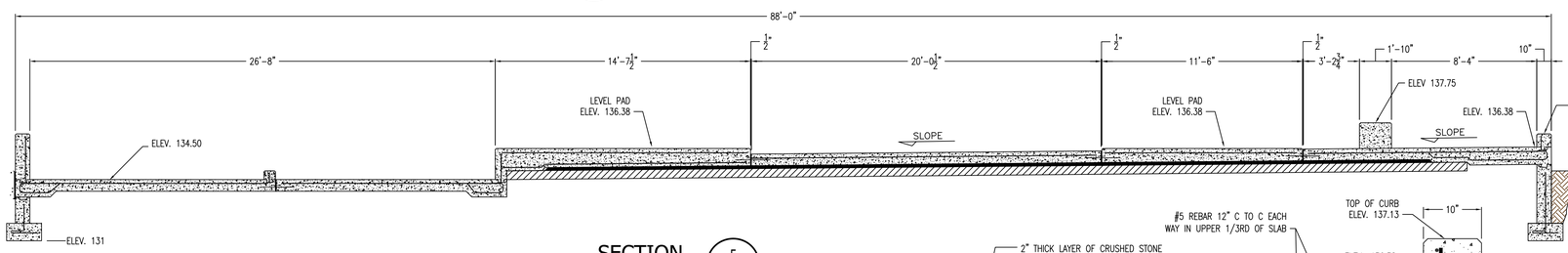
SECTION
SCALE: 1/4" = 1'-0" (1 / C7)



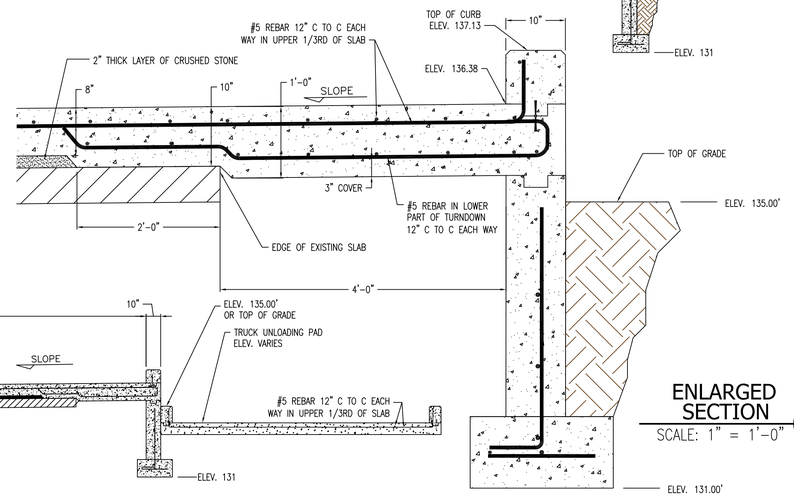
ENLARGED SECTION
SCALE: 1" = 1'-0" (2 / C7)



SECTION
SCALE: 1/4" = 1'-0" (3 / C7)



SECTION
SCALE: 1/4" = 1'-0" (5 / C7)



ENLARGED SECTION
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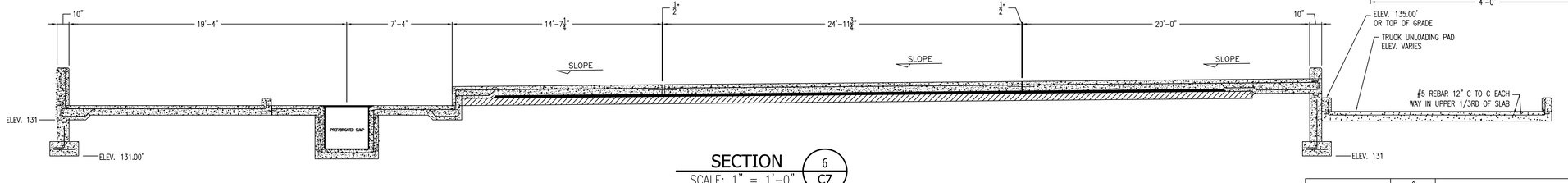

SECTION
SCALE: 1" = 1'-0" (6 / C7)

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/2014	2	ISSUED FOR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:
7789 C7

TANK FARM SECTIONS

SHEET: 8 OF 13
PRO # 13-019
MARCH 2014

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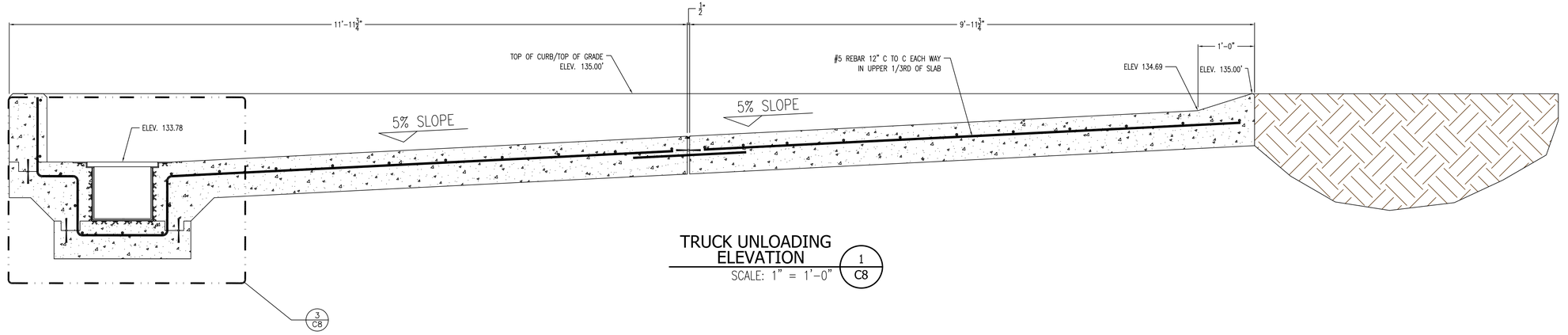
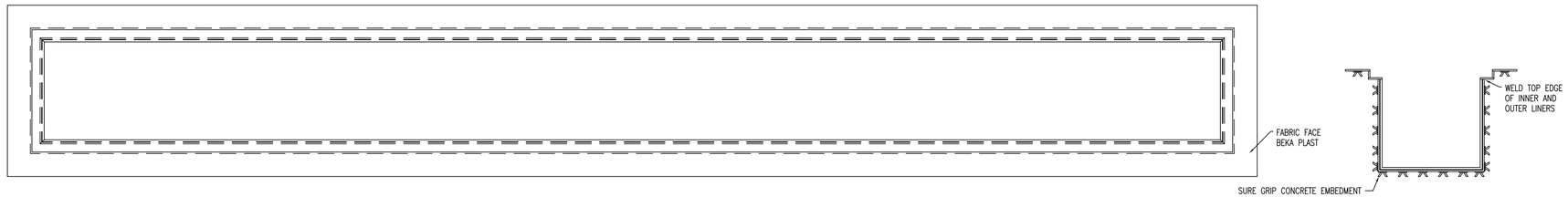
STATE OF NEW YORK — KENNETH A. MARTIN — No. 074334 — LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

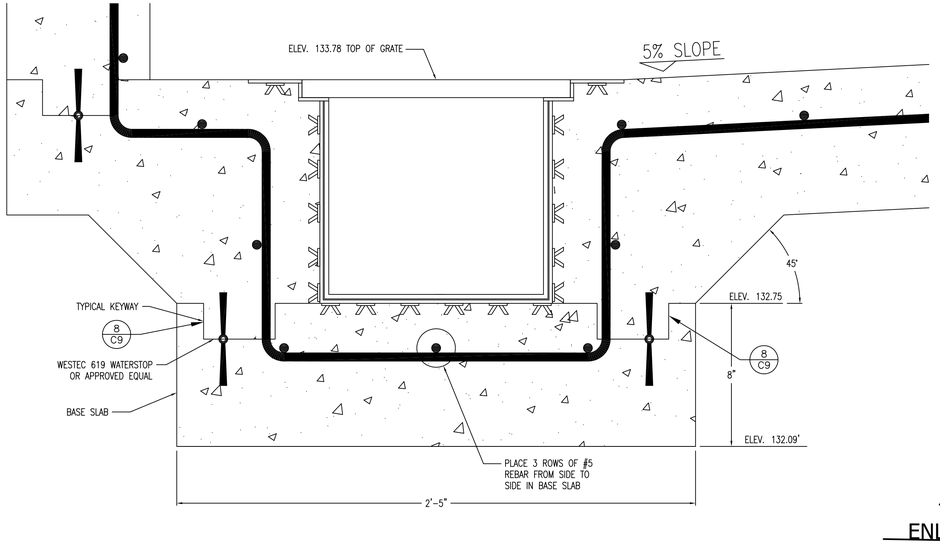
FILE:



TRUCK UNLOADING ELEVATION (1 / C8)
SCALE: 1" = 1'-0"



PREFORMED SUMP DETAILS (2 / C8)
SCALE: 1 1/2" = 1'-0"



TRUCK UNLOADING ENLARGED ELEVATION (3 / C8)
SCALE: 3" = 1'-0"

DATE	REV #	ISSUED / REVISIONS	DRAWN BY	APPR'D BY
08/28/14	3	ADDED SUMP BOXES AND NORTH CANOPY DETAILS	TAH	KAM
05/09/2014	2	ISSUED ROR REVIEW WITH REVISED ELEVATIONS	TAH	KAM
02/03/2014	1	ISSUED FOR REVIEW	TAH	FHA

DRAWING:
7789 C8

TANK FARM ENLARGED PLAN

MARCH 2014 | PRO # 13-019 | SHEET: 9 OF 13

TREATMENT BUILDING UPGRADE
NORTHEAST TREATERS
OF NEW YORK, LLC
SCHOHARIE TURNPIKE
ATHENS, NEW YORK

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STATE OF NEW YORK · KENNETH A. MARTIN · LICENSED PROFESSIONAL ENGINEER · No. 074334

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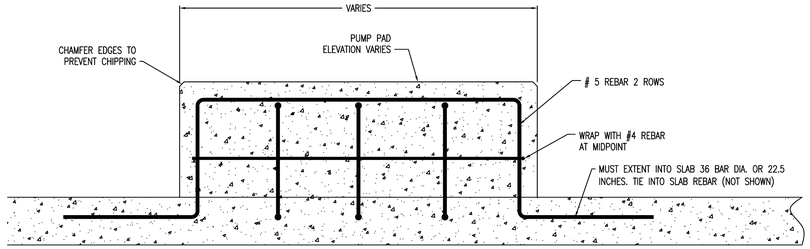

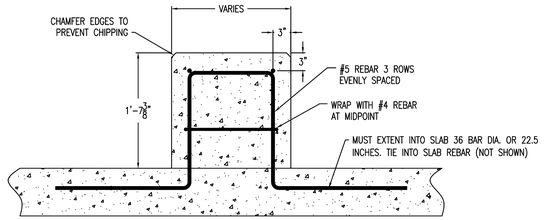

TYPICAL PUMP PAD (1/C9)
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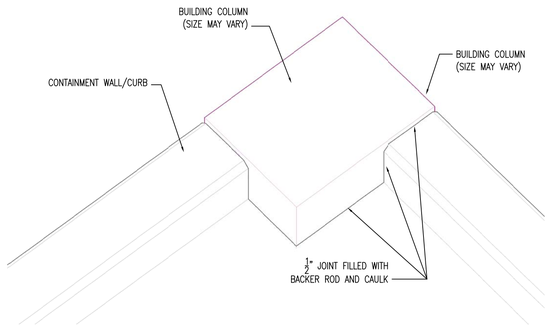

CURB & FROSTWALL DETAIL (2/C9)
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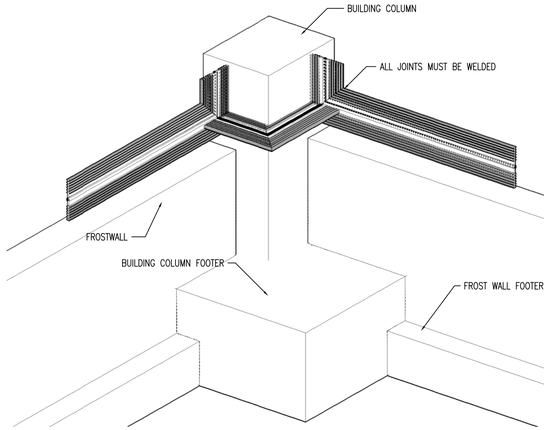

CORNER BUILDING COLUMN (3/C9)
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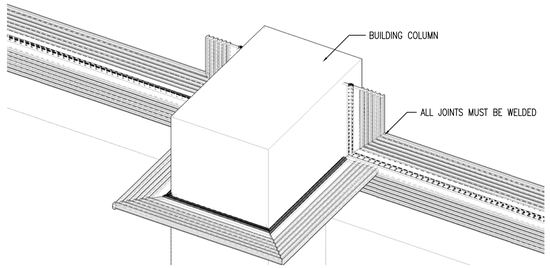

MIDDLE BUILDING COLUMN WATERSTOP (4/C9)
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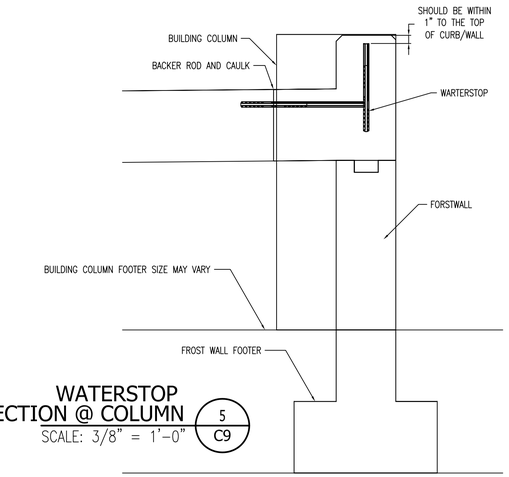
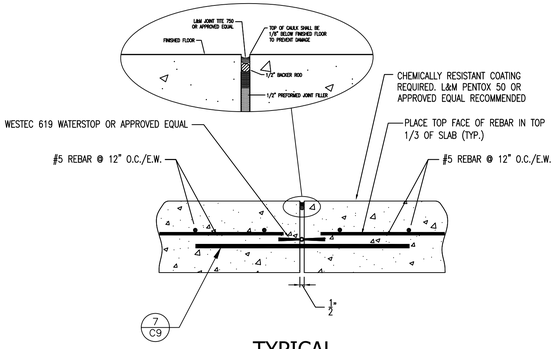


WATERSTOP SECTION @ COLUMN (5/C9)
SCALE: 3/8" = 1'-0"



TYPICAL CONSTRUCTION JOINT (6/C9)
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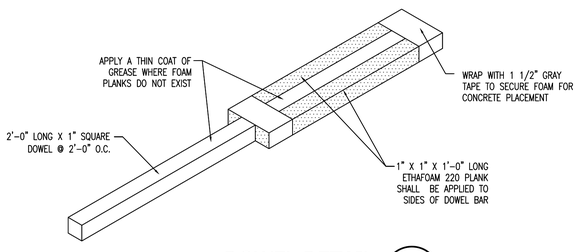
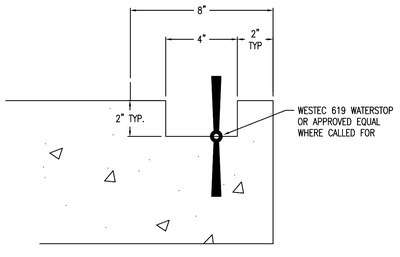


DOWEL DETAIL (7/C9)
SCALE: NONE



TYPICAL KEY-WAY (8/C9)
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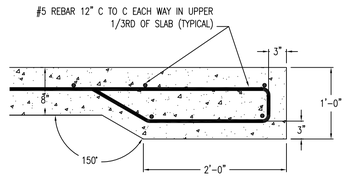

TYPICAL TURNDOWN (9/C9)
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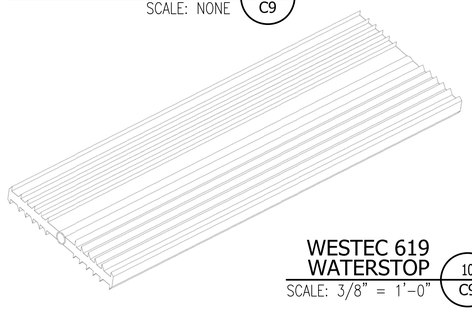

WESTEC 619 WATERSTOP (10/C9)
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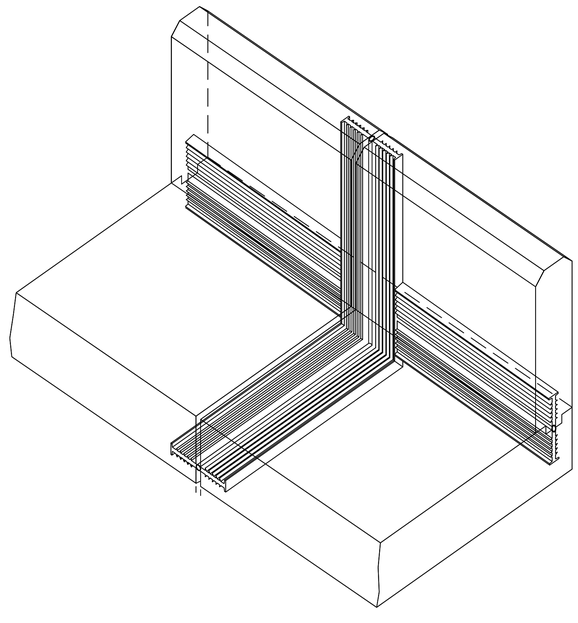

WESTEC 619 SPLICE DETAIL (11/C9)
SCALE: 3/8" = 1'-0"

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DRAWING:
7789 C9

CONCRETE DETAILS

SHEET: 10 OF 13
PRO # 13-019
MARCH 2014

TREATMENT BUILDING UPGRADE
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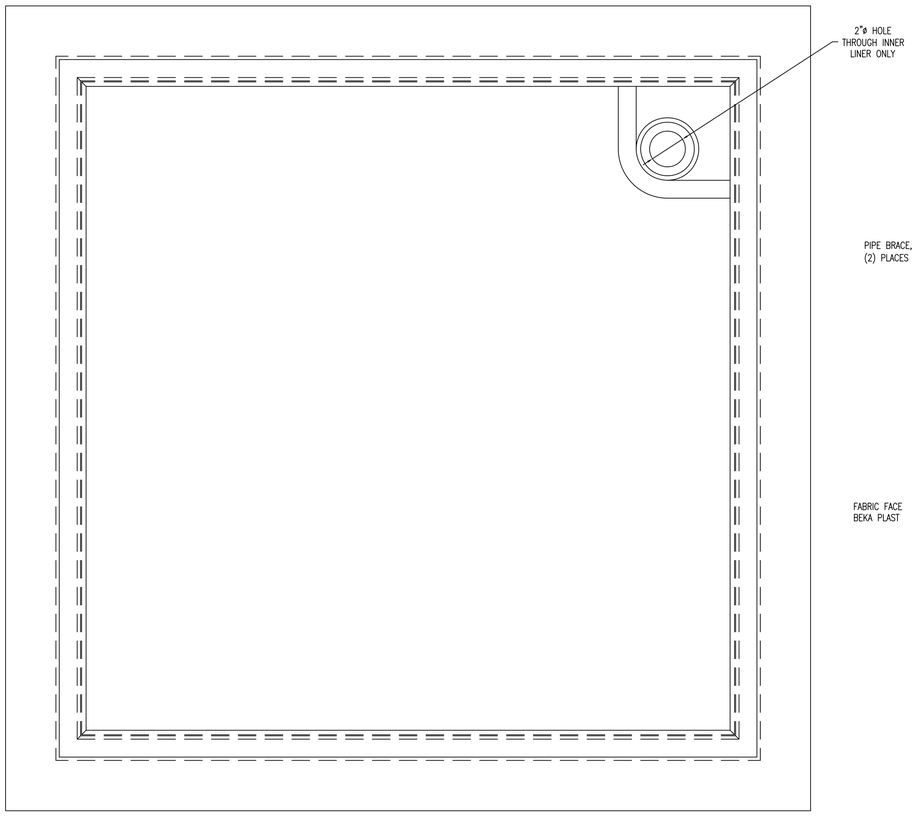
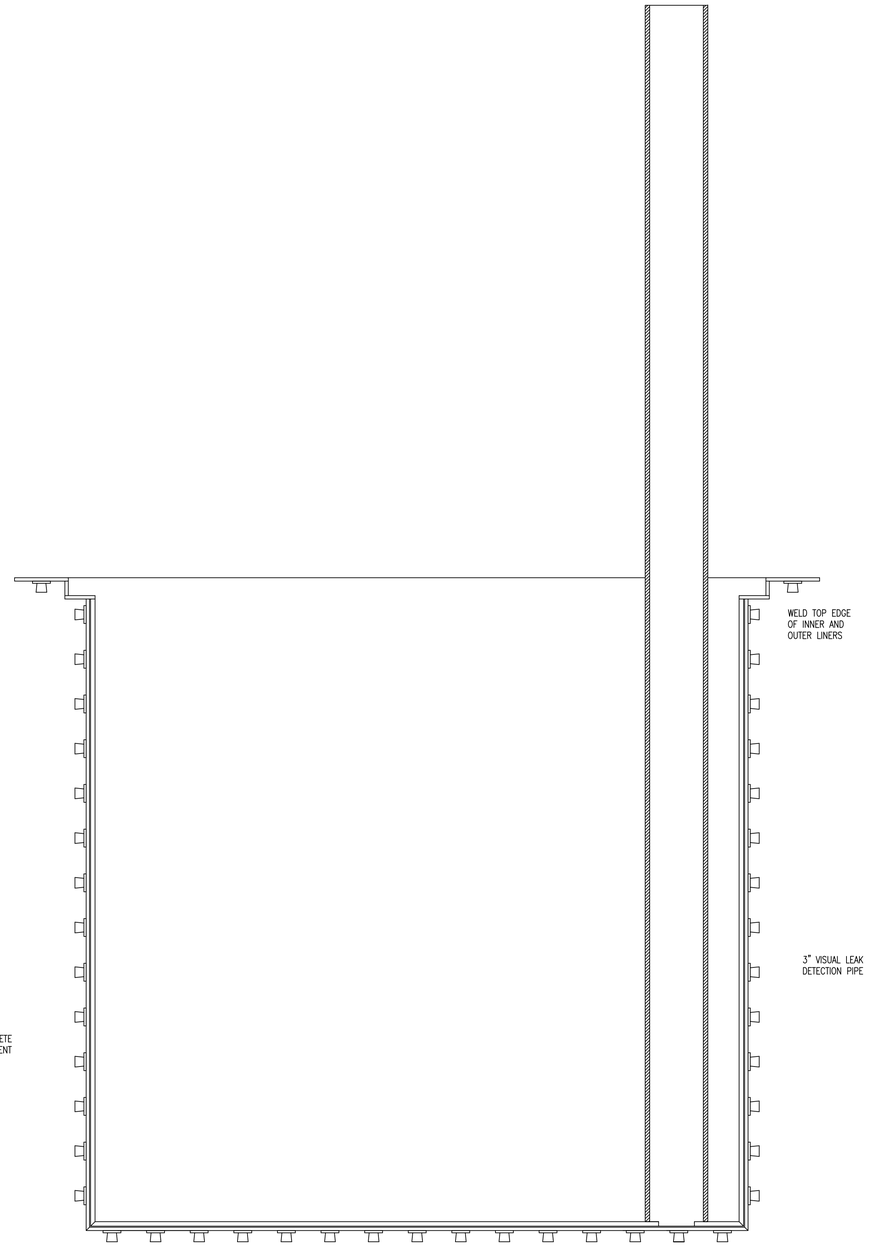
STATE OF NEW YORK
KENNETH A. MARTIN
No. 074334
LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

FILE:





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FILE:

DRAWING:

7789 C10

PREFORMED SUMP BOX DETAILS

MARCH 2014 | PRO # 13-019 | SHEET: 11 OF 13

TREATMENT BUILDING UPGRADE
NORTHEAST TREATERS
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STATE OF NEW YORK · KENNETH A. MARTIN · No. 074334 · LICENSED PROFESSIONAL ENGINEER

KENNETH A. MARTIN
P.E. # 074334

DESIGN:

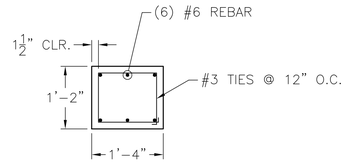
1. ALL STRESSES IN CONCRETE AND REINFORCING DESIGN PROCEDURES AS APPLICABLE SHALL CONFORM TO A.C.I. BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (A.C.I.318).
2. THIS DESIGN IS INTENDED TO MEET OR EXCEED THE DRIP PAD REQUIREMENTS FOUND IN SUBPART W; WOOD PRESERVING IDENTIFICATION AND LISTING OF HAZARDOUS WASTE; FINAL RULE 55, FEDERAL REGISTER 50450, DECEMBER 6, 1990/1992

CONCRETE:

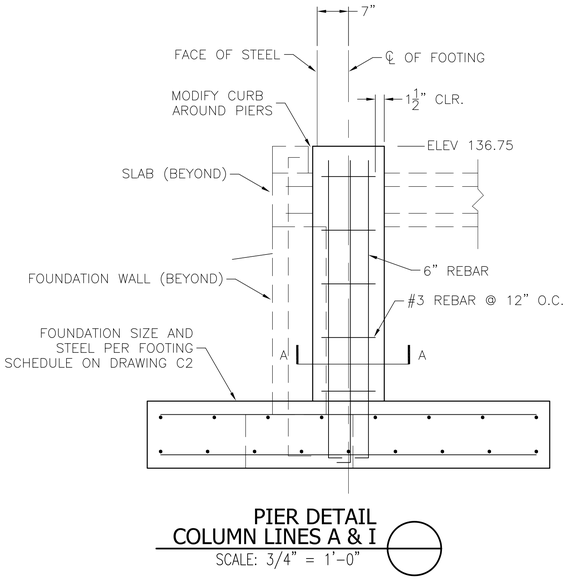
1. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4"
2. REINFORCING BARS SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH A.S.T.M. A615 GRADE 60.
3. ALL #5 REBAR TO BE ON 1'–0" CENTERS UNLESS OTHERWISE NOTED.
4. DOWEL BARS SHALL BE 1" X 2'–0" LONG.
5. DOWEL PLACEMENT SHALL NOT BE ANY CLOSER THAN 12" FROM ANY CORNER CONDITION.
6. CONCRETE COVER ON REINFORCING SHALL BE AS FOLLOWS, EXCEPT WHERE NOTED ON DETAIL DRAWINGS: GROUND: 3" MIN. ALL OTHERS:
   A. 1 1/2" FOR #5 REBAR OR SMALLER
   B. 2" FOR #6 REBAR OR LARGE
7. WHERE FIELD SPLICING IS REQUIRED, BARS TO LAP 36 DIAMETERS UNLESS OTHERWISE NOTED.
8. ALL FOOTINGS SHALL REST ON UNDISTURBED SOIL BELOW FROSTLINE.
9. ALL POLYETHYLENE WATERSTOP SPLICING SHALL BE MADE USING A CONTROLLED ELECTRICAL SOURCE OF HEAT; NO LAP SPLICING.
10. STRUCTURAL ENGINEER AND CONTRACTOR TO INSPECT AND VERIFY REBAR PLACEMENT PRIOR TO CONCRETE PLACEMENT.
11. THE OWNER MAY CHOOSE FROM THE FOLLOWING CONCRETE FINISHES:
    A. ALUMINUM FLOAT FINISH (MEDIUM WITH LIGHT BROOM FINISH)
    B. ALUMINUM FLOAT FINISH (MEDIUM)
    C. ALUMINUM FLOAT FINISH (SLICK OR POWER TROWEL)
12. SLOPE CONCRETE IN THE DIRECTION OF SLOPE ARROWS AS SHOWN ON FOUNDATION PLAN.
13. ALLOWABLE SOIL BEARING CAPACITY SHALL BE 2000 P.S.F., MIN. COMPACTION SHALL BE 95% OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR ASTMD698. SOIL BEARING AND COMPACTION TO BE DETERMINED BY ON–SITE TESTING PRIOR TO CONSTRUCTION.
14. CONCRETE TO BE VIBRATED TO REMOVE AIR POCKETS BEFORE DRYING.
15. ALL CONCRETE SURFACES MUST RECEIVE A WET CURE. APPROVED PROCEDURE ARE LISTED BELOW.
    A. FABRIC COVERINGS SUCH AS BURLAPS, COTTON MATS, OR OTHER MOISTURE RETAINING FABRICS CAN BE USED. BURLAP MUST BE FREE OF SIZING OR ANY SUBSTANCE THAT IS HARMFUL TO CONCRETE OR CAUSES DISCOLORATION. NEW BURLAP SHALL BE THOROUGHLY RINSED IN WATER TO REMOVE SOLUBLE SUBSTANCES AND MAKE THE BURLAP MORE ABSORBENT. THE FABRICS SHOULD BE PLACED AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT SURFACE DAMAGE. THE COVERINGS SHOULD BE KEPT CONTINUOUSLY MOIST SO THAT A FILM OF WATER REMAINS ON THE CONCRETE SURFACE. PLASTIC SHEETS PLACED OVER THE BURLAP WILL ELIMINATE THE NEED FOR CONTINUOUS WATERING OF THE COVERING.
    B. WET COVERINGS OF EARTH, SAND, OR SAWDUST ARE EFFECTIVE FOR CURING AND ARE OFTEN USEFUL ON SMALL JOBS. A LAYER APPROXIMATELY 2" THICK SHOULD BE EVENLY DISTRIBUTED OVER THE PREVIOUSLY MOISTENED SURFACE OF THE CONCRETE AND KEPT WET. A DISADVANTAGE OF THIS PROCESS IS THE POSSIBILITY OF DISCOLORING THE CONCRETE.
    C. WET HAY OR STRAW CAN BE USED TO CURE FLAT SURFACES. IF USED IT SHALL BE PLACED 6" THICK AND COVERED WITH BURLAPS OR PLASTIC TO PREVENT IT FROM BEING BLOWN OFF BY WIND. THIS PROCESS ALSO HAS THE ABILITY TO DISCOLOR THE CONCRETE.
16. SUBGRADE SHALL BE SMOOTH TO ALLOW FOR LATERAL MOVEMENT OF SLAB AND COMPONENTS. (REFER TO ACI 302.1 R7 2.4 1994)
17. JOINTS SHALL NOT BE FILLED WITH SEALER UNTIL CONCRETE WORK IS OTHERWISE COMPLETE AND/OR COATING APPLIED.

READY MIXED CONCRETE:

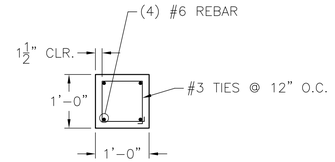
1. CEMENT SHALL BE TYPE 1 OR 1A IN ACCORDANCE WITH A.S.T.M SPECIFICATION C150 FOR PORTLAND CEMENT.
2. CONCRETE SHALL BE AIR ENTRAINED (4–6%) AND SHALL DEVELOP 4,000 P.S.I. @ 28 DAYS. (THIS REQUIRES AN AVERAGE COMPRESSION STRENGTH OF 5,200 P.S.I.) (REFER TO ACI 318 5.3.2.2 1994)
3. CONCRETE SHALL NOT CONTAIN ANY FLY ASH MATERIAL.
4. WATER CEMENT RATIO .45. UNPLASTICIZED SLUMP NOT TO EXCEED 2" AT POINT OF PLACEMENT. (IF THE SLUMP IS NOT TESTED ON SITE, DOCUMENTATION OF THIS TEST SHALL BE PROVIDED TO THE OWNERS ENGINEER.)
5. A HIGH RANGE WATER REDUCER (HRWR) (SUPER PLASTICIZER) MAY BE ADDED TO ACHIEVE WORKABILITY. MAXIMUM ALLOWABLE CHEMICALLY INDUCED SLUMP SHALL BE SPECIFIED BY THE OWNERS ENGINEER OR BY THE ARCH ENGINEERING DEPARTMENT.
6. CONCRETE SHALL BE PLACED IN TEMPERATURES OF 40°F OR GREATER. THIS TEMPERATURE SHALL BE MAINTAINED FOR A CONTINUOUS 48 HOURS.
7. ENGINEERED REINFORCING FIBERS SHALL BE USED IN ALL CONCRETE AS SPECIFIED AND IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AS TO TYPE AND AMOUNT. THE RECOMMENDED AMOUNT SHALL BE 1 1/2 LBS PER CUBIC YARD. ONLY FIBRILLATED FIBERS DESIGNED AND MANUFACTURED SPECIFICALLY FOR USE IN CONCRETE FROM 100% VIRGIN POLYPROPYLENE AND SO CERTIFIED BY THE MANUFACTURER SHALL BE ACCEPTABLE. MINIMUM FIBER LENGTH 3/4".
8. CONCRETE MIX DESIGN TO BE SUBMITTED FOR APPROVAL BY ENGINEERS.
9. CONTRACOR'S TESTING LABORATORY WILL PERFORM SAMPLING & DURING CONCRETE PLACEMENT, TESTING COMPRESSIVE STRENGTH TESTING IN ACCORDANCE WITH ASTM C31, C39 AND C172 SHALL BE DONE DAILY OR FOR EVERY 50 CUBIC YARDS OF EACH CLASS OF CONCRETE. CONTRACTOR MAY PERFORM ADDITIONAL TESTING AS NECESSARY TO INSURE QUALITY CONCRETE.
10. SLUMP TEST: ASTM C143, ONE TEST FOR EACH LOAD AT THE POINT OF DISCHARGE.
11. AIR CONTENT: ASTM C173, ONE TEST FOR EACH SET OF COMPRESSIVE STRRENGTH SPECIMENS.
12. COMPRESSIVE STRENGTH: ASTM C39, TESTING SHALL BE DONE AT 7 DAYS AND 28 DAYS AND AN ADDITIONAL CYLINDER RETAINED FOR ADDITIONAL TESTING IF REQUIRED.
13. TEST RESULTS WILL BE REPORTED IN WRITING TO ENGINEER, CONTRACTOR, AND CONCRETE PRODUCER WITHIN 24 HOURS AFTER TESTS ARE COMPLETED.



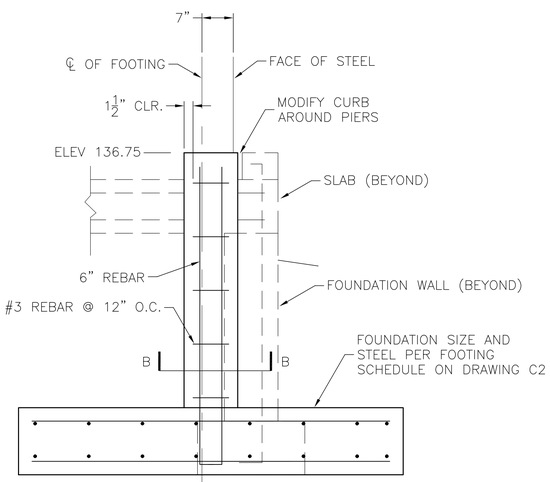
SECTION A-A
(COLUMN A&I)



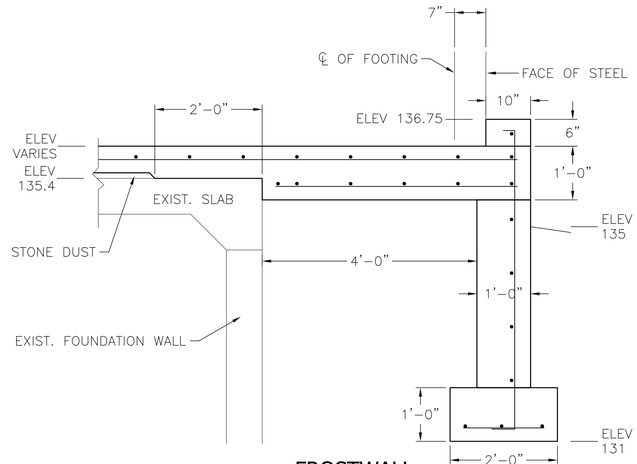
PIER DETAIL
COLUMN LINES A & I
SCALE: 3/4" = 1'–0"



SECTION B-B
(COLUMN B&F)



PIER DETAIL
COLUMN LINES B & F
SCALE: 3/4" = 1'–0"



FROSTWALL
DETAIL
SCALE: 3/4" = 1'–0"

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DRAWING:
7789 C11

CONCRETE NOTES

SHEET: 12 OF 13
PRO # 13-019
MARCH 2014

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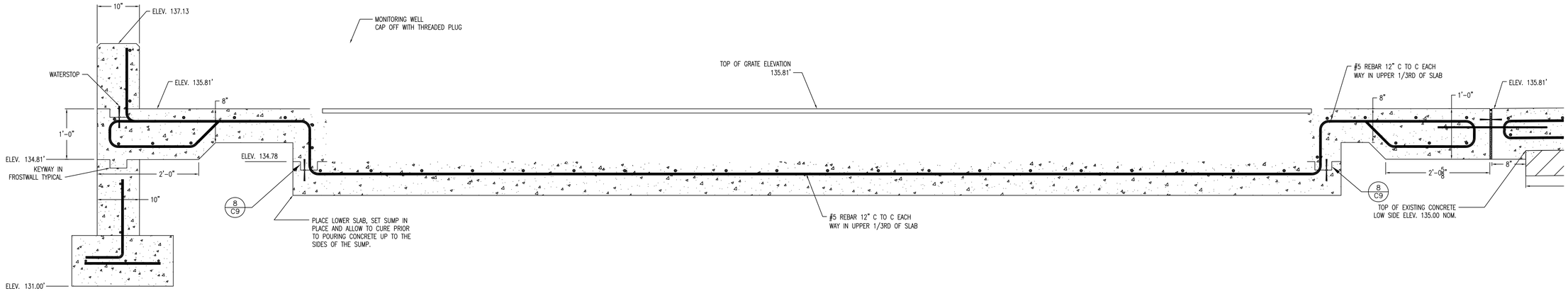

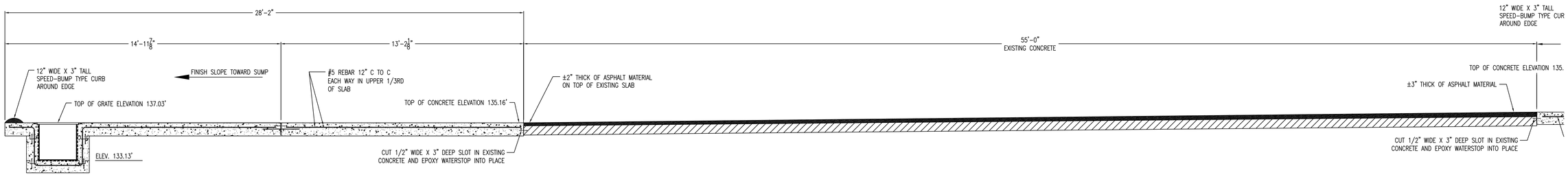

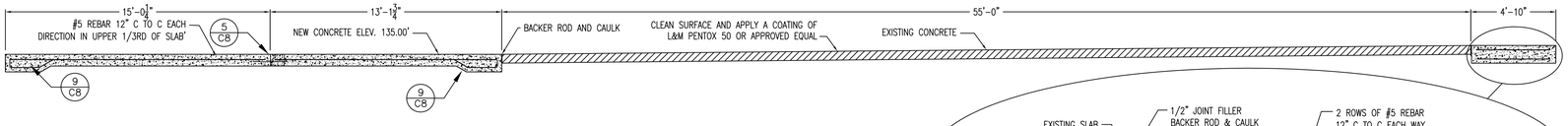

INFEED SECTION 3/C12
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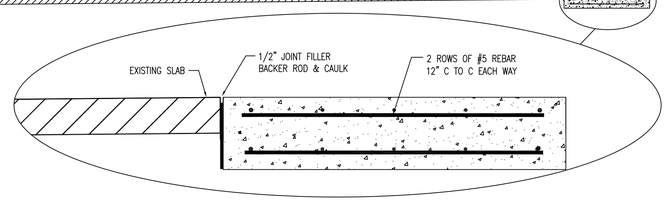

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FILE:

DRAWING:
7789 C12

CONCRETE NOTES

SHEET: 13 OF 13
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STATE OF NEW YORK
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APPENDIX F

REPORT OF ASBESTOS AIR MONITORING & PROJECT MONITORING VISUAL INSPECTION

REPORT OF ASBESTOS AIR MONITORING & PROJECT MONITOR VISUAL INSPECTION

Location of Project: Northeast Treaters
796 Schoharie Turnpike
Athens, New York 12015

Client: Northeast Treaters
796 Schoharie Turnpike
Athens, New York 12015

Alpine Project #: 14-16893-A

Material or Area of Abatement: Second Floor Offices & Break Room

Abatement Specification performed by: Unknown

Asbestos Material Removed: Floor Tile, Sink Undercoating & Roofing

Dates of Abatement: January 7th – 10th, 2015

Abatement Contractor: ERSI

Monitoring Performed By: Alpine Environmental Services, Inc.
438 New Karner
Albany, New York 12205
Phone (518) 250-4047

Technician(s): Gered Burns
Anthony Moro
Ben Natale
Greg (Mel) Gbson

Scope and Purpose
This report is intended to document asbestos air testing & project monitor visual inspection services associated with the abatement project at the above address.

Air samples were analyzed by Phase Contrast Microscopy (PCM). Alpine Environmental Services, Inc (ELAP# 11740) analyzed PCM samples. All sampling via PCM followed NIOSH 7400 Method. NYSDOL defines acceptable air results to be less than 0.010 f/cc. These results can be found in the far right column of the attached Air Sample Data Reports.

Limitations
Alpine was hired to perform air monitoring & project monitor visual inspection services. Clearance air sampling, as required by 12 NYCRR 56 was performed by Alpine to determine airborne fiber concentrations following abatement.

Asbestos material abatement was limited to the materials listed below.

Air Sample Results
Clearance air samples were taken on January 10th, 2015 and fiber concentrations were found to be below the limits set forth by NYSDOL ICR 56.

Asbestos Materials Removed
Summary of asbestos abatement:

Floor Tile	~ 600 Square Feet
Sink Undercoating	~ 4 Square Feet
Roof Perimeter Fabric	~ 120 Square Feet
Rolled Roofing	~ 900 Square Feet

Conclusion
In the event renovation or demolition reveals previously unidentified suspect asbestos materials, Alpine should be contacted immediately for verification and all aspects of 12 NYCRR56 must be followed.

If Alpine can be of any further assistance to you on this matter, please contact me at (518) 250-4047 Ext 307.

Sincerely,
Alpine Environmental Services, Inc.

Michael Balzano
Field Operations Manager

Enclosure: Air Sample Results, Logs, Certificates of Visual Inspection & Diagrams.

Alpine Inc.
ENVIRONMENTAL SERVICES

AIR SAMPLE DATA REPORT

ENT: Northeast Treaters
PROJECT: Northeast Treaters
PROJECT # 15-16893-A
ADDRESS: 796 Schoharie Turnpike Rd. Esther
LAB# 32
ROTOMETER #: 666
WORK AREA: 2nd Fl offices
COLLECTED BY: A. Mora
ABATEMENT CONTRACTOR: ERSI
CONTRACTOR SUPERVISOR: N/A
(Circle One) PCM TEM
QUANTITY: 6755F Floor Tile, 45F Sink Underseam
DATE COLLECTED: 01-07-15
(Circle One) BACKGROUND PRE DURING FINAL QC

SAMPLE NO.	LOG NO.	LOCATION	START TIME	STOP TIME	TOTAL MIN.	INITIAL FLOW (L/MIN) / FINAL FLOW (L/MIN)	TOTAL VOLUME (LITERS)	FIBERS / 100 FIELDS	FIBERS / mm²	FIBERS / cc	QC
1	178	IwA Top stairs	1140	1300	80	15 / 15	1200	1/100	1.27	4.002*	
2	179	IwA by Womens rm	1140	1300	80	15 / 15	1200	0/100	0.00	4.002*	
3	180	IwA by Womens rm	1141	1304	80	15 / 15	1200	5/100	6.37	4.002*	3.82
4	181	IwA Kitchen area	1143	1303	80	15 / 15	1200	1/100	1.27	4.002*	
5	182	IwA Kitchen area	1143	1303	80	15 / 15	1200	1/100	1.27	4.002*	
6	183	OwA Conference rm	1144	1304	80	15 / 15	1200	9/100	11.5	.004	
7	184	OwA Conference rm	1144	1304	80	15 / 15	1200	3/100	3.82	4.002*	
8	185	OwA Hall to Conference rm	1145	1305	80	15 / 15	1200	14/100	17.8	.006	15.3
9	186	OwA Main office	1146	1306	80	15 / 15	1200	9/100	11.5	.004	
10	187	OwA Main office	1146	1306	80	15 / 15	1200	8/100	10.2	.003	
11	B1	F.B. #1	/	/	/	/	/	45.5/100	57.01	—	
12	B2	F.B. #2	/	/	/	/	/	45.5/100	57.01	—	

RELINQUISHED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	DATE:	TIME:	Comments: FB Ave.= 0 fibers/100field
1.	2.	1/8/15	1045	
3.	4.			

SAMPLES PREPPED BY: (PRINT)	DATE:	TIME:	SAMPLES ANALYZED BY: (PRINT)	DATE:	START TIME:	STOP TIME:
Nicki Davey	1/8/15	1050	Joel DiTata	1/8/15	1300	1525

Samples Received Meet Lab Sample Acceptance Criteria (circle one): (Y) N
[X] * Below the limit of Detection [ ] ** > 50% Particulate Matter, Unreadable [ ] *** Sample Damaged or Missing
Microscope Used: [ ] Olympus CH27L0215 [X] Nikon 131-545 [ ] Olympus CH2700880

Standard Deviation	Log#	/ Standard Dev	Log#	/ Standard Dev	Log#	/ Standard Dev
	180	3.82	185	15.3		

NYS DOH ELAP# 11740; NIOSH Method 7400, A Rules, Rev. 3, Issue 2, 8/15/94, Not Asbestos Specific.
Field Area of Scope= 0.00785mm² Lab RSD: 5.5-25.5 fibers = 0.135, 25.6-63.7 fibers = 0.090,
>63.7 Fibers = 0.116, Fibers/cc has been calculated after subtracting field blank average.
Please note that results of samples collected by the client can be verified by Alpine through f/mm² only.
The results relate only to the items tested. Report may not be reproduced, except in full, without written permission of Alpine Environmental. **BDL = Below Detectable Limits, PbB = Passed By Background**
QC X Signed X Scanned X DOL ___

Jeffery Eames, Lab QA/QC Officer

Craig Petreikis, CIH, Lab Director; Report Date

Alpine Inc.
ENVIRONMENTAL SERVICES

AIR SAMPLE DATA REPORT

CLIENT: NORTHEAST TREATERS PROJECT: NORTHEAST TREATERS PROJECT #: 15-16893-A

ADDRESS: 796 SCHOHARIE TURNPIKE, ATHENS LAB#: 46

ROTOMETER #: 401 WORK AREA: BREAK ROOM + LANDING COLLECTED BY: G. BURNS

ABATEMENT CONTRACTOR: ERSI

CONTRACTOR SUPERVISOR: DAVE M. DATE COLLECTED: 01-09-15

(Circle One) PCM TEM QUANTITY: ~600SF VAT

(Circle One) BACKGROUND PRE DURING FINAL QC

SAMPLE NO.	LOG NO.	LOCATION	START TIME	STOP TIME	TOTAL MIN.	INITIAL FLOW (L/MIN) / FINAL FLOW (L/MIN)	TOTAL VOLUME (LITERS)	FIBERS / 100 FIELDS	FIBERS / mm²	FIBERS / cc	QC
1	259	DECON IN	1840	2040	120	10 / 10	1200	0/100	0.00	<.002*	
2	260	DECON OUT	1840	2040		10 / 10		0/100	0.00	<.002*	0.00
3	261	CRITICAL 1: AIR LOCK	1841	2041		10 / 10		2.5/100	3.18	<.002*	
4	262	CRITICAL 2: BOTTOM DOOR	1842	2042		10 / 10		13/100	16.6	.006	
5	263	AMBIENT	1840	2040		10 / 10		2/100	2.55	<.002*	
6	B1	FB-1						<5.5/100	<7.01	—	
7	B2	FB-2						<5.5/100	<7.01	—	

RELINQUISHED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	DATE:	TIME:	Comments: FB Ave.= 0 fibers/100field
1.	2.	1/12/15	1355	
3.	4.			

SAMPLES PREPPED BY: (PRINT)	DATE:	TIME:	SAMPLES ANALYZED BY: (PRINT)	DATE:	START TIME:	STOP TIME:
Nick Dovey	1/12/15	1400	Nick Dovey	1/12/15	1430	1500

Samples Received/Meet Lab Sample Acceptance Criteria (circle one): (Y) N

[X] * Below the limit of Detection [ ] ** > 50% Particulate Matter, Unreadable [ ] *** Sample Damaged or Missing

Microscope Used: [X] Olympus CH27L0215 [ ] Nikon 131-545 [ ] Olympus CH2700880

Standard Deviation	Log# 260	/ Standard Dev BDL	Log#	/Standard Dev	Log#	/ Standard Dev

NYS DOH ELAP# 11740; NIOSH Method 7400, A Rules, Rev. 3, Issue 2, 8/15/94, **Not Asbestos Specific.**

Field Area of Scope= 0.00785mm² Lab RSD: 5.5-25.5 fibers = 0.135, 25.6-63.7 fibers = 0.090,

>63.7 Fibers = 0.116, Fibers/cc has been calculated after subtracting field blank average.

Please note that results of samples collected by the client can be verified by Alpine through f/mm² only.

These results relate only to the items tested. Report may not be reproduced, except in full, without written permission of Alpine Environmental. **BDL = Below Detectable Limits, PbB = Passed By Background**

QC ✓ Signed ✓ Scanned ✓ DOL —

Jeffery Eames, Lab QA / QC Officer

Craig Petreikis, CIH, Lab Director; Report Date

AIR SAMPLE DATA REPORT

Alpine Inc. ENVIRONMENTAL SERVICES

CLIENT: Northeast Treaters
PROJECT: Northeast Treaters
PROJECT # 15-16893-A
ADDRESS: 796 Schoharie Turnpike-Athens
LAB# 41
ROTOMETER #: 777
WORK AREA: 2nd Flr.
COLLECTED BY: Gibson
ABATEMENT CONTRACTOR: ERST
CONTRACTOR SUPERVISOR: Dave
DATE COLLECTED: 1.10.15
(Circle One) PCM TEM
QUANTITY: VAT ~ 600 S.F. + 2 sinks 45 f coving FB
(Circle One) BACKGROUND PRE DURING FINAL QC

SAMPLE NO.	LOG NO.	LOCATION	START TIME	STOP TIME	TOTAL MIN.	INITIAL FLOW (L/MIN) / FINAL FLOW (L/MIN)	TOTAL VOLUME (LITERS)	FIBERS / 100 FIELDS	FIBERS / mm²	FIBERS / cc	QC
1	230	IWA 1	840	1000	80	15 / 15	1200	1/100	1.27	< .002	0.00
2	231	2	840	1000		15 / 15		0/100	0.00	< .002	
3	232	3	841	1001		15 / 15		0/100	0.00	< .002	
4	233	4	842	1002		15 / 15		1/100	1.27	< .002	
5	234	5	842	1002		15 / 15		1/100	1.27	< .002	
6	235	OWA 1	846	1006		15 / 15		2/100	2.55	< .002	1.27
7	236	2	847	1007		15 / 15		2/100	2.55	< .002	
8	237	3	847	1007		15 / 15		1/100	1.27	< .002	
9	238	4	847	1007		15 / 15		1/100	1.27	< .002	
10	239	5	848	1008		15 / 15		2/100	2.55	< .002	
11	B1	B-1						≤5.5/100	< 7.01		
12	B2	B-2						≤5.5/100	< 7.01		

RELINQUISHED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	DATE:	TIME:	Comments: FB Ave.= 0 fibers/100field
1.	2.	1/10/15	1125	
3.	4.			

SAMPLES PREPPED BY: (PRINT)	DATE:	TIME:	SAMPLES ANALYZED BY: (PRINT)	DATE:	START TIME:	STOP TIME:
Jeff Eames	1/10/15	1120	Jeff Eames	1/10/15	1125	1145

Samples Received Meet Lab Sample Acceptance Criteria (circle one): Y N
[N] * Below the limit of Detection [ ] ** > 50% Particulate Matter, Unreadable [ ] *** Sample Damaged or Missing
Microscope Used: [X] Olympus CH27L0215 [ ] Nikon 131-545 [ ] Olympus CH2700880

Standard Deviation	Log# 230	/ Standard Dev BDL	Log# 235	/Standard Dev BDL	Log#	/ Standard Dev

NYS DOH ELAP# 11740; NIOSH Method 7400, A Rules, Rev. 3, Issue 2, 8/15/94, Not Asbestos Specific.
Field Area of Scope= 0.00785mm² Lab RSD: 5.5-25.5 fibers = 0.135, 25.6-63.7 fibers = 0.090, >63.7 Fibers = 0.116, Fibers/cc has been calculated after subtracting field blank average.
Please note that results of samples collected by the client can be verified by Alpine through f/mm² only.
These results relate only to the items tested. Report may not be reproduced, except in full, without written permission of Alpine Environmental. **BDL = Below Detectable Limits, PbB = Passed By Background**
QC ✓ Signed ✓ Scanned ✓ DOL ___

Jeffery Eames, Lab QA / QC Officer

Craig Petreikis, CIH, Lab Director; Report Date

438 New Karner Road,
Albany, NY 12205
(518)250-4047
Fax (518)-250-4353

Alpine NYSDOL Lic. No. 29095
Alpine ELAP No. 11740
EMSL ELAP No. 11506

Daily Inspection Log

Project: Northeast Treaters	**Date:** 01-07-15	**Page** 1 **of** 1
Alpine Project No.: 15-16893-A	**(PM) or Air Tech (circle one)** **Name:** A. Moro	**Variance No.:**
Abatement Contractor: ERSI	**Supervisor Name and Cert No:** N/A	**Waste Hauler Permit #:**
Exact Work Area(s): 2nd Pl Offices	**Type and Amount of ACM:**	**Phase:**
1.	1.	1.
2.	2.	2.
3.	3.	3.

Time	Notes **Phase:** Backs, Preparation, During, 1st/2nd/3rd Cleaning, Visual, Clearance
1. 1130	I arrive on site, gain access to the 2nd Pl area
2.	and start setting up pumps
3. 1145	start Background air samples (5) Inside (5) Outside.
4. 1220	check pumps (OK)
5. 1300	Collect Air Samples, collect equip.
6. 1315	leave site
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	
23.	

Original - to be delivered to the office with Air Sheets
Copy – must be kept on site
Also need daily check list (separate sheet) to be submitted with original

Alpine Technician Signature

Alpine Inc. ENVIRONMENTAL SERVICES

438 New Karner Road,
Albany, NY 12205
(518)250-4047
Fax (518)-250-4353

Alpine NYSDOL Lic. No. 29095
Alpine ELAP No. 11740
EMSL ELAP No. 11506

Daily Inspection Log

Project: NORTHEAST TREATERS	Date: 01-09-15	Page 1 of 1
Alpine Project No.: 15-16893-A	(PM) or Air Tech (circle one) Name: GERED BURNS	Variance No.:
Abatement Contractor: ERSI	Supervisor Name and Cert No: DAVE	Waste Hauler Permit #:
Exact Work Area(s):	Type and Amount of ACM:	Phase:
1. BREAK ROOM / LANDING	1. ~600SF VAT	1. DURING
2.	2.	2.
3.	3.	3.

Time **Notes** **Phase:** Backs, Preparation, During, 1st/2nd/3rd Cleaning, Visual, Clearance

1. 1530	ON-SITE @ NE. TREATERS. ERSI ON-SITE. 5+1
2.	IN CREW. SUPER GOES OVER WORK PLAN. BEGINING
3.	PREP OF WORK-SITE FOR IN-PLANT REMOVEL.
4. 1700	PREP OF AREA CONTINUES. SETTING UP DURING
5.	SAMPLES FOR REMOVEL.
6. 1830	PREP COMPLETE. CREW BEGINS REMOVEL. USING FULL DECON
7.	AS WASH STATION. REMIND SUPER TO MAKE SURE CREW
8.	IS IN FULL PPE + H_2O USE.
9. 1840	DURING SAMPLES STARTED @ 10 Hm.
10. 1930	REMOVAL CONTINUES. CREW IN PPE + H_2O. CHECK
11.	SAMPLES, ETC
12. 2020	CREW FINISHING WASTE OUT. SUPER + MY-SELF DO
13.	A PRELIMINARY VISUAL INSPECTION (OFFICIAL AM. 01-16)
14.	AREA GOOD, COLLECTING SAMPLES.
15. 2040	PACKING EQUIPMENT, FINISHING FIELD REPORTS.
16. 2100	OFF-SITE.
17.	
18.	
19.	
20.	
21.	
22.	
23.	

Original - to be delivered to the office with Air Sheets
Copy – must be kept on site
Also need daily check list (separate sheet) to be submitted with original

Alpine Technician Signature

438 New Karner Road,
Albany, NY 12205
(518)250-4047
Fax (518)-250-4353

Alpine NYSDOL Lic. No. 29095
Alpine ELAP No. 11740
EMSL ELAP No. 11506

Daily Inspection Log

Project: NorthEast Treaters	Date: 1.10.15	Page 1 of _____
Alpine Project No.: 15.16893.A	PM or Air Tech (circle one) Name: Mel	Variance No.:
Abatement Contractor: ERSI	Supervisor Name and Cert No: DAVE	Waste Hauler Permit #:
Exact Work Area(s):	Type and Amount of ACM:	Phase:
1. 2nd flr.	1. VAT ~ 600 s.f. (flr. Tile)	1. Finals
2.	2. Sink Undercoating ~ 4 s.f.	2.
3.	3.	3.

Time **Notes** **Phase:** Backs, Preparation, During, 1st/2nd/3rd Cleaning, Visual, Clearance

1.	8⁰⁰	on site. Doors locked - Dave (ERST) on site unlocks
2.		I set up for finals
3.	8⁴⁰	start log finals for flr Tile.
4.	10⁰⁰	collect finals and equip. talk w Dave about roof,
5.		He shows work areas
6.	10⁴⁵	samples / equip collected - off site to lab.
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		

Original - to be delivered to the office with Air Sheets
Copy – must be kept on site
Also need daily check list (separate sheet) to be submitted with original

Alpine Technician Signature

Alpine inc.
ENVIRONMENTAL SERVICES

CERTIFICATE OF VISUAL INSPECTION

Building: NORTHEAST TREATERS

Project and Project Number: 15-16893-A

Specific Area: BREAK ROOMS + LANDING AREAS

Abatement Contractor: ERST

Asbestos Materials Removed, including Quantities (TO BE COMPLETED BY PROJECT MANAGER)

~600 SF VAT, 4SF SINK UNDERCOAT.

MONITOR'S CERTIFICATION:

The Monitor hereby certifies that he/she has accompanied the Asbestos Abatement Contractor on his/her visual inspection and verifies that his/her inspection has been through and, to the best of his/her knowledge and belief, the Asbestos Abatement Contractor has removed all asbestos that was to be removed in the above area.

By: (Signature) _____ Date: 01-10-15

(Print Name) GERED B Title: PROJECT MONITOR

Has all of the asbestos identified in the abatement specification been removed (circle one):

(Yes) No Don't Know

Note: This form must be completed and included with any final abatement air samples to be read.

Comments/Concerns: _____

438 New Karner Road • Albany, NY 12205 • Phone: (518) 453-0146 • Fax: (518) 453-0175

Alpine Inc.
ENVIRONMENTAL SERVICES

Certificate of Visual Inspection
Roof Only

Building Address: 796 Schodack Turnpike

Project & Project Number: 15-16893-1A

Specific Work Area: Roof Top. Break Room

Abatement Contractor: ERSI

Asbestos Materials Removed, Including Quantities (To be completed by Project Monitor):

900 SF rolled roofing.

120 SF Perimeter fabric

Asbestos Project Monitor's Certification:
The Monitor hereby certifies that he/she has accompanied the Asbestos Abatement Contractor on his/her visual inspection and verifies that his/her inspection has been thorough and, to the best of his/her knowledge and belief, the Asbestos Abatement Contractor has removed all Asbestos that was to be removed in the above area.

By: (Signature) _____ Date: 1-10-15

(Print Name) F. Natale Title: P.M.

Is there an Asbestos Abatement Design Specification or Variance for this project?

☐ **YES** ☒ **NO**

If yes, has all the Asbestos identified in the Asbestos Design Specification or Variance been removed?

☐ **YES** ☐ **NO**

Is the Work Area a segment of a larger Abatement Project? (Example: A section of a larger roof, etc.)

☐ **YES** ☒ **NO**

If yes, is this the final segment of the larger Abatement Project?

☒ **YES** ☐ **NO**

Note: This form must be completed and included with any final abatement air samples to be read.
Comments/Concerns:

The Visual Inspection documented on this form is for the external roof abatement (or roof flashing if identified above) in the identified external work area only. In no way shall it be used to assess any materials or conditions inside the structure, which includes, but is not limited to, roof or flashing materials, or materials suspected or presumed to be roof or flashing materials, which may be in cavities, interior spaces, or on surfaces inside the building, from the installation or removal of current or prior roof systems. Any visual inspection of cavities, spaces, or on surfaces inside the building would require a pre-abatement and post abatement inspection of 100% of the interior areas under the work area roof deck and any cavities with the potential for roof materials to fall. Any such inspection needs to be contracted, in writing, with Alpine prior to the start of the project. Any such inspection will not be reported on this form.

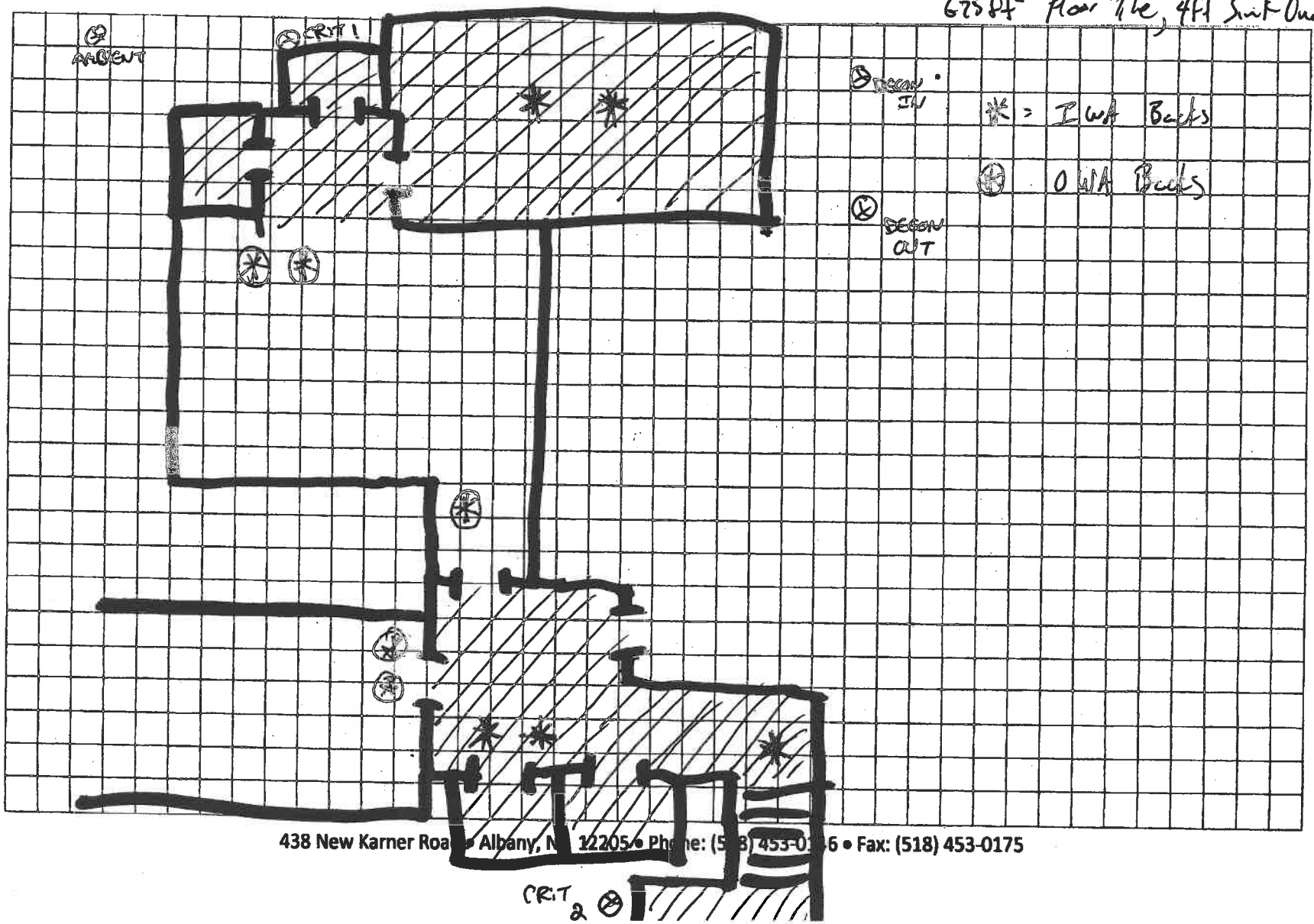
Alpine Inc.
ENVIRONMENTAL SERVICES

Client: Northeast Treaters
Project: Northeast Treaters

Name: A. Moro
Phase: Backs

Date: 01-07-15

6758ft² floor tile, 4ft² Suit Underneath



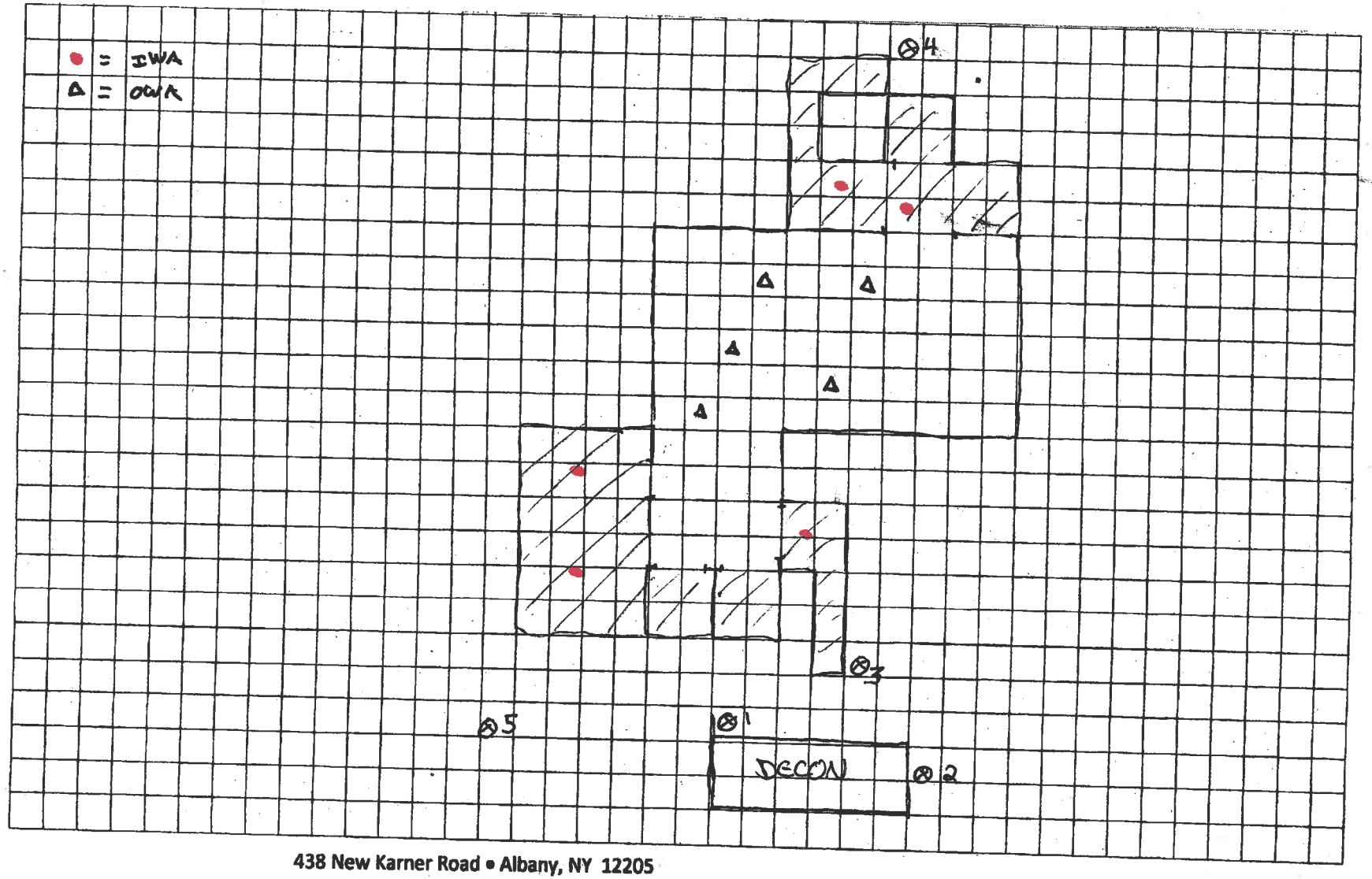
438 New Karner Road • Albany, NY 12205 • Phone: (518) 453-0176 • Fax: (518) 453-0175

Alpine Inc.
ENVIRONMENTAL SERVICES

Client: NORTHEAS TREATERS
Project: " "

Name: GERED BURNS
Phase: DURING / FINAL

Date: 01-09-15



APPENDIX G

EXCAVATION WORK PLAN (EWP)

Sterling Environmental Engineering, P.C.

NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
SITE #C420029

EXCAVATION WORK PLAN (EWP)

Prepared for:

Northeast Treaters of New York, LLC
796 Schoharie Turnpike
Athens, New York 12015

Prepared by:

Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110

March 31, 2015

"Serving our clients and the environment since 1993"

NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
SITE #C420029

EXCAVATION WORK PLAN (EWP)

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EXECUTIVE SUMMARY

This Excavation Work Plan (EWP) has been prepared for the Northeast Treaters of New York, LLC (Northeast Treaters) site, which is included in the Brownfield Cleanup Program (BCP) as Site #C420029, in anticipation of future soil intrusive activities that present a reasonable possibility to encounter chromium and arsenic impacted soils in excess of site cleanup criteria.

1.0 APPLICABLILITY AND NOTIFICATION

This EWP only applies to the BCP area, located on the easternmost portion of the Northeast Treaters property, as defined by the executed copy of the Brownfield Cleanup Agreement dated December 31, 2014. The New York State Department of Environmental Conservation (NYSDEC) requires this EWP for future soil intrusive activities that present a reasonable possibility to encounter chromium and arsenic impacted soils in excess of site cleanup criteria listed in Table 1. This EWP is not triggered if existing data, and/or testing performed prior to soil intrusive activities, indicates that soil to be disturbed during soil intrusive activities meets site cleanup criteria listed in Table 1.

At least 15 days prior to the start of any activity anticipated to encounter contamination, the site owner or their representative will notify the NYSDEC. Currently, this notification will be made to:

NYSDEC Region 4 Hazardous Waste Remediation Engineer
1130 North Westcott Road
Schenectady, NY 12306
(518) 357-2045

This notification will include:

- 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, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- 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 CFR 1910.120;
- A copy of the contractor's Health and Safety Plan (HASP), in electronic format, if it differs from the HASP provided in Appendix A of the Remedial Investigation Work Plan for the site;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with required chemical testing results.

2.0 SOIL ASSESSMENT METHODS

The primary contaminants of concern for the BCP Site are chromium and arsenic. These compounds cannot be detected by visual, olfactory or instrument-based soil screening. Therefore, an assessment will be performed by a qualified environmental professional or remediation engineer during all remedial and development excavations into known or potentially contaminated material at the BCP site to determine the likelihood of encountering soil impacted by chromium or arsenic, based on data from the site remedial

investigation and existing data. An assessment will be performed for all invasive work at the BCP site, such as excavations for foundations, underground utility work, or other necessary ground intrusive work.

Soils will be segregated based on previous environmental data into material that requires offsite disposal, material that requires further testing, material that can be returned to the subsurface, and clean material that can be used as cover soil.

3.0 STOCKPILE METHODS

Stockpiles of contaminated or potentially contaminated material will be 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 of contaminated or potentially contaminated material will be covered at all times with appropriately anchored tarps. Stockpiles of contaminated or potentially contaminated material will be inspected at a minimum once each week and after every storm event and damaged tarp covers will be promptly replaced. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

Stockpiles of uncontaminated material, which meets Track 1 unrestricted use soil cleanup objectives (SCOs), will be subject to erosion and sediment control practices pursuant to the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-15-002).

4.0 MATERIALS EXCAVATION AND LOADOUT

A qualified environmental professional or person under their supervision will oversee invasive work and the excavation and loadout of excavated material. The owner of the property and its contractors are solely responsible for safe execution of 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 to the extent such utilities and easements are modified or added after remedial activities are completed. It will be determined whether a risk or impediment to the planned work under this EWP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A tire wash will be operated onsite for work performed under this EWP. The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are free of loose soil and other materials derived from the site during intrusive excavation activities. Only outbound trucks that come in contact with chromium and arsenic impacted soil will be required to be washed at the truck wash before leaving the site until the activities performed under this section are complete. Locations where vehicles enter or exit the site shall be inspected daily for evidence of offsite soil tracking.

5.0 MATERIALS TRANSPORT OFFSITE

Transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used. Truck wheels that come in contact with chromium and arsenic impacted soils will be washed prior to leaving the site or if determined to be necessary by the qualified environmental professional. Truck wash waters will be collected and disposed of offsite in an appropriate manner.

The truck transport route is provided as Appendix A. All trucks loaded with site materials will exit the site using only this approved truck route which takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city or town mapped truck routes; (c) prohibiting offsite 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 (if necessary).

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Egress points for truck and equipment transport from the site will be kept free of loose soil and related materials during site remediation and development. Queuing of trucks will be performed onsite in order to minimize offsite disturbance. Offsite queuing will be prohibited.

6.0 MATERIALS MANAGEMENT OFFSITE

All soil/fill/solid waste excavated and removed from the BCP site will be classified as contaminated and regulated material, unless specially approved by the NYSDEC, and will be transported and disposed in accordance with all local, State and Federal regulations. Offsite disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition (C&D) recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous, contaminated fill and soils removed from the BCP site will be handled, at minimum, as a Municipal Solid Waste in accordance with 6 NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted use SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility). Uncontaminated soil/fill from the BCP site that meets Track 1 unrestricted use SCOs may be reused (i.e. clean soil or fill removed for development purposes).

7.0 MATERIALS REUSE ONSITE

If excavated soil does not present characteristics indicating it is potentially contaminated (see Section 2.0) and is planned for reuse elsewhere on the property, where reuse is defined as material that originates at the BCP site and does not leave the property, a composite soil sample will be collected in accordance with DER-10 requirements. Chemical criteria for reuse of material elsewhere on the property have been approved by the NYSDEC and are listed in Table 1.

NYSDEC DER-10 recommends one (1) composite soil sample be collected from five (5) locations within each stockpile (up to 300 cy). Sampling will be conducted in accordance with DER-10 Table 5.4(e)10. A duplicate sample will also be collected for every twenty (20) composite soil samples collected. Composite soil samples will be analyzed for total chromium (Cr) and total arsenic (As).

Soil samples will be composited by placing equal portions of fill/soil from each of the five (5) composite sample locations from one (1) soil stockpile into a clean, stainless steel or Pyrex glass mixing bowl. The soil/fill will be thoroughly homogenized using a stainless steel scoop or trowel and transferred to containers provided by the laboratory. Sample containers will then be labeled and a Chain-of-Custody form will be prepared.

The qualified environmental professional will ensure that procedures defined for materials reuse in this EWP are followed and that unacceptable excavated soil does not remain onsite. Contaminated onsite material, including historic fill and contaminated soil, that is acceptable for reuse onsite will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse onsite will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing onsite will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused onsite.

8.0 FLUIDS MANAGEMENT

All liquids to be removed from the BCP site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids may be recharged back to the land surface or subsurface of the BCP site, if testing indicates that the liquids meet applicable standards, criteria and guidance values.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

9.0 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities performed under this EWP, the cover system will be restored in a manner that complies with this EWP. Any previously existing demarcation layer will be replaced to provide a visual reference to the top of any remaining contaminated soil that would require adherence to special conditions for disturbance as defined in this EWP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt) a modification of the cover element of the remedy and the upper surface of the remaining contaminated soil will be deemed to have occurred. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

10.0 BACKFILL FROM OFFSITE SOURCES

All materials proposed for import onto the BCP 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, or other environmental remediation sites or potentially contaminated sites will not be imported to the BCP site.

Soils imported as part of work performed under this EWP will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d). The applicable soil quality standards are listed in Table 1 and are based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

In accordance with NYSDEC DER-10, sampling is required for all imported soil for use as backfill or cover material. Sampling frequency of the material will be determined by a qualified environmental professional or remediation engineer. A minimum of one (1) sample will be analyzed from every new source, at the following sampling frequency for:

(1) soil or sand imported from a virgin mine/pit, at least one round of characterization samples for the initial 100 cubic yards of material;
(2) material sources other than a virgin mine/pit (e.g., a former manufacturing site), in accordance with Table 5.4(e)10 of DER-10; or
(3) sites where large amounts of cover material/backfill are required, the sampling frequency can be reduced from that specified in Table 5.4(e)10 once a trend of compliance is established.

Chemical criteria for onsite reuse of material have been approved by the NYSDEC and are listed in Table 1.

According to NYSDEC DER-10, one (1) composite soil sample will be collected from five (5) locations within each stockpile (up to 300 cy). Sampling will be conducted in accordance with DER-10 Table 5.4(e)10. A duplicate sample will also be collected for every twenty (20) composite soil samples collected. Composite soil samples will be analyzed for Total Cr and As.

Soil samples will be composited by placing equal portions of fill/soil from each of the five (5) composite sample locations from one (1) soil stockpile into a clean, stainless steel or Pyrex glass mixing bowl. The soil/fill will be thoroughly homogenized using a stainless steel scoop or trowel and transferred to containers provided by the laboratory. Sample containers will then be labeled and a Chain-of-Custody form will be prepared.

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.

11.0 STORMWATER POLLUTION PREVENTION

As mandated by the SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-15-002), construction projects exceeding one (1) acre must specify procedures for stormwater pollution prevention. The area of soil to be disturbed during remedial activities outlined in the

Remedial Work Plan (RWP) is less than one (1) acre, and therefore a Stormwater Pollution Prevention Plan (SWPPP) is not required.

Erosion and sediment control measures identified in the RWP (i.e. silt fencing, erosion control socks or tubes, or hay bales) shall be observed to ensure proper implementation and operation. Discharge locations or points, if accessible, may be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

12.0 CONTINGENCY PLAN

It is highly unlikely that buried drums or underground storage tanks (USTs), or previously unidentified contaminant sources, will be encountered during soil excavation activities, based on the known site history. However, if such conditions are encountered a work plan will be provided to the NYSDEC for prompt approval to minimize interruption of the construction schedule. Construction-related excavation will continue elsewhere on the BCP site until the plan is approved by the NYSDEC. Following NYSDEC approval, appropriately trained personnel will excavate all of the drums and/or USTs while following all applicable Federal, State, and local regulations. Removed drums and USTs will be properly characterized and disposed at a permitted facility. The soil/fill surrounding the buried drums or USTs will be considered potentially contaminated and will be stockpiled and characterized.

Sampling will be performed on product, sediment and surrounding soils, etc. in accordance with DER-10 to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by telephone to NYSDEC's Project Manager. Reportable quantities of petroleum product associated with a release will also be reported to the NYSDEC Spills Hotline.

13.0 COMMUNITY AIR MONITORING PLAN

This EWP is to be utilized in coordination with the Community Air Monitoring Plan (CAMP) established for this project. Locations of air sampling stations will be adjusted on a daily or more frequent basis based on observed wind directions to provide at least one (1) upwind and one (1) downwind monitoring station. All monitoring readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

14.0 ODOR CONTROL PLAN

This BCP site does not represent an odor risk. Notwithstanding, this odor control plan addresses the control of emissions of nuisance odors. Specific odor control methods to be used on a routine basis are described below. If nuisance odors are identified at the site boundary, or if odor complaints are received specific to work at the BCP site, work at the BCP site 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 Northeast Treaters' Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent onsite and offsite nuisances relative to the BCP site. 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 offsite disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to onsite 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.

15.0 DUST CONTROL PLAN

The Dust Control Plan (DCP) for the BCP site addresses dust management during invasive onsite work including the items listed below:

- Dust suppression will be achieved through the use of a dedicated onsite water truck for road wetting. The truck will be equipped with a water cannon or hose capable of spraying water directly onto off-road areas including excavations, stockpiles and staging areas.
- Clearing and grubbing of larger sites will be performed 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.
- Onsite roads will be limited in total area to minimize the area required for water truck sprinkling.

S:\Sterling\Projects\2014 Projects\Northeast Treaters of New York - Athens NY - 2014-08\Reports\Excavation Work Plan\Excavation Work Plan_txt.docx

TABLE 1

TABLE 1

SOIL CLEANUP OBJECTIVES
NORTHEAST TREATERS OF NEW YORK, LLC
BROWNFIELD CLEANUP PROGRAM SITE #C420029

TOWN OF ATHENS
GREENE COUNTY, NEW YORK

Parameter	Soil Cleanup Objectives [1] (ppm)
Metals (for composite soil samples):	
Arsenic	16
Barium	10,000
Beryllium	2,700
Cadmium	60
Chromium (hexavalent)	800
Chromium (trivalent)	6,800
Copper	10,000
Total Cyanide	10,000
Lead	3,900
Manganese	10,000
Total Mercury	5.7
Nickel	10,000
Selenium	6,800
Silver	6,800
Zinc	10,000

[1] As provided in 6 NYCRR Part 375-6.8(b) – Industrial Use Soil Cleanup Objectives

Parameter	Soil Cleanup Objectives [1] (ppm)
PCBs/Pesticides (for composite soil samples):	
2,4,5-TP Acid (Silvex)	1,000
4,4'-DDE	120
4,4'-DDT	94
4,4'-DDD	180
Aldrin	1.4
alpha-BHC	6.8
beta-BHC	14
Chlordane (alpha)	47
delta-BHC	1,000
Dibenzofuran	1,000
Dieldrin	2.8
Endosulfan I	920
Endosulfan II	920
Endosulfan sulfate	920
Endrin	410
Heptachlor	29
Lindane	23
Polychlorinated biphenyls	25

[1] As provided in 6 NYCRR Part 375-6.8(b) – Industrial Use Soil Cleanup Objectives

Parameter	Soil Cleanup Objectives [1] (ppm)
SVOCs (for composite soil samples):	
Acenaphthene	1,000
Acenapthylene	1,000
Anthracene	1,000
Benzo(a)anthracene	11
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	11
Benzo(g,h,i)perylene	1,000
Benzo(k)fluoranthene	110
Chrysene	110
Dibenz(a,h)anthracene	1.1
Fluoranthene	1,000
Fluorene	1,000
Indeno(1,2,3-cd)pyrene	11
m-Cresol	1,000
Naphthalene	1,000
o-Cresol	1,000
p-Cresol	1,000
Pentachlorophenol	55
Phenanthrene	1,000
Phenol	1,000
Pyrene	1,000

[1] As provided in 6 NYCRR Part 375-6.8(b) – Industrial Use Soil Cleanup Objectives

Parameter	Soil Cleanup Objectives [1] (ppm)
VOCs (grab soil samples only):	
1,1,1-Trichloroethane	1,000
1,1-Dichloroethane	480
1,1-Dichloroethene	1,000
1,2-Dichlorobenzene	1,000
1,2-Dichloroethane	60
cis-1,2-Dichloroethene	1,000
trans-1,2-Dichloroethene	1,000
1,3-Dichlorobenzene	560
1,4-Dichlorobenzene	250
1,4-Dioxane	250
Acetone	1,000
Benzene	89
Butylbenzene	1,000
Carbon tetrachloride	44
Chlorobenzene	1,000
Chloroform	700
Ethylbenzene	780
Hexachlorobenzene	12
Methyl ethyl ketone	1,000
Methyl tert-butyl ether	1,000
Methylene chloride	1,000
n-Propylbenzene	1,000
sec-Butylbenzene	1,000

[1] As provided in 6 NYCRR Part 375-6.8(b) – Industrial Use Soil Cleanup Objectives

Parameter	Soil Cleanup Objectives [1] (ppm)
VOCs (grab soil samples only):	
tert-Butylbenzene	1,000
Tetrachloroethene	300
Toluene	1,000
Trichloroethene	400
1,2,4-Trimethylbenzene	380
1,3,5-Trimethylbenzene	380
Vinyl chloride	27
Xylene (mixed)	1,000

[1] As provided in 6 NYCRR Part 375-6.8(b) – Industrial Use Soil Cleanup Objectives

APPENDIX A

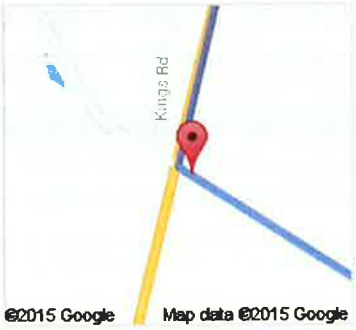
TRUCK TRANSPORT ROUTE

Google

Directions to CWM Chemical Services Inc
1550 Balmer Rd, Model City, NY 14107 - (716) 286-1550
332 mi – about **4 hours 59 mins**

Northeast Treaters of NY LLC
796 Schoharie Turnpike, Athens, NY 12015 - (518) 945-2660

	1. Head **northwest** on **Schoharie Turnpike** About 1 min	go 0.9 mi total 0.9 mi
9W	2. Turn right onto **US-9W N** About 9 mins	go 7.4 mi total 8.2 mi
	3. Turn right onto the ramp to **I-87 N** Toll road	go 0.2 mi total 8.4 mi
87	4. Keep left at the fork, follow signs for **Interstate 87 N/Albany** and merge onto **I-87 N** Toll road About 21 mins	go 23.6 mi total 32.0 mi
915H	5. Continue onto **NY-915H** Toll road About 1 min	go 1.2 mi total 33.2 mi
90	6. Merge onto **I-90 W** Toll road About 3 hours 55 mins	go 271 mi total 304 mi
	7. Take exit **50** for **I-290** toward **Niagara Falls** Toll road	go 0.4 mi total 304 mi
290	8. Continue onto **I-290 W** About 10 mins	go 9.5 mi total 314 mi
	9. Take the **Interstate 190 N** exit toward **Niagara Falls**	go 0.3 mi total 314 mi
190	10. Merge onto **I-190 N** Partial toll road About 14 mins	go 13.9 mi total 328 mi
	11. Take exit **25A** for **NY-265** toward **Lewiston**	go 0.1 mi total 328 mi
265	12. Turn left onto **NY-265 N**	go 0.1 mi total 328 mi
	13. Turn right onto **Upper Mountain Rd** About 4 mins	go 2.5 mi total 331 mi
	14. Slight left onto **Indian Hill Rd** About 46 secs	go 0.4 mi total 331 mi
	15. Slight left onto **Model City Rd** About 1 min	go 0.5 mi total 332 mi



CWM Chemical Services Inc
1550 Balmer Rd, Model City, NY 14107 - (716) 286-1550

APPENDIX H

HEALTH AND SAFETY PLAN (HASP)

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
BCP #C420029

HEALTH AND SAFETY PLAN (HASP)

Prepared for:

Northeast Treaters of New York, LLC
796 Schoharie Turnpike
Athens, New York 12015

Prepared by:

Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110

October 30, 2014

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NEW YORK
BCP #C420029

HEALTH AND SAFETY PLAN (HASP)

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Appendices

1.0 GENERAL INFORMATION

The Health and Safety Plan (HASP) identifies specific measures to be taken to ensure that hazardous substances or conditions do not adversely impact the health and safety of personnel and the general community (public) for Site operations. The HASP is intended to identify potential hazards and appropriate precautions as defined by OSHA 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response).

All personnel working on this project must read this HASP, acknowledge understanding of this plan, and abide by its requirements.

In general, personnel are responsible for complying with all regulations and policies applicable to the work they are performing. The Project Manager is authorized to stop work if any personnel/subcontractor fails to adhere to the required health and safety procedures.

In addition to this HASP, each contractor must provide a HASP that addresses minimum training requirements for activities specific to the project and identified potential hazards specific to the project that are not discussed herein.

2.0 DESIGNATION OF RESPONSIBILITIES

Implementing this HASP is the responsibility of the Project Manager. The Project Manager will be designated prior to any Site activities and can be the contractor hired for a particular project, or an independent consultant hired by the Owner.

The Project Manager is responsible for:

- Ensuring the availability, use, and proper maintenance of specified personal protective equipment, decontamination, and other health or safety equipment.
- Maintaining a high level of safety awareness among personnel/subcontractors and communicating pertinent matters to them promptly.
- Ensuring all field activities are performed in a manner consistent with this HASP.
- Monitoring for dangerous conditions during field activities.
- Ensuring proper decontamination of personnel and equipment.
- Coordinating with emergency response personnel and medical support facilities.
- Initiating immediate corrective actions in the event of an emergency or unsafe condition.
- Notifying the New York State Department of Environmental Conservation (NYSDEC) and project owner of any emergency, unsafe condition, problem encountered, or exception to the requirements of this HASP.
- Recommending improved health and safety measures to the NYSDEC.

The Project Manager must be present for all intrusive investigative activities. However, the presence of the Project Manager shall in no way relieve any person or company of its obligations to comply with the requirements of the HASP and all applicable Federal, State and local laws and regulations.

All personnel involved in the project must be familiar with and conform to the safety protocols prescribed in this HASP, and communicate any relevant experience or observations to the Project Manager to ensure that these valuable inputs improve overall safety. Individual project members are the key elements in ensuring health and safety compliance. Every project member is considered responsible for implementing and following this HASP.

3.0 SITE PROPERTY SPECIFIC HEALTH AND SAFETY CONCERNS

3.1 Suspected Contaminant Hazards

Concentrations of chromium and arsenic above industrial soil cleanup objectives (SCOs) are known to be present at the Northeast Treaters of New York, LLC (Northeast Treaters) property. Documented historical use of the property and previous investigations conducted at the property suggest that organic vapors and/or explosive gases are not a concern at the Northeast Treaters property.

Although unlikely, unknown or unexpected materials of a hazardous nature may be encountered during ground intrusive activities. No work will be conducted if field observations or field measurements indicate that there is potential uncontrolled exposure to undefined hazards, or that exposures may exceed protection afforded by the requirements in this HASP.

3.2 Personal Protective Equipment (PPE)

Suspected hazards that may be encountered by workers during ground intrusive and construction activities, action levels and corresponding required actions, and the PPE level required for workers is as follows:

TABLE 1

AIR MONITORING METHODS, ACTION LEVELS, AND PROTECTIVE LEVELS FOR PERSONNEL

Hazard	Monitoring Unit	Action Level	Protective Levels/Action	Monitoring Schedule
Dust	Particulate Monitor Miniram or Equivalent	< 5 mg/m^3 above background in the breathing zone.	Level D-Continue Work	Continuous for ground intrusive activities.
		5-10 mg/m^3 above background in the breathing zone.	Level C-Continue Work	
		> 10 mg/m^3 above background in the breathing zone.	STOP WORK EVACUATE AREA (1)	

(1) For all circumstances where work is stopped, the NYSDEC must be notified.

No work is anticipated requiring Levels B or A PPE and very limited work in Level C. If air monitoring results require PPE upgrades from Level D, then only medically qualified, trained personnel experienced in the use and limitations of air purifying or supplied air respirators will be used. Air purifying respirators with High-Efficiency Particulate Air (HEPA) filters, capable of removing particles of 0.3 micron or larger from air at 99.97% or greater efficiency, should be used when exposure to dust is a potential risk.

Unless the Project Manager directs otherwise, respirators used for organic vapors or particulates should have cartridges changed after eight (8) hours of use, or at the end of each shift, or when any indication of

breakthrough or excessive resistance to breathing is detected. OSHA regulations require a Respiratory Protection Program for companies that require employees to enter areas where respirators are required and such Respiratory Protection Programs must address the requirements for replacement of cartridges.

3.3 Suspected Safety Hazards

Suspected safety hazards include those inherent with the operation of heavy equipment such as drill rigs or excavators, and proximity to excavations. Inspections to ensure appropriate safety measures are in place and the use of lockout and tagout procedures during maintenance of this equipment will control these inherent hazards. Personal protective equipment (PPE) including hard hats, safety shoes and eye protection will be worn to augment other safety precautions.

Drilling rigs and excavators must not operate closer than thirty (30) feet to any overhead lines, measured directly between any part of the equipment and the lines themselves except where electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work, or where insulating barriers have been erected to prevent physical contact with the lines. If drilling or excavating is required within thirty (30) feet of any overhead lines, a written work plan must be provided by the contractor or other equipment operator that includes special measures designed to mitigate the risks and is in accordance with 29 CFR 1926.550(a)(15). The work plan must be reviewed and approved by written signature by the Project Manager.

Care must be taken to ensure loose clothing does not get tangled in any moving equipment associated with drilling rigs or excavators.

All excavations will be maintained to prevent access by unauthorized persons and will be filled or fenced off by the end of the workday. Absolutely no one will be permitted in the excavations, except the operator of equipment where the operator is always located above ground level. If equipment breaks down within the excavation, the equipment will have to be towed out of the excavation for repair. All subsurface samples will be obtained by operation of the excavating equipment and will be collected from the excavator bucket.

3.4 Excavator and Drill Rig Operations

Excavation will be performed with a track-mounted excavator or backhoe. To conduct soil borings, a hollow-stem auger or direct push drilling rig will be used. Working with or near this equipment poses potential hazards, including being struck by or pinched/caught by equipment, potentially resulting in serious physical bodily harm or inhaling dust from concrete coring.

In particular, the following precautions will be used to reduce the potential for injuries and accidents:

- The inspection of excavator and drill rig brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be conducted prior to the initial mobilization and checked routinely throughout the project.

- Excavator and drill rig cabs will be kept free of all non-essential items and all loose items will be secured.

- Excavators and drill rigs will be provided with necessary safety equipment, including seat belts.

- Drill rig cables and auger flight connections will be checked for evidence of wear. Frayed or broken cables or defective connections will be replaced immediately.

- Parking brakes will be set before shutting off any heavy equipment or vehicle.

- All employees will be briefed on the potential hazards prior to the start of each excavation or drilling project.

3.5 Adverse Weather

Drilling or excavating is dangerous during electrical storms. All field activity must terminate during thunderstorms. Extreme heat and cold, ice and heavy rain can produce unsafe conditions for drilling work. Such conditions, when present, will be evaluated on a case-by-case basis to determine if work shall terminate.

3.6 Fire and Explosion

Use of gasoline or diesel powered equipment increases the risk of fire and explosion hazards. Contractors will be required to store diesel fuel and gasoline in metal cans with self-closing lids and flash arrestors.

3.7 Requirement to Conduct Utility Mark Out

Prior to the start of any subsurface work, underground utilities and piping that may pose a potential hazard will be identified and located. DigSafely.NewYork or equivalent service will be called and underground utilities will be located and marked. Also, the location of privately owned utility lines will be determined.

In the event a pipe or line is struck, work will stop and the Emergency Action Plan will be implemented (see Section 5.0).

3.8 Confined Space Entry

Confined space entry is not anticipated for excavating and sampling activities. If a project requires confined space entry, a specific HASP will be implemented.

"Confined Space" is defined as a space that:

1. *"is large enough and so configured that an employee can bodily enter and perform assigned work;*
2. *has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and*
3. *is not designed for continuous employee occupancy."*

3.9 Excavation and Sampling Work Zones

One of the basic elements of an effective HASP is the delineation of work zones for each ground intrusive location. The purpose of establishing work zones is to:

- Reduce the accidental spread of hazardous substances by workers or equipment from the contaminated areas to the clean areas;
- Confine work activities to the appropriate areas, thereby minimizing the likelihood of accidental exposures;

- Facilitate the location and evacuation of personnel in case of an emergency; and
- Prevent unauthorized personnel from entering controlled areas.

Although a work site may be divided into as many zones as necessary to ensure minimal employee exposure to hazardous substances, this HASP uses the three (3) most frequently identified zones: the Exclusion Zone, Decontamination Zone, and Support Zone. Movement of personnel and equipment between these zones should be minimized and restricted to specific access control points to minimize the spreading of contamination.

- Exclusion Zone

  During investigative work, the Exclusion Zone is the immediate excavation, test pit, borehole, or other area where contamination is either known or expected to occur and where the greatest potential for exposure exists.

  Unprotected onlookers will be restricted from the excavation location so that they are at least twenty-five (25) feet upwind or fifty (50) feet downwind of excavation or drilling activities.

- Decontamination Zone

  During investigative work, a Decontamination Zone will be established at the perimeter of the Exclusion Zone, and will include the personnel, equipment and supplies that are needed to decontaminate equipment. The size will be selected by the Project Manager to conduct the necessary decontamination activities. Personnel and equipment in the Exclusion Zone must pass through this zone before leaving or entering the Support Zone. The necessary decontamination must be completed in this zone and the requirements are described in Section 6.0. This zone should always be established and maintained upwind of the Exclusion Zone.

- Support Zone

  During investigative work, the areas located beyond the Decontamination Zone will be considered the Support Zone. Break areas, operational direction and support facilities will be located in this area. Eating and drinking will be allowed only in the Support Zone.

3.10 Natural Hazards

Work that takes place in the natural environment may be affected by plants and animals that are known to be hazardous to humans. Spiders, bees, wasps, hornets, ticks, poison oak and poison ivy are only some of the hazards that may be encountered. Individuals who may potentially be exposed to these hazards should be made aware of their existence and instructed in their identification. Emergencies resulting from contact with a natural hazard should be handled through the normal medical emergency channels. Individuals who are sensitive or allergic to these types of natural hazards should indicate their susceptibility to the Project Manager.

3.11 Heat and Cold Stress Hazards

If work is to be conducted during the winter, cold stress is a concern to the health and safety of personnel. Because disposable clothing such as Tyvek does not "breathe", perspiration does not evaporate and the suits can become wet. Wet clothes combined with cold temperatures can lead to hypothermia. If the air temperature is less than 40 degrees Fahrenheit (°F) and a worker's clothes become wet due to perspiration, the worker must change to dry clothes.

3.12 Signs and Symptoms of Cold Stress

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

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

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

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

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

    - Involuntary shivering;
    - Irrational behavior;
    - Slurred speech;
    - Sluggishness; and
    - Loss of consciousness.

3.13 Preventing Cold Related Illness/Injury

- Train personnel to identify the signs and symptoms of cold stress. Require field personnel to wear proper clothing for cold, wet and windy conditions, including layers that can be adjusted to changing weather conditions. It is important to keep hands and feet dry.

- Field personnel working in extremely cold conditions must take frequent short breaks in warm, dry shelters to allow their body temperature to increase. If possible, field work should be scheduled during the warmest part of the day. The buddy system should be used so that personnel can assist each other in recognizing signs of cold stress.

- Drink warm, sweet beverages and avoid drinks with caffeine and alcohol. Eat warm, high-calorie foods.

- Personnel with medical conditions such as diabetes, hypertension or cardiovascular disease or who take certain medications, may be at increased risk for cold stress.

3.14 Treatment of Cold Related Injuries

If cold stress symptoms are evident, the affected person must move into a warm, dry sheltered area and all wet clothing should be removed and replaced with dry clothing. If frostbite is suspected, the affected person should be treated by trained medical personnel.

3.15 Signs and Symptoms of Heat Stress

Wearing PPE also puts a worker at a considerable risk for developing heat stress. This can result in health effects ranging from heat fatigue to serious illness or death. Consequently, regular monitoring, remaining hydrated and other precautions are vital.

- **Heat Rash** may result from continuous exposure to heat and humid air.

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

    - Muscle spasms; and
    - Pain in the hands, feet and abdomen.

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

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

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

    - Red, hot, and unusually dry skin;
    - Lack of or reduced perspiration;
    - Dizziness and confusion;
    - Strong, rapid pulse; and
    - Loss of consciousness.

3.16 Preventing Heat Related Illness/Injury

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion that person may be predisposed to additional heat injuries. To avoid heat stress, the following steps should be taken:

- Have workers drink sixteen (16) oz. (0.5 liter) of fluid (preferably water or diluted drinks) before beginning work. Urge workers to drink a cup or two every fifteen (15) to twenty (20) minutes, or at each monitoring break. A total of 1 to 1.6 gallons (four (4) to six (6) liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

- If possible, adjust work schedules to avoid the hottest parts of the day.

- Encourage workers to maintain an optimal level of physical fitness.

- Shelter (air-conditioned, if possible) or shaded areas should be provided to protect personnel during rest periods.

- Train workers to recognize, identify, and treat heat stress.

For workers wearing standard work clothes, recommendations for monitoring and work/rest schedules are those approved by American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute of Occupational Safety and Health (NIOSH). Workers wearing semi-permeable PPE or impermeable PPE should be monitored when the temperature in the work area is above 70°F.

3.17 Noise Hazards

Work that involves the use of heavy equipment such as a drill rig or excavator can expose workers to noise during field activities that can result in noise-induced hearing loss. The Project Manager will monitor the noise exposure and will determine whether noise protection is warranted for each of the workers. The Project Manager will ensure that either ear muffs or disposable foam earplugs are available and are used by the workers in the immediate vicinity of the field operation as required.

3.18 Slip, Trip and Fall Hazards

Ground intrusive locations can contain a number of slip, trip and fall hazards for workers, such as:

- Holes, pits, or ditches
- Excavation faces
- Slippery surfaces
- Steep grades
- Uneven grades
- Snow and ice
- Sharp objects

All workers must be instructed to keep back three (3) feet from the top edge of excavation faces.

Drill auger sections will be stored on the transport vehicle as long as possible to avoid creating a trip hazard. Drill auger sections and other tools will be stored in neat arrangements convenient to the driller, but sufficiently distant from the immediate area around the drill rig to minimize trip hazards.

Workers will be instructed to look for potential safety hazards and immediately inform the Project Manager regarding any new hazards. If the hazard cannot be immediately removed, actions must be taken to warn workers about the hazard.

3.19 Modifications to this Plan

Requirements and guidelines in this HASP are subject to modification by the Project Manager in response to additional information obtained during field work regarding the potential for exposure to hazards.

4.0 MEDICAL SURVEILLANCE PROGRAM

4.1 General

Workers who participate in field activities that meet the following criteria will be included in the Medical Surveillance Program:

- All who may be exposed to hazardous substances or health hazards at or above permissible exposure limits, without regard to the use of respirators, for thirty (30) days or more per year, as required by 1926.65(f)(2)(i-iv).

- All who wear a respirator for thirty (30) days or more every year as required by 1926.62(f)(2)(i-iv).

- All who are injured because of overexposure from an incident involving hazardous substances or health hazards.

4.2 Frequency of Medical Exams

Medical examinations and consultations will be provided on the following schedule to the workers who meet the above listed general qualifications:

- Prior to assignment to a work site, if any of the criteria noted above are anticipated.

- At least once every twelve (12) months, unless the physician believes a longer interval (not greater than two (2) years) is appropriate.

- As soon as possible upon notification that a worker has developed signs or symptoms indicating possible overexposure to hazardous materials.

5.0 EMERGENCY ACTION PLAN

Workers will use the following standard emergency procedures. The Project Manager will be notified of any emergency and be responsible for ensuring that the appropriate procedures are followed and that the Project Manager is notified. A first aid kit, an eye wash unit that can provide a minimum flow rate of 0.4 GPM for fifteen (15) minutes, and a fire extinguisher rated 20A-B-C (or higher) will be readily available to workers. All workers will be trained in use of emergency supplies. Questions regarding procedures and practices described in the HASP should be directed to the Project Manager.

5.1 Notification

Any symptoms of adverse health, regardless of the suspected cause, are to be immediately reported to the Project Manager.

Upon the occurrence of an emergency, including an unplanned chemical release, fire or explosion, workers will be alerted and the area evacuated immediately. The Project Manager will notify the ambulance service, fire department and/or police department, as required. Emergency contact telephone numbers are provided below. Re-entry to the work area will be limited to those required to assist injured workers or for firefighting or spill control. Anyone entering the work area following an emergency incident must wear appropriate protective equipment.

5.2 Emergency Services

Contact Name	Telephone Number
Emergency Services	911
Owner: Northeast Treaters of New York, LLC	(518) 945-2660
Columbia Memorial Hospital	(518) 828-7601
Poison Control Center	(800) 222-1222
NYSDEC Spills Emergency Response Program	(800) 457-7362

A map showing the preferred route to the hospital with written directions is presented in Appendix A-1; and written directions are also included on the map.

The following alarm systems will be utilized to alert workers to evacuate the restricted area:

- Direct Verbal Communication
- Radio Communication or Equivalent
- Portable or Fixed Telephone

The following standard hand signals will also be used as necessary:

Hand Signal	Message
Hand gripping throat	Can't breathe/out of air
Grip co-worker's wrist	Leave area immediately, no debate!
Hands on top of head	Need assistance
Thumbs up	Yes/O.K.
Thumbs down	No/Problem

Upon activation of an alarm, workers will proceed to a designated assembly area. The designated assembly area will be determined on a daily basis by the Project Manager and updated as necessary depending upon work conditions, weather, air monitoring, etc. The location of the designated assembly area will be clearly marked and communicated to employees daily or upon relocation of the area. Workers gathered in the designated assembly area will remain there until their presence has been noted. A tally of workers on the daily restricted area access roster will be made as necessary to ensure all workers have been properly evacuated and accounted for.

Workers may return to the designated work area following authorization by the Project Manager.

5.3 Personal Injury

If anyone within a work area is injured and cannot leave the restricted area without assistance, emergency medical services will be notified (see Section 5.0) and appropriate first aid will be administered by certified Emergency Medical Technicians (EMTs).

5.4 Fire/Explosion

Upon the occurrence of a fire beyond the incipient stage or an explosion anywhere on the worksite property, the fire department will be alerted and all personnel moved to a safe distance from the involved area.

5.5 Equipment Failure

If any equipment fails to operate properly, the Project Manager will determine the effect of this failure on continuing operations. If the failure affects the safety of workers (e.g., failure of monitoring equipment) or prevents completion of the planned tasks, all workers will leave the work area until appropriate corrective actions have been taken.

5.6 Record Keeping

The Project Manager will maintain records of reports concerning occupational injuries and illnesses in accordance with 29 CFR 1904.

6.0 DECONTAMINATION

6.1 Contamination Prevention Methods

The Project Manager will make all workers aware of the potential for contamination. The following procedures will be established to minimize contact with waste:

- Workers will not walk through areas obvious of contamination;
- Workers will not directly touch potentially hazardous substances;
- Workers will wear gloves when touching soil or waste;
- Workers will wear disposable outer garments where appropriate; and
- Excavated soils will be placed on plastic sheeting and covered with plastic sheeting at the end of the workday.

6.2 Decontamination Methods

6.2.1 Cleaning of Field Sampling Equipment

All equipment and tools used to collect samples for chemical analyses, including spatulas, spoons, scoops, trowels, split-spoons, augers, etc. will be decontaminated using the following procedures:

- non-phosphate detergent wash;
- potable water or distilled/deionized water rinse; and
- air or oven-dry.

If the equipment is to be stored for future use, allow to dry and then wrap in aluminum foil (shiny-side out) or seal in plastic bags.

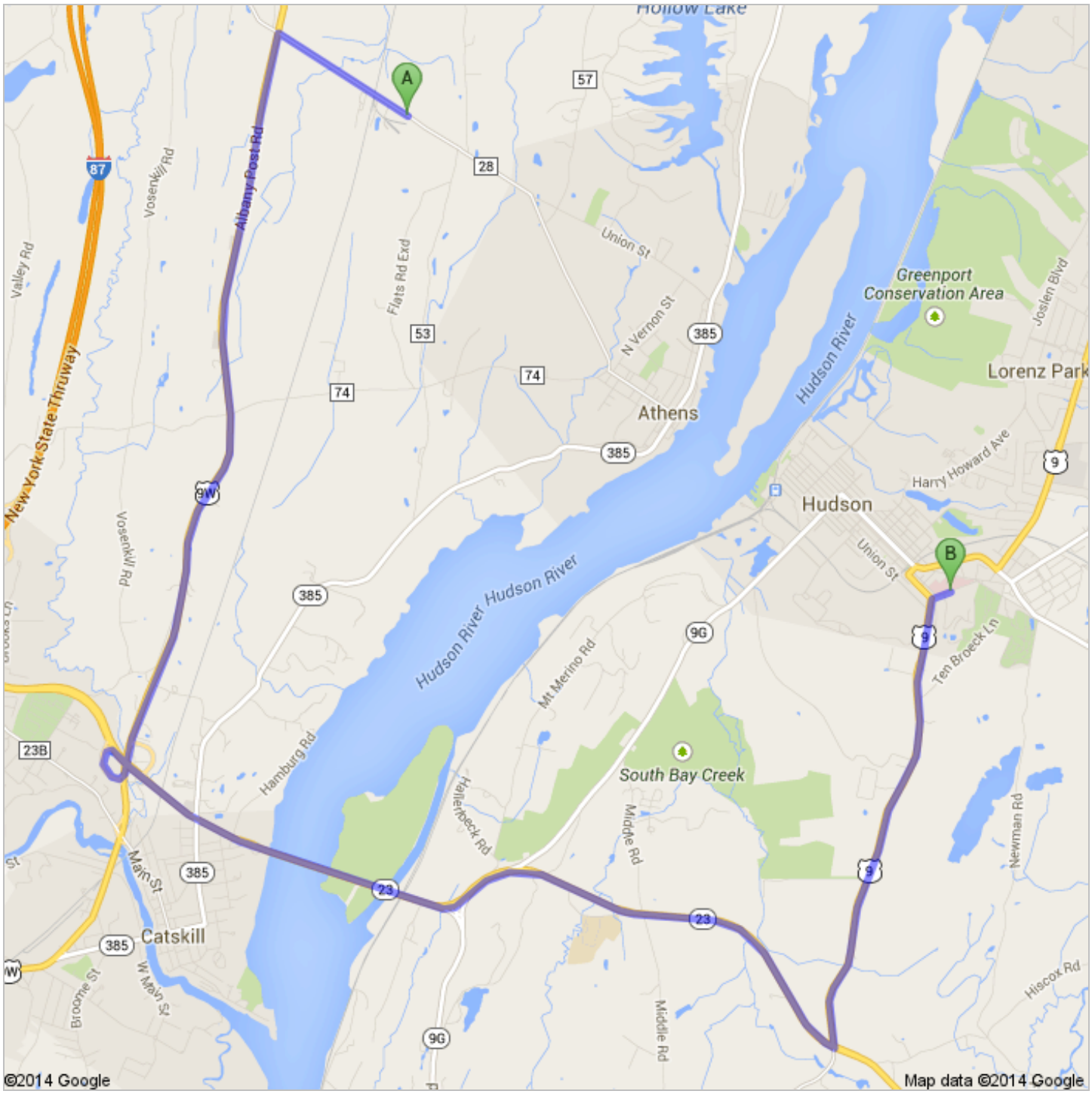
Collect or dispose of all decontamination fluids in accordance with site/project-specific requirements.

6.2.2 Personal Clothing Decontamination

All footwear worn in and around the contamination area will be washed down using soap and water to remove soil or oily residue remnants. If disposable gloves, boots or suits (such as Tyvek® suits) are worn, such are to be removed and disposed in a designated 55-gallon drum or garbage bag onsite for future disposal. Any other clothing that comes in contact with the potentially contaminated material should not be worn more than 24-hours and should be washed prior to wearing again.

2014-08\Reports\Health and Safety Plan_HASP_txt.doc

Directions to Columbia Memorial Hospital: Vigna Lauren MD
71 Prospect Ave, Hudson, NY 12534
13.1 mi – about **18 mins**



Northeast Treaters of NY LLC
796 Schoharie Turnpike, Athens, NY 12015

	1. Head **northwest** on **Schoharie Turnpike** About 1 min	go 0.9 mi total 0.9 mi
9W	2. Turn left onto **US-9W S/Albany Post Rd S** About 5 mins	go 4.3 mi total 5.2 mi
	3. Slight right onto the **NY-23** ramp to **Cairo/Hudson**	go 0.3 mi total 5.5 mi
23	4. Turn right onto **NY-23 E** (signs for **State Highway 23 E**) Partial toll road About 7 mins	go 4.8 mi total 10.3 mi
9	5. Turn left onto **U.S. 9 N** About 4 mins	go 2.7 mi total 13.0 mi
	6. Slight right onto **Prospect Ave** Destination will be on the left	go 0.1 mi total 13.1 mi

Columbia Memorial Hospital: Vigna Lauren MD
71 Prospect Ave, Hudson, NY 12534

APPENDIX I

COMMUNITY AIR MONITORING PLAN (CAMP)

NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
SITE #C420029

COMMUNITY AIR MONITORING PLAN (CAMP)

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the Northeast Treaters of New York, LLC (Northeast Treaters) site located at 796 Schoharie Turnpike, in the Town of Athens, Greene County, New York. This CAMP only applies to the BCP area (the Site), located on the easternmost portion of the Northeast Treaters property, as defined by the executed copy of the Brownfield Cleanup Agreement dated December 31, 2014. The Site is included in the Brownfield Cleanup Program (BCP) as Site #C420029. This CAMP provides the methods and procedures for real-time air monitoring to be implemented during the disturbance of Site soils relating to construction or remedial activities. This CAMP is to be utilized in coordination with the Health and Safety Plan (HASP), Excavation Work Plan (EWP), and Dust Control Plan (DCP) established for the project. Actions and requirements to protect the health and safety of onsite workers from airborne contaminants are addressed in the HASP.

This CAMP provides for real-time air monitoring of particulates at the downwind perimeter of each designated work area when remediation-related ground-intrusive activities, such as excavation or drilling, are implemented at the Site. The CAMP was developed from the New York State Department of Health (NYSDOH) Generic CAMP provided in the DER-10 Technical Guidance for Site Investigation and Remediation. This CAMP provides a measure of protection for the downwind community (potential receptors include residences, businesses, and personnel not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. Contractors should employ Best Management Practices (BMPs) and common sense measures to minimize dust and odors around work areas.

Analytical results of previous sampling investigations conducted at the Site indicate that contamination is restricted to heavy metals (i.e. chromium and arsenic). No volatile organic compounds (VOCs) were detected at or above New York State Department of Environmental Conservation (NYSDEC) unrestricted use soil cleanup objectives (SCOs) in samples collected during the Remedial Investigation and subsequent supplemental sampling events. As such, Site conditions only require particulate monitoring and no VOC monitoring is proposed.

2.0 PARTICULATE MONITORING

Monitoring for particulates will be required during remediation-related ground intrusive activities and will include monitoring the upwind and downwind perimeters of the exclusion zone or work area, at a minimum. The particulate monitoring must use real-time monitoring equipment capable of measuring particulate matter less than ten (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.

As outlined in NYSDEC DER-10 Appendix 1B: Fugitive Dust & Particulate Monitoring, the monitoring equipment must meet, at a minimum, the following performance standards:

a) Object to be measured: dust, mists, aerosols size range: <0.1 to 10 microns;
b) Sensitivity: 0.001 mg/m^3;
c) Range: 0.001 to 400 mg/m^3;
d) Overall accuracy: ± 5% as compared to gravimetric analysis of stearic acid or reference dust;
e) Operating conditions: Temperature: -10 to 50°C;
f) Humidity: 10 to 99% Relative Humidity;
g) Operating Time: 48 hours (fully charged NiCd battery); Automatic alarms are suggested; and
h) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require averaging hardware to accomplish this task.

The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. Calibration will be in accordance with the HASP and the instrument manufacturer's recommendations.

The upwind sampling station will be situated upwind of the largest dust producing activity occurring at the Site at the boundary of the work zone. Similarly, the downwind sampling station will be directly downwind of the largest dust producing activity at the boundary of the work zone.

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

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/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 ug/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for review by the NYSDOH, NYSDEC and Greene County Health Department, if requested.

The sampling locations will be periodically adjusted to account for observed changes in wind direction.

3.0 FORMS FOR MONITORING AND RESPONSE

Air monitoring of particulate concentrations will be documented using the air monitoring form provided in Appendix 1. This form is to be completed on a daily basis and records of this form must be made available for NYSDEC and NYSDOH review upon request.

Response action to observed exceedances will be documented using the form provided in Appendix 2. This form must also be made available for NYSDEC and NYSDOH review upon request.

APPENDIX 1

AIR MONITORING FORM

NORTHEAST TREATERS OF NEW YORK, LLC
TOWN OF ATHENS, NEW YORK

Air Monitoring Form

Name ______________________ **Weather Conditions** ______________________

Date ______________________ **Wind Direction** ______________________

Particulate Concentrations (mg/m^3)

WORK AREA		UPWIND		DOWNWIND	
Time	Concentration	Time	Concentration	Time	Concentration

APPENDIX 2

EXCEEDANCES AND ACTIONS TAKEN

NORTHEAST TREATERS OF NEW YORK, LLC
TOWN OF ATHENS, NEW YORK

Exceedances and Actions Taken

Name _____ **Date** _____

Time _____ **Weather Conditions** _____

Location of Exceedance _____ **Wind Direction** _____

Type of Exceedance:

_____

_____

_____

_____

_____

_____

_____

Action Taken:

_____

_____

_____

_____

_____

_____

_____

APPENDIX J

DUST CONTROL PLAN (DCP)

NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

NORTHEAST TREATERS OF NEW YORK, LLC
ATHENS, NY
SITE #C420029

DUST CONTROL PLAN (DCP)

1.0 INTRODUCTION

This Dust Control Plan (DCP) sets forth dust control methods that will be implemented for various remedial activities including the excavation, handling and consolidation of impacted soils at the Northeast Treaters of New York, LLC (Northeast Treaters) site (Site) in the Town of Athens, Greene County, New York. The DCP follows guidelines provided in the New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigation and Remediation and the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP).

1.1 Site Description & Background

The Northeast Treaters property consists of an approximate 13-acre parcel on the north side of Schoharie Turnpike. For the purposes of the Brownfield Cleanup Program, the Site is defined as an area of approximately 1.68 acres located at the easternmost portion of the Northeast Treaters property. The Site is part of the Athens Industrial Park located east of U.S. Route 9W.

This DCP applies to work to be conducted at the Northeast Treaters Site by the remedial contractor. The subject Site contains soils impacted by arsenic and chromium, at concentrations above NYSDEC Soil Cleanup Objectives, from lumber treatment process and waste management practices.

2.0 SCOPE OF WORK TO COMPLETE SELECTED REMEDY FOR THE SITE

The scope of work to complete the selected remedy for the Site will include the following tasks:

- In-place capping of northern section of existing drip pad with asphalt pavement.
- Construction specific-excavation.
- Constructing a new drip pad over and beyond the remaining portion of existing drip pad.
- Install erosion control measures around areas to be excavated and in consolidation area.
- Stabilize the disturbed soils at all excavation areas.
- Implement erosion control measures throughout Site.
- Limited grading in the immediate vicinity of the process building.
- Implement stormwater plan for construction processes.

3.0 POTENTIAL FUGITIVE DUST EMISSION SOURCES AND CONTROL METHODS PLAN

This DCP will be implemented during excavation, grading, disturbance of soils, and covering of materials. Fugitive dust levels will be monitored in accordance with the site-specific CAMP. Table 1 describes potential dust sources and control methods to be used to suppress dust emissions on or offsite.

TABLE 1		
Potential Dust Source	**Control Method [1]**	**Frequency of Application [2]**
Excavation Areas	Pre-moisten area (if dry) before excavating.	As necessary.
Stockpile Clean Fill	Moisten stockpile by misting.	As needed.
Stockpile Contaminated Soil	Moisten stockpile by misting.	As needed.
Unpaved Roads	Apply water to the road, control run-off from water application. Apply crushed stone to egress and exit area to/from the exclusion zone [3].	As needed and where directed by Engineer. Once before excavation starts, maintain as needed.
Paved Roads (on-site and public roads)	Water flush and vacuum sweep road. Control run-off from water flush.	Once daily or more as needed.
Vehicles	On-Site Speed Limit 10 mph, Post Signs. Properly Tarp Hauling vehicles.	On-going.

[1] An Inspection Checklist for each Potential Dust Source will be kept to record the type of control method used, the frequency of application and comments with regards to the method's effectiveness (see Attachment 1).

[2] The Frequency of Application for those methods that specify a daily application may be increased based on the particulate concentrations that are monitored as required in the Community Air Monitoring Plan (CAMP).

[3] The exclusion zone is identified as the area where contamination is either known or expected to occur and where the greatest potential for exposure exists.

2014-08\Reports\Dust Control Plan

Attachment 1

Self-Inspection Checklist
Fugitive Dust Control Method Log

NORTHEAST TREATERS OF NEW YORK
TOWN OF ATHENS
COUNTY OF GREENE, NEW YORK

Self-Inspection Checklist: Fugitive Dust Control Method Log

Date	Time	Name of Inspector	Weather	Location	Control Methods Employed	Comments (Note Effectiveness, Observed Problems, Complaints and Response Actions)

Source: Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110
(518)456-4900
2014-08/Reports/Dust Control Plan/Attachment 1.doc

APPENDIX K

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

NORTHEAST TREATERS OF NEW YORK, LLC

796 Schoharie Turnpike
Athens, NY 12015

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SCHEDULE OF REQUIRED ACTIONS/CHANGES

ITEM #	DATE	DESCRIPTION OF ACTION/CHANGE	SCHEDULE	PERSON RESPONSIBLE	COMPLETED

CERTIFICATION STATEMENT

Certification Statement: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ **Title:**

Signature: _____ **Date:**

1. GENERAL INFORMATION

1.a Purpose

The purpose of the SWPPP is to identify potential sources of pollution or contamination that originate at this facility, and to select and implement actions which prevent or minimize the release of pollutants into the storm water. The storm water management controls included in the SWPPP focus on providing adequate control of pollutant discharges with practical approaches that utilize readily available techniques, expertise, material and equipment.

The SWPPP is intended to be a flexible, active operations plan to allow incorporation of changes and management practices. As the plan is implemented and methods to improve the plan are found, or as regulations change, revisions to the plan must be made. Revisions to the plan must be approved by management and recorded in all copies of the plan in order to meet the requirements of the storm water permit.

1.b Procedural Requirements

The operator must comply with the following requirements:

- A signed copy of the SWPPP must be retained at the facility.
- The operator must conduct inspections at the facility in order to comply with the permit and this plan. Inspection results may determine modification of this plan.
- The SWPPP will be updated whenever there is a change in design, construction, operation or maintenance which may effect potential pollutants that may enter the storm water discharge.
- A copy of the permit will be kept with this plan
- All records must be maintained for at least one year from the date that the storm water permit expires.

1.c Facility Information

Facility Mgr.	*Scott Crowe*	**Owner Name:**	
Facility Address:	*796 Schoharie Turnpike Athens, NY 12015*	**Owner Address:**	
Facility Tel. #	*(518) 945-2660*		
Primary SIC	*2491*	**NAICS**	*321114*
Latitude	*042-17-15*	**Longitude**	*073-50-30*
Receiving Waters:	*Murderer's Creek*		
Number of Outfalls:	*001*		
Facility Total Acreage:	*13.3*	**Acreage graveled:**	*0.3*
Acreage used for Industrial Activity:	*12.3*	**Acreage paved:**	*9*
Acreage of undisturbed:	*1*	**Acreage roofed:**	*3*
Process Description:	*Wood preservation using Copper Azole and Dricon fire retardant solutions.*		

2. POLLUTION PREVENTION TEAM

Team Leader

Name	*Scott Crowe*
Title	*Production Manager*
Telephone	*(518) 945-2660*
Responsibilities	*Responsible for overall implementation of program. Ensure inspections, sampling and BMPs in use. Determine effectiveness of program. Incorporate changes based upon success or failure of BMPs. May perform inspections, sampling. Performs periodic review of plan.*

Team Members

Name	*Shawn Colwell*
Title	*Lead Treater*
Telephone	*(518) 945-2660*
Responsibilities	*Ensures implementation of plan with employees. May perform inspections, sampling. Monitors BMP effectiveness. Assists with implementing any changes or modifications to plan.*

Name	*Jamie Crowe*
Title	*Lead Supervisor*
Telephone	*(518) 945-2660*
Responsibilities	*Ensures implementation of plan with employees. May perform inspections, sampling. Monitors BMP effectiveness. Assists with implementing any changes or modifications to plan.*

3. DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

3.a Pollutant Information (Inventory of materials that may potentially be exposed to precipitation)

Potential Pollutant	Location of Potential Pollutant Source (Method of storage)	Reason for Potential Pollutant exposure to precipitation*	Management practices to minimize exposure to precipitation	Outfall (Direction of flow)
Copper	*1) Treated Lumber; 2) Drip pad; 3) truck unloading*	*1) Incidental drippage onto yard; 2) Forklift, employee tracking; 3) Spillage*	*1) Ensure drippage has ceased before removing lumber from drip pad; 2) Dedicated forklift or washing procedures; 3) Trained drivers, spill equipment available on trucks, paved unloading area, connections contained.*	*001*
Chrome *Eliminated use in December, 2003*	*1) Treated Lumber;*	*1) Incidental drippage onto yard;*	*1) Lumber comes in dry*	*001*
Arsenic *Eliminated use in December, 2003*	*1) Treated Lumber; 2) Drip pad; 3) truck unloading*	*1) Incidental drippage onto yard;*	*1) Lumber comes in dry*	*001*
Oil	*Forklift, Trucks, Stacker*	*Leakage, breakage, spillage*	*Training, containment, preventative maintenance program, repair work on forklifts done indoors or contained area*	*001*
Diesel Fuel	*Forklifts, truck unloading*	*Spillage while fueling forklifts, unloading fuel into storage*	*Training, containment, preventative maintenance program,) Trained drivers, spill equipment available nearby, paved unloading*	*001*
Gasoline	*Portable Air Compressor*	*1) Incidental drippage onto yard;*	*Training, containment, preventative maintenance program,) Trained drivers, spill equipment available nearby, paved unloading*	*001*
Kerosene	*Not in Use*			
Boric Acid	*Truck unloading, forklift handling, unloading bags into hopper*	*Spillage due to puncture in bag*	*Forklift training, clean up procedures, housekeeping*	*001*

3.b Record Of Significant Leaks/Spills

If a significant leak/spill occurs, (such as a release that equals or exceeds a reportable quantity or if it is a potentially harmful quantity, even though it is below a reportable quantity), then the SWPPP must be modified within 14 calendar days. The modification will include a description of the release and the circumstances leading up to the release. In addition we will review and identify any measures that may be incorporated to prevent a reoccurrence. Any modifications will be added to the SWPPP.

DATE OF SPILL, LEAK	LOCATION	MATERIAL INVOLVED	QUANTITY OF SPILL, LEAK	CAUSE/SOURCE OF SPILL/LEAK	CLEAN UP ACTIVITY
There have been no reportable leaks or spills of hazardous substances in at least the last 5 years.					

1. MEASURES AND CONTROLS

The results of a site assessment indicate that controls are either in place or need to be added to minimize contaminant releases to storm water run off. Housekeeping is one area that can be readily controlled to limit the discharge of wood debris and minimize the generation of dust.

Best Management Practices (BMPs) as well as other controls are used to reduce potential contaminant releases. Some of our controls are as simple as ensuring that we maintain vegetation, such as grass on slopes to prevent soil erosion and keeping outfall areas clean and free of debri.

To ensure that the BMPs and other controls are in use and working, employees are taught about controls in use and periodic inspections are performed.

The measures currently in use or to be implemented at our facility to control contaminant releases are found under section 4.a.

4.a. Effective Pollutant control Options for Timber Product Facilities

Activity	Associated BMPs	In Use	Remarks
Log, Lumber, and other Wood Product Storage Areas (Untreated)	**Divert Storm water around storage areas with ditches, swales and/or berms**	*X*	
	Line storage areas with crushed rock, gravel or porous pavement to promote infiltration, minimize discharge and provide sediment and erosion control	*X*	
	Stack materials to minimize surface area of materials exposed to precipitation	*X*	
	Frequent removal of debris	*X*	
	Use of detention pond for collection of rain events		

Activity	Associated BMPs	In Use	Remarks
Residue Storage Areas (such as untreated sawdust, chips) *This section not applicable at this time, but is being left in due to pending changes in the facility. This area will be completed if cutting of untreated lumber is performed.*	**Divert Storm water around storage areas with ditches, swales and/or berms**		
	Locate storage residues away from drainage pathways and surface waters		
	Avoid contamination of residues with oil, solvents, chemically treated wood, trash, etc.		
	Assemble piles to minimize surface area of materials exposed to precipitation		
	Limit storage time of residues to prevent degradation and generation of leachates		
	Provide collection and treatment of runoff with containment basins, sedimentation ponds and infiltration basins		
	Spray surfaces to reduce windblown dust and residue particles		
	Use of silt fence and rip rap check dams in drainage ways		
	Place materials on raised pads of compacted earth, clay, shale, or stone to collect and drain runoff		
	Cover and/or enclose stored residues to prevent contact with precipitation using silos, van trailers, sheds, roofs, buildings or tarps		
	Limit slopes of storage areas to minimize velocities of runoff which may transport residues		

Activity	Associated BMPs	In Use	Remarks
Loading and Unloading, Material Handling Areas	**Provide diversion berms and dikes to limit runon**	*X*	
	Cover loading and unloading areas (chemicals, diesel, gasoline, etc)	*X*	
	Cover materials entering and leaving areas	*X*	
	Provide good housekeeping measures to limit debris and to provide dust control	*X*	
	Provide paved areas to enable easy collection of spilled materials	*X*	

Activity	Associated BMPs	In Use	Remarks
Wood Preservation Activities	**Extend drip time on drip pad (process area) before moving to storage**	*X*	
	Pave and berm areas used by equipment that has come in contact with treatment chemicals	*X*	
	Dedicate equipment that is used for treatment activities to that specific purpose only to prevent the tracking of treatment chemicals to other areas on site	*X*	
	Locate treatment chemical loading and unloading areas away from high traffic areas where tracking of the chemical may occur.	*X*	
	Provide frequent visual inspections of loading and unloading areas during and after activities occur to identify any spills or leaks needing clean-up	*X*	
	Cover and/or enclose treatment areas	*X*	
	Cover storage areas to prevent contact of treated wood products with precipitation	*X*	*Some treated lumber stored under cover*
	Elevate stored, treated wood products to prevent contact with runon/runoff	*X*	

Activity	Associated BMPs	In Use	Remarks
Chemical Storage Areas	**Provide secondary containment around chemical storage areas**	*X*	
	Provide level gages	*X*	
	Inventory fluids to identify leakage	*X*	
	Locate storage areas away from high traffic areas and surface waters	*X*	
	Develop spill prevention, containment and countermeasure (SPCC) plans and implement	*X*	
	Cover and/or enclose chemical storage areas	*X*	
	Provide containment to allow for recycling of spill and leaks	*X*	

Activity	Associated BMPs	In Use	Remarks
Equipment and/or vehicle maintenance and cleaning	**Provide diversion berms and dikes to limit runon**	*X*	
	Preventative maintenance program (cleaning oil/water separators, catch basins, vehicle mounted drip containment devices)	*X*	
	Minimizing storm water runon and runoff at fueling areas.	*X*	
	Perform all maintenance activities indoors	*X*	
	Cover and/or enclose chemical storage areas (used oil, oil filters, used solvents, etc.)	*X*	
	Locate storage areas away from high traffic areas	*X*	
	Provide containment to allow for recycling of spill and leaks	*X*	*Some in containment, all inside building*

Activity	Associated BMPs	In Use	Remarks
Erosion and Sediment Controls	**Grassed areas to prevent soil erosion**	*X*	
	Shubbery/brush/tree areas to prevent soil erosion	*X*	
	Use of vegetation on sloped areas to prevent sediment run-off	*X*	
	Storm drain inlet protection (Such as gravel, covers)	*X*	
	Sediment Trap (Such as rock, vegetation, etc.)	*X*	

4.b Spill Prevention and Response Procedures

Spill prevention is key to preventing releases. Process controls are in place to minimize the potential for a release and employees are trained on these process controls. All chemical storage tanks are located inside containment areas. The containment areas cannot release any minor spills or drips unless liquid is manually pumped out.

All personnel involved with the handling of hazardous chemicals or waste are trained under 40 CFR 265.16 and 29 CFR 1910.1200. Any large releases will be handled by an outside firm.

All information pertaining to spill prevention and response is located in this facility's contingency plan.

4.c Preventive Maintenance

This facility has a maintenance program. This program includes regular maintenance on all vehicles used on site. Employees have been trained to notify the maintenance department or their supervisor if any vehicles have a leak that needs repair. Daily visual inspections on all tanks and equipment that store hazardous chemicals is performed by our operators to ensure prompt repairs for any leaks that may come in contact with storm water run off.

All information pertaining to preventive maintenance for this facility are kept with the maintenance supervisor. All inspections pertaining to the catch basins, detention pond and outfall are kept with this plan.

4.d Facility Security

Security systems to prevent accidental or intentional entries that could cause a discharge are as follows:

Security Measure	In Use	Remarks	Security Measure	In Use	Remarks
Fencing	*X*		Lighting	*X*	
Secure Chemical Storage Bldg	*X*				

4.e Authorized Non-Storm Water Discharge

Non-storm water discharges related to industrial activity that are authorized are below. Any other non-storm water discharges are not permitted without notification and authorization from the state.

Authorized by Regulation	
Discharges from fire fighting activities	
Fire hydrant flushings	NA
Potable water sources, including water line flushings	Rarely performed
Drinking fountain water	NA
Irrigation drainage	NA
Lawn Water	NA
Routine external building wash downs which do not use detergents or other compounds	Periodic (Every few years)
Routine pavement wash waters where spills have not occurred which do not use detergents or other compounds	Periodic (Every few years)
Air conditioning condensate	Yes, does not discharge off site
Compressor condensate	Yes, does not discharge off site
Uncontaminated springs	NA
Uncontaminated ground water	NA
Foundation or footing drains where flows are not contaminated with processed materials	Yes

4.f Non-storm water discharges

The discharges from this facility are evaluated annually for the presence of non-storm water discharges. The evaluation includes a visual inspection of each outfall during a non-storm event to determine any releases.

Date of Evaluation	Were any non-stormwater discharges detected at the outfalls?	Printed Name of Person Who conducted Evaluation
December 6, 2004	*Visual of outfall, None Detected*	*Jane House*

2. SITE EVALUATIONS/SAMPLING/MONITORING

Site evaluations/sampling and/or monitoring are performed based upon this facility's storm water permit.

5.a Sampling Requirements

Based upon our permit we are required to perform the following sampling. Sampling results are located after this plan.

Frequency of Sampling	Outfalls to Sample	Type of Sampling	Analytical Requirements	
4/times per year	#001	Grab and Composite	Grab Sample	Oil and Grease pH BOD5 COD TSS Total Arsenic Total Copper Total Chromium
			Composite Sample	BOD5 COD TSS Total Arsenic Total Copper Total Chromium

5.b Evaluations

Daily visual inspections are performed around the yard, maintenance shop and treating plant for any signs of contamination. Weekly documented inspections of the drip pad is performed.

Monthly facility yard sweeping to reduce treated lumber pieces from going into basins.

Monthly catch basin inspection and annual clean out of basins along with flushing of the drainage lines

Detention pond inspection and maintenance. Inspections are performed twice a year which include mowing, debris/litter removal, vegetation. Sediment will be removed when necessary.

Annual facility compliance evaluations are completed. These include an inspection of the outfalls and a determination on whether our plan is effective. During this evaluation we will determine if any changes to the plan need to be made. Results of these evaluations are located under Appendix “D”.

5.c Site Plan

A copy of this facility’s site plan is located under Appendix “B”. Information provided on the site plan is as follows:

- Chemical Storage
- Lumber (Treated and Untreated)
- Residue (Untreated)
- Maintenance
- Outfalls
- Fueling Stations
- Loading/Unloading Areas
- Run Off Flow Direction

3. EMPLOYEE TRAINING

Employees that work at this facility will be trained periodically on *Storm Water Pollution Prevention*. Training will include, at a minimum, the following information:

- What is Storm Water Pollution
- Sediment Erosion
- Treated Lumber, Ensuring No Drippage Before Leaving The Drip Pad
- Housekeeping
- Best Management Practices in Use
- Forklifts - Oil/hydraulic leaks, fueling procedures
- General Clean Up of Spills/Leaks
- Maintenance Work
- Visual Inspections of Equipjment
-

All personnel involved with the handling of hazardous waste have been (or will be) trained under 40 CFR 265.16. All employees have received some training under 29 CFR 1910.1200 concerning the chemicals located on site and basic spill/leak response procedures.

7. FORMS

Forms used for evaluations and inspections are as follows:

STORM WATER POLLUTION PREVENTION
ANNUAL FACILITY SITE COMPLIANCE INSPECTION

NORTHEAST TREATERS OF NEW YORK, LLC

Has your SWPPP been updated to include current Non-Storm Water Discharge Evaluation results?	**YES**	**NO**	**N/A**
Has your SWPPP been amended for any new construction that would affect the site map or drainage conditions at the facility?	**YES**	**NO**	**N/A**
Has your SWPPP been amended for any changes in facility operations that could be identified as new source areas for contamination of storm water?	**YES**	**NO**	**N/A**
Are there any materials at the facility that are handled, stored or disposed in a manner to allow exposure to storm water that are not currently addressed in your SWPPP?	**YES**	**NO**	**N/A**
Are outside yard and perimeter areas kept neat and orderly?	**YES**	**NO**	**N/A**
Are regular housekeeping inspections made?	**YES**	**NO**	**N/A**
Do you see spots, pools, puddles, or other traces of oils, grease, or other chemicals on the ground?	**YES**	**NO**	**N/A**
Are particulates on the ground from industrial operations or processes being controlled?	**YES**	**NO**	**N/A**
Do you see any leaking equipment, pipes or containers?	**YES**	**NO**	**N/A**
Do drips, spills, or leaks occur when materials are being transferred from one source to another?	**YES**	**NO**	**N/A**
Are drips or leaks from equipment or machinery being controlled?	**YES**	**NO**	**N/A**
Are clean up procedures used for spilled solids?	**YES**	**NO**	**N/A**
Are absorbent materials (floor dry, kitty litter, etc.) regularly used in certain areas to absorb spills?	**YES**	**NO**	**N/A**
Can you find discoloration, residue, or corrosion on the roof or around vents or pipes that ventilate or drain work areas?	**YES**	**NO**	**N/A**
Is the detention pond well kept, cut, drainage areas free of excess vegetation build up?	**YES**	**NO**	**N/A**
Have the storm drainage lines been flushed? (Required annually)	**YES**	**NO**	**N/A**
Do the catch basins have excess sediment build up and need clean out?	**YES**	**NO**	**N/A**
Are Best Management Practices implemented to reduce or eliminate contamination of storm water from source areas at the facility?	**YES**	**NO**	**N/A**
Are Best Management Practices adequately maintained?	**YES**	**NO**	**N/A**
Are there significant changes that will have to be made to your SWPPP to correct any inadequacies that the plan may have to effectively control a discharge of contaminated storm water from your facility?	**YES**	**NO**	**N/A**

COMMENTS

Certification Statement: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Inspector_____ Date of Inspection_____

Facility Manager_____ Date_____

NORTHEAST TREATERS OF NEW YORK
MONTHLY FACILITY INSPECTION

DATE_____ **INSPECTOR**_____

		DATE SCHEDULED	REMARKS
1. The treated wood storage areas have been swept.	**Yes No**		
2. No sign of treated wood debris in treated wood storage areas.	**Yes No**		
3. All catch basin grates clean, free of excess debris	**Yes No**		
4. Any catch basins have excess sediment and require cleaning?	**Yes No**		
5. Were the storm drainage lines flushed this month? *(Minimum annually)*	**Yes No**		
6. Is the detention pond clean, free of wood and debri?	**Yes No**		
7. Was the detention pond vegetation cut this month? *(Minimum of 2 times yearly)*	**Yes No**		
8. Are you readily able to see the drainage pipes into the detention pond and at the outfall?	**Yes No**		
9. Any signs of chemical contamination around the outside of the treating plant?	**Yes No**		
10. Any chemical storage outside of the treating plant?	**Yes No**		
11. Dricon unloading bin is clean, not chemical left outside.	**Yes No**		
12. Any signs of chemical contamination around the outside of the maintenance shop?	**Yes No**		
13. Any chemical storage outside of the maintenance shop?	**Yes No**		
14. Any signs of contamination in the yard?	**Yes No**		

DAILY RAINFALL REPORT

***YEAR*_____** ***LOCATION*_____**

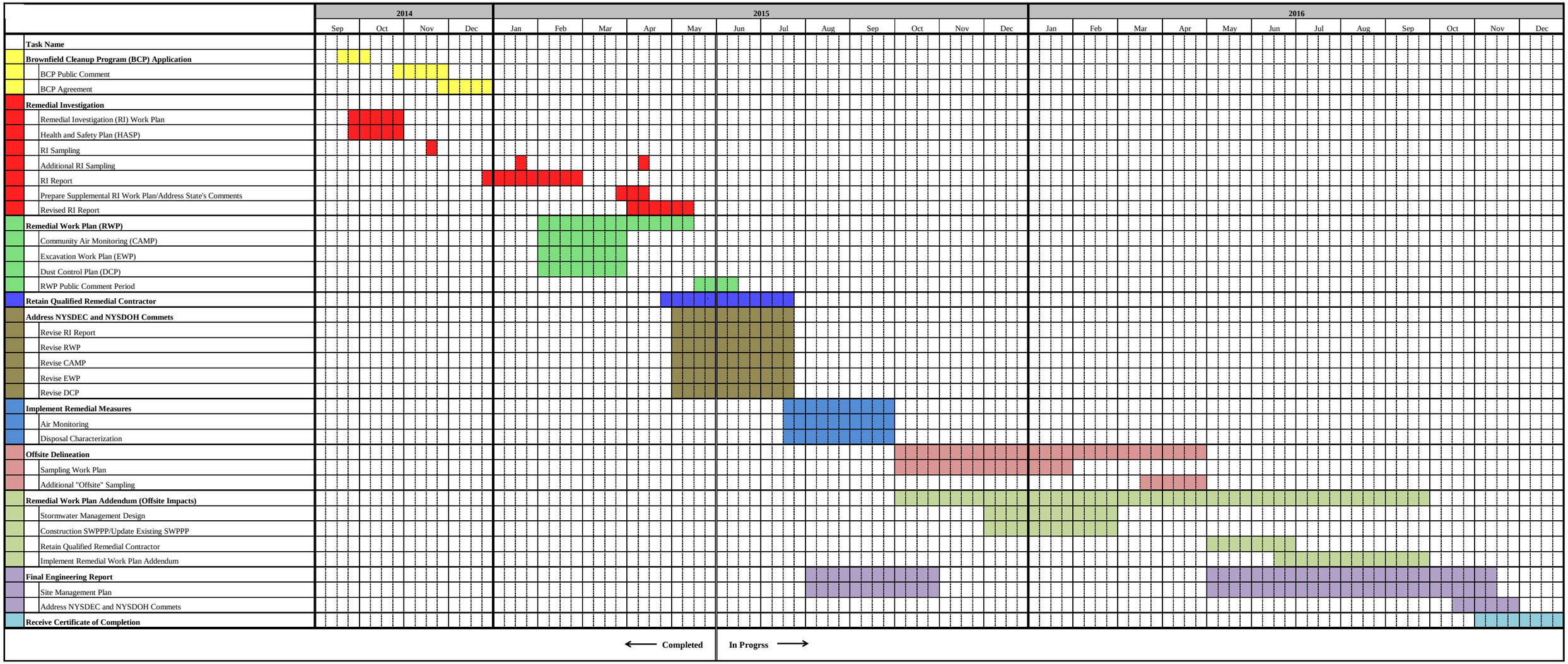
Date/Time	*Initials*	*Rainfall Amount*	*Yr To Date Rainfall Amount (Inches)*		*Date/Time*	*Initials*	*Rainfall Amount*	*Yr to Date Rainfall Amount (Inches)*

APPENDIX L

PROJECT SCHEDULE

Project Schedule (BCP #C420029)
Northeast Treaters of New York, LLC
Athens, New York
(as of 5/27/2015)

	Task Name
	Brownfield Cleanup Program (BCP) Application
	BCP Public Comment
	BCP Agreement
	Remedial Investigation
	Remedial Investigation (RI) Work Plan
	Health and Safety Plan (HASP)
	RI Sampling
	Additional RI Sampling
	RI Report
	Prepare Supplemental RI Work Plan/Address State's Comments
	Revised RI Report
	Remedial Work Plan (RWP)
	Community Air Monitoring (CAMP)
	Excavation Work Plan (EWP)
	Dust Control Plan (DCP)
	RWP Public Comment Period
	Retain Qualified Remedial Contractor
	Address NYSDEC and NYSDOH Commets
	Revise RI Report
	Revise RWP
	Revise CAMP
	Revise EWP
	Revise DCP
	Implement Remedial Measures
	Air Monitoring
	Disposal Characterization
	Offsite Delineation
	Sampling Work Plan
	Additional "Offsite" Sampling
	Remedial Work Plan Addendum (Offsite Impacts)
	Stormwater Management Design
	Construction SWPPP/Update Existing SWPPP
	Retain Qualified Remedial Contractor
	Implement Remedial Work Plan Addendum
	Final Engineering Report
	Site Management Plan
	Address NYSDEC and NYSDOH Commets
	Receive Certificate of Completion



← **Completed** | **In Progrss** →

S:\Sterling\Projects\2014 Projects\Northeast Treaters of New York - Athens NY - 2014-08\Supporting Documents\Project Schedule\Gantt Chart.xlsx