FEBRUARY 2020

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

New York State Department of Environmental Conservation

Division of Environmental Remediation

Glenmere Lake Property

Site No. 336071

Final Engineering Report

D&B Engineers and Architects, P.C.

3150-20 - Final Engineering Report Cover (Glenmere Lake Property) September 3, 2019 3:29 PM

FINAL ENGINEERING REPORT

GLENMERE LAKE PROPERTY
PINE HILL ROAD
CHESTER, ORANGE COUNTY, NEW YORK
NYSDEC SITE NUMBER: 336071

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK

Prepared by:

D&B ENGINEERS AND ARCHITECTS, P.C.
330 CROSSWAYS PARK DRIVE
WOODBURY, NEW YORK
(516) 364-9890

FEBRUARY 2020

CERTIFICATIONS

I, Matthew DeVinney, P.E., am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Design was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Design.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Design and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Matthew DeVinney, P.E. of 330 Crossways Park Drive, Woodbury, NY, am certifying as Owner's Designated Site Representative for the site.

085452	2-27-20	Matthew R DeVinney
NYS Professional Engineer #	Date	Signature

FINAL ENGINEERING REPORT

GLENMERE LAKE PROPERTY
PINE HILL ROAD
CHESTER, ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

List of Appendices

List of Appendices (continued)

List of Drawings

List of Figures

List of Tables

LIST OF ACRONYMS

ACM	Asbestos-Containing Material	PCM	Phase Contrast Microscopy
AST	Aboveground Storage Tank	PCO	Proposed Change Order
CAMP	Community Air Monitoring Plan	PID	Photoionization Detector
CY	Cubic Yard	QAO	Quality Assurance Officer
D&B	D&B Engineers and Architects, P.C.	QA/QC	Quality Assurance/Quality Control
DER	Division of Environmental Remediation	RAO	Remedial Action Objective
DUSR	Data Usability Summary Report	RAWP	Remedial Action Work Plan
EC	Engineering Control	RCRA	Resource Conservation and Recovery Act
EDD	Electronic Data Deliverable	RD	Remedial Design
ELAP	Environmental Laboratory Approval Program	RFI	Request for Information
FER	Final Engineering Report	ROD	Record of Decision
FO	Field Order	RTAM	Real-time Aerosol Monitor
GPS	Global Positioning System	SAP	Sampling and Analysis Plan
HA	Herpetological Associates, Inc.	SEL	Severe Effect Level
HASP	Health and Safety Plan	SMECP	Storm Water Management for Erosion Control Plan
IC	Institutional Control	S/MMP	Site/Materials Management Plan
ICL	Industrial Code Rule	SCO	Soil Cleanup Objective
IRM	Interim Remedial Measure	SMP	Site Management Plan
Land	Land Remediation, Inc.	SOP	Site Operations Plan
MS/MSD	Matrix Spike/Matrix Spike Duplicate	SVOC	Semivolatile Organic Compound
NYS	New York State	TAL	Target Analyte List
NYSDEC	New York State Department of Environmental Conservation	TCL	Target Compound List
NYSDOH	New York State Department of Health	TCLP	Toxicity Characteristic Leaching Procedure
NYSDOL	New York State Department of Labor	TSP	Tank Specialists Plus
NYCRR	New York Codes, Rules and Regulations	USEPA	United States Environmental Protection Agency
PBS	Petroleum Bulk Storage	UST	Underground Storage Tank
PCBs	Polychlorinated Biphenyls	VOC	Volatile Organic Compound

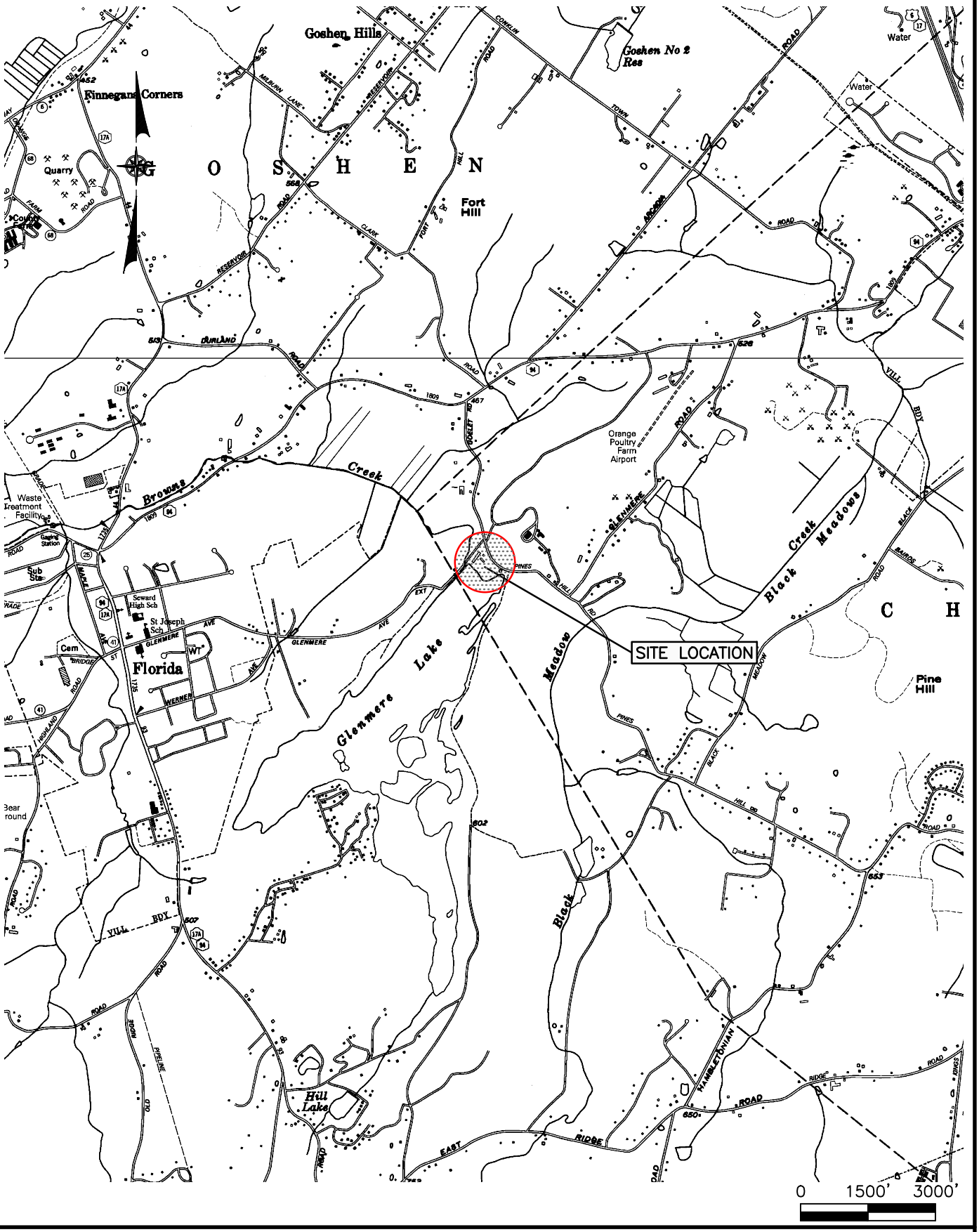
1.0 BACKGROUND AND SITE DESCRIPTION

The New York State Department of Environmental Conservation (NYSDEC) entered into a contract with Land Remediation, Inc. (Land) in October 2017, to remediate the Glenmere Lake Property (NYSDEC Site No. 336071), hereinafter referred to as the "Site". The Site is a 9.9-acre property located on Pine Hill Road adjoining the northeast end of the 350-acre Glenmere Lake in the Town of Chester, Orange County, New York. A site location map is provided as ***Figure 1-1***. The Site was remediated in accordance with the June 2017 Remedial Design, including plans and specifications. Based on discussions with Orange County, who is the Site owner, the most likely future use of the Site is as a passive use public park.

The Site is identified as Section 16, Block 1, Lot 3.12 on the Orange County Tax Map. The Site is situated on an approximately 9.9-acre area bounded by Pine Hill Road to the north; Glenmere Lake to the south; undeveloped land owned by Orange County to the east; and Glenmere Avenue Extension to the west. A Site Plan is provided as ***Figure 1-2***. The boundaries of the Site are fully described in the metes and bounds survey provided in ***Appendix A***. The owner of the Site parcel at the time of issuance of this Final Engineering Report (FER) is Orange County, New York. This FER focuses on the contract limits of the remediation, which is an approximate 2-acre portion of the Site which is included in the Remedial Design.

This FER was prepared by D&B Engineers and Architects, P.C. (D&B), as Project Engineer on behalf of NYSDEC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 "Technical Guidance for Site Investigation and Remediation," dated May 2010 and the guidelines provided by the NYSDEC.

An electronic copy of this FER with supporting documentation is included as ***Appendix B***.



D&B ENGINEERS AND ARCHITECTS, P.C.

GLENMERE LAKE PROPERTY
ORANGE COUNTY, NEW YORK

SCALE: 1" = 3,000'

SITE LOCATION MAP

FIGURE 1-1

F:\3150-20\dwg\3150-20-FIG 1-1.dwg, 5/24/2019 10:48:56 AM, dbcadd

SITE BOUNDARY
GATE
GLENMERE LAKE ESTATES
GATE
SITE BOUNDARY
ORANGE COUNTY PROPERTY
GRAVEL PARKING AREA
PINE HILL ROAD
CHAIN LINK FENCE
BUILDING REMAINS
SITE BOUNDARY
WOODS ROAD
8
PUMP HOUSE
5
6
1–N
OPEN FIELD
BUILDING REMAINS
GLENMERE LAKE EXTENSION
DAM
4
7
DIRT DRIVE
1–MIDDLE
FOUNDATION REMAINS
3
2
BEAVER LODGE
WOODS ROAD
EDGE OF SHORE
1–SOUTH
GLENMERE LAKE
SITE AREA=9.9076 ACRES
AREA=431,576 S.F.
DUMPING GROUND
EDGE OF SHORE
EDGE OF SHORE
GLENMERE LAKE
0
80'

SOURCE: ALTA / ACSM LAND TITLE SURVEY, WILLIAM D. YOUNGBLOOD LAND SURVEYING , P.C, APRIL 21, 2008

D&B ENGINEERS AND ARCHITECTS, P.C.

GLENMERE LAKE PROPERTY
ORANGE COUNTY, NEW YORK

SITE PLAN

SCALE: 1" = 80'

FIGURE 1-2

F:\3150-20\dwg\3150-20-FIG 1-2.dwg, 5/9/2019 11:38:57 AM, kalesius

2.0 SUMMARY OF REMEDIAL ACTIONS

2.1 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this Site, as listed in the March 2011 Record of Decision (ROD):

2.1.1 Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

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

2.1.2 Sediment RAOs

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent releases of contaminants from sediments that would result in surface water levels in excess of Class AA surface water criteria, which is the classification of Glenmere Lake.

- Prevent impacts to biota due to ingestion/direct contact with contaminated sediments that would cause toxicity or bioaccumulation through the aquatic food chain.

- Restore sediments to background conditions to the extent feasible.

2.2 Description of Selected Remedy

The site was remediated in accordance with the remedy selected by the NYSDEC in the ROD dated March 2011. The remedy was refined through a Pre-Design Investigation and remedial design program, with the final remedy specified in the Remedial Design dated June 2017.

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

1. Demolition and off-site disposal of the remnants of Buildings 1 through 7, which represent a source of lead contamination, and removal and off-site disposal of solid waste present at the Site. The remnants of Buildings 1 through 7 also contain asbestos, so the demolition was performed in the manner required by applicable laws and regulations.

2. Excavation and off-site disposal of soils located in the western portion of the Site which exceeded the Unrestricted Use soil cleanup objectives (SCOs) for the primary contaminants of concern, which are lead and arsenic. The SCOs for lead and arsenic are 63 mg/kg and 13 mg/kg, respectively. By using these indicator compounds, other contaminants detected at the Site were also addressed. A total of approximately 6,485 tons of soil were excavated. Confirmatory soil samples were collected. Clean fill and topsoil which meets the requirements of 6 NYCRR 375-6.7(d) was then brought in to replace the excavated soil and restore the Site to its approximate original contours. Disturbed areas were re-vegetated with appropriate native species. An effort was made to avoid removing large trees. Where removal could not be avoided, trees were replaced in accordance with Department requirements.

3. Removal (excavation or dredging) and off-site disposal of contaminated sediments from the small embayment to the southeast of the remnants of Buildings 1 through 7. A total of approximately 394 tons of wetland soil and lake sediment were excavated. Excavated sediments were replaced with an appropriate substrate and the area restored to pre-excavation contours. Disturbed areas were re-vegetated with locally native nursery stock. All remediation and restoration activities complied with the substantive technical requirements of 6 NYCRR Parts 608 and 663.

4. Due to the presence of the endangered Northern Cricket Frog, remedial activities were consistent with 6 NYCRR Part 182 and applicable guidance, including Guidelines for Reviewing Projects for Potential Impacts to the Northern Cricket Frog, June 2009. Efforts were made to reduce potential impacts to Northern Cricket Frogs and their habitat during construction, and to maximize the value of cricket frog habitat during restoration, including: performing intrusive work during specific time periods during the year; performing sweeps for individuals and installation of an exclusion drift fence prior to intrusive work; and worker education and training. All restored areas will be inspected for a period of at least one year following the Department's determination of substantial completion of the site remediation by the contractor. During this time the restored areas will be inspected for erosion, settlement and growth of plantings and grass. Areas will be repaired and restored as directed by the Department.

3.0 INTERIM REMEDIAL MEASURES

In July and August 2010, an Interim Remedial Measure (IRM) was implemented by the site owner to remove several petroleum bulk storage tanks from the Site. Four underground storage tanks (USTs) and one aboveground storage tank (AST) were removed.

The contents of the tanks were removed prior to excavating the tanks. Approximately 470 gallons of oil-contaminated water was generated and disposed off-site.

Soil excavated to access the USTs was disposed off-site due to the presence of lead that was documented during the remedial investigation. Petroleum-contaminated soil, which was identified by staining and odors, was encountered below a vaulted 5,000-gallon UST (UST-3). Petroleum-impacted soil was excavated from an area measuring approximately 620 square feet down to bedrock, which was present at about six to eight feet below grade. Petroleum-contaminated soil was not encountered in the vicinity of any other tanks. A total of 204.5 tons of soil, including non-hazardous lead- and petroleum-contaminated soil, was disposed off-site.

Petroleum-related contamination (i.e., volatile organic compounds and semi-volatile organic compounds) was not detected in soil samples collected at the base of the tank excavations. Soil samples collected from the base of the excavations for UST-6 showed elevated levels of arsenic. The IRM did not address this subsurface metal contamination.

The information and certifications made in the March 2011, D&B Interim Remedial Measure Construction Completion Report were relied upon to prepare this report and certify that the remediation requirements for the Site have been met.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved June 2017 Remedial Design (RD) for the Glenmere Lake Property, revised by two field orders, four proposed change orders (which will be incorporated into one final change order) and three requests for information (RFI) responses approved by NYSDEC. All deviations from the Remedial Design are noted below.

4.1 Governing Documents

Remedial construction activities included the following: pre-mobilization work such as a pre-construction meeting and submission of written plans; mobilization to the Site; site preparation; building demolition and excavation; off-site transportation and disposal of demolition debris, soil and sediment; endpoint sample collection; backfilling with clean fill and topsoil, where appropriate; and demobilization. As described in Section 4.2, the work was completed in phases to accommodate the life cycle of the Northern Cricket Frog, an endangered species in New York present at Glenmere Lake, with the first phase being the wetland work (wetland soil and lake sediment excavation) and the second phase being the upland work (building demolition and upland soil excavation). Plans prepared by the remedial contractor, Land Remediation, Inc. (Land) as part of the remedial construction were reviewed and approved by D&B, the Project Engineer, prior to implementation. The following is a description of the governing documents for the remedial construction activities.

4.1.1 Health & Safety Plan (HASP)

The Health and Safety Plan (HASP) was prepared by Land as part of the remedial construction. Site personnel performing remedial activities were required to read and comply with the requirements of the HASP.

The HASP addressed all appropriate federal, state and local regulatory requirements necessary to undertake and successfully complete the remedial construction. The HASP was

prepared in accordance with 29 Code of Federal Regulation (CFR) 1910.120 and the Remedial Design, and included the following:

- Health and safety organization;
- Site description and hazard assessment;
- Training requirements;
- Medical surveillance requirements;
- Work areas/site control procedures;
- Standard operating procedures;
- Personal protective equipment requirements;
- Personal hygiene and decontamination protocols;
- Equipment decontamination procedures;
- Air monitoring requirements;
- Emergency equipment/first aid requirements;
- Emergency responses/contingency procedures;
- Confined space entry procedures;
- Spill containment plan;
- Heat and cold stress;
- Record keeping requirements; and
- Community protection plan

All remedial work performed under this Remedial Action was in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Contractor complied with the Health and Safety Plan for all remedial and invasive work performed at the Site.

4.1.2 Quality Assurance/Quality Control (QA/QC) Plan

The QA/QC Plan was prepared by Land as part of the remedial construction and describes the specific policies, objectives, organization, functional activities and quality assurance/quality control activities designed to achieve the project data quality objectives for environmental sampling. In accordance with the Remedial Design, the QA/QC Plan included the following:

- Organizational chart, including a designated QA Officer (QAO).
- Data quality objectives for the site.
- A chart reflecting types of samples, approximate number of samples, matrices, holding times, analytical protocols and anticipated QA/QC samples to be collected or analyzed.
- Specific limits of concern for each analyte for each matrix to be sampled.
- The matrix specific method detection limit that must be obtained for each of the analytes and matrices listed.
- The analytical laboratory to be used and evidence of their certification for all subcategories of solid and hazardous waste under the NYSDOH ELAP.
- Criteria for laboratory selection and audits.
- Criteria for field sampling audits.
- Record maintenance and archive methods.
- Review and checking procedures for the sampling plan and the analytical results reporting.
- Copy of the QAO's resume and training certificates.

4.1.3 Sampling and Analysis Plan (SAP)

The SAP was prepared by Land as part of the remedial construction and provides a comprehensive description of the procedures to be used for collection and analysis of environmental samples. In accordance with the Remedial Design, the SAP includes procedures for sample collection, labeling, preservation, storage, Chain of Custody requirements and shipping;

sample analysis including analytical methods and quality assurance/quality control; and data reduction, validation and reporting.

4.1.4 Soil/Materials Management Plan (S/MMP)

The overall quantity of soil and lake sediments excavated was approximately 6,879.5 tons, including 394 tons of wetland soil and lake sediments, and 6,485.5 tons of upland soil.

Excavation of wetland soil and lake sediment was completed from the perimeter of the wetland/lake excavation area using a Link-Belt 350 Excavator, which is a long reach excavator equipped with Global Positioning System (GPS) grade control. The GPS was utilized during excavation to demonstrate that the required excavation depths were achieved. As further outlined in Section 4.1.5 below, a dual turbidity curtain was installed within Glenmere Lake outside of the sediment excavation area to prevent sediment disturbed during excavation of wetland soil and shallow sediment from migrating into the lake. Excavated material was placed directly in the sediment staging area. The staging area was a lined, bermed, water-proof pad adjacent to the wetland area that was accessible to receive trucks for loading. The removed material was blended with Calciment®, a hybrid of quicklime and Portland Cement to solidify the material and ensure the material met the paint filter test for off-site disposal. In order to reach some of the wetland/lake excavation limits, temporary crane mats were placed to allow the excavator to enter the wetland/lake excavation area. In general, excavation progressed from upgradient (wetland excavation area) to downgradient (lake sediment excavation area). During the wetland soil and lake sediment excavation work, the stockpiled material was moved from the sediment staging area adjacent to the wetland area to an area constructed in the upland adjacent to the access road due to a delay in approval for off-site disposal of the removed material (refer to Proposed Change Order No. 1 described in Section 4.10).

Excavation of upland soil was completed using a 350 sized excavator with GPS grade control, and an off-road, low-ground pressure, articulated dump truck to move soil around the Site. Contaminated soil was excavated, placed in the articulated dump truck and hauled to the soil staging area. Contaminated soil was staged on the northwest corner of the upland excavation area.

The soil below the staging area was the last to be excavated, thereby minimizing the potential for cross-contamination. In general, the upland excavation started at the southwest corner of the Site, and moved progressively to the east and north to minimize carrying excavated soils over areas which had already been excavated. Tree stumps were grubbed during excavation activities. However, stumps with contaminated soil within the roots were disposed off-site.

Excavated soil and sediment was loaded from the staging areas into triaxle dump trucks. Plastic sheeting was placed on the construction road at the loading location. Trucks were loaded on top of the plastic sheeting. The sheeting was swept clean with a broom prior to trucks departing the loading area, to prevent tracking of soil onto the construction road and ultimately the public roadway. The plastic sheeting was replaced as necessary. Trucks then exited the Site at the stabilized construction entrance, and the street was cleaned periodically to prevent the tracking of soil into the surrounding neighborhood. Stockpiles of excavated soil/sediment were covered with plastic sheeting during non-working hours. Air monitoring, construction fencing and normal work hours were implemented in order to ensure nuisance free performance in compliance with all applicable Federal, State and local laws and regulations. Dust control was not required during soil/sediment excavation and disposal as visible dust was not observed and dust readings were not elevated during air monitoring. All excavation activities were overseen and documented by a qualified environmental professional provided by D&B.

As discussed in Section 4.3.1, the buildings were demolished and disposed using controlled demolition procedures with asbestos in place. Debris piles not associated with the building demolition were sorted by Land for disposal or recycling. Building and debris piles were direct loaded for off-site disposal. Dust control and air monitoring during building demolition are discussed in Section 4.3.1.

Additional information on soil/material management is provided in the December 2017 Remedial Action Work Plan (RAWP) prepared by Land as part of the remedial construction.

4.1.5 Storm Water Management for Erosion Control Plan

The Storm Water Management for Erosion Control Plan (SMECP) was prepared by Land as part of the remedial construction and describes the storm water management systems to be implemented during the project, including turbidity curtains, sediment and erosion control facilities and water storage facilities. The SMECP also includes procedures for handling water generated during the project, and methods to prevent storm water from entering excavations or contacting stockpiled materials. The erosion and sediment controls for all remedial construction were performed in accordance with New York State (NYS) Guidelines for Urban Erosion and Sediment Control and the site-specific SMECP.

A frog exclusion drift fence was installed around the perimeter of the limits of remediation, including the downgradient perimeter along Glenmere Lake, and served as a silt fence to prevent potentially contaminated runoff from migrating off-site. During the upland excavation work, excavated soils brought to the staging area were typically loaded out by the end of each day. Temporary access roads were used to stabilize on-site vehicle transportation routes, staging and parking areas.

Land secured open excavations with construction fence and berms to minimize stormwater infiltration. When gullies were observed, the gullies were filled to original grade and the cause of the erosion addressed. As directed in Field Order No. 2 (refer to Section 4.10), bio-degradable erosion control fabric was installed following the completion of the upland excavation and restoration in areas where grass did not grow, the growth was sparse, or where gullies had formed.

During the wetland soil and lake sediment excavation, temporary stockpiles of excavated materials were placed on bermed plastic liners and covered with plastic liners to prevent erosion. The sediment staging area was bermed with 10mm HDPE plastic liner over hay bales. Storm water which collected in the staging area was regularly pumped out into on-site poly storage tanks for subsequent off-site transportation and disposal.

Sedimentation controls consisting of a dual turbidity curtain were installed within Glenmere Lake outside of the sediment excavation area. The objective of the curtain was to prevent sediment disturbed during excavation of wetland soil and shallow sediment from migrating into the lake. The dual turbidity curtain was comprised of two rows of Type 1 – elastic still-water turbidity curtain, with 6-inch boom, deployed with ballast chain and supplemental anchorage as necessary.

4.1.6 Community Air Monitoring Plan (CAMP)

A Community Air Monitoring Plan (CAMP), including concentration-based action levels, was implemented as part of remedial construction and is described in the HASP. Land was responsible for implementing all air monitoring activities during ground intrusive activities. The plan complied with the requirements of the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan.

The CAMP included monitoring for particulates (i.e., dust) and volatile organic compounds (VOCs). Four (4) on-site monitoring stations (one upwind and three downwind) were utilized for the CAMP, each equipped with a TSI DustTrak-II particulate meter for dust, and a RAE Systems MiniRAE 3000 Photoionization Detector (PID) with a 10.6 eV lamp for VOCs. The data was transmitted wirelessly to an on-site computer and preset alarms alerted Land if levels of particulates or VOCs exceeded action levels. Action levels comply with the requirements of the NYSDOH Generic Community Air Monitoring Plan. CAMP monitoring station locations were not fixed and were modified to adjust for different construction activities and wind direction.

Particulate and VOC concentrations were monitored in real-time and integrated over a period of 15 minutes (or less) for comparison to the action levels. Real-time monitoring was conducted under the following conditions:

- If the downwind real-time aerosol monitor (RTAM) particulate level exceeded the upwind (background) level by 100 ug/m^3 for the 15-minute period, or if airborne dust was observed leaving the work area, then dust suppression techniques were employed;

- Work continued using dust suppression techniques as long as the downwind RTAM particulate level remained less than 150 mg/m^3 greater than the background level. If the level exceeded this value, work was stopped, and site work was reevaluated;

- If total organic vapor levels exceeded 5 ppm above background for the 15-minute average at the downwind perimeter, work activities were temporarily halted and monitoring continued. If levels readily decreased (per instantaneous readings) below 5 ppm above background, work activities resumed with continued monitoring;

- If downwind total organic vapor levels persisted at levels in excess of 5 ppm above background but less than 25 ppm, work activities were halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities resumed provided that the total organic vapor level 200 feet downwind or half the distance to the nearest potential receptor or residential/ commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average. If the downwind total organic vapor level was 25 ppm above the upwind concentration, activities were shut down; and

- All readings were recorded.

4.1.7 Contractors Site Operations Plans (SOPs)

D&B reviewed all plans and submittals for this remedial project (i.e. those listed above plus contractor and subcontractor submittals) and confirmed that they were in compliance with the RD. All remedial documents were submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.8 Community Participation Plan

Land notified the site neighbors of the remedial actions prior to the start of work. NYSDEC released a public fact sheet on the NYSDEC website on January 3, 2018 announcing the beginning of the cleanup of contamination at the Site. Signage about the project was also posted on construction fencing surrounding the Site throughout remedial activities.

4.2 Remedial Program Elements

4.2.1 Contractors and Consultants

D&B, the certifying Engineer of Record, was retained by NYSDEC to perform remedial inspection activities during construction. As Project Engineer, D&B reviewed submittals and RFIs prepared by the remedial contractor, Land Remediation, Inc. In addition, D&B served as asbestos project monitor during building demolition. D&B retained the following subcontractors to assist with remedial inspection:

- Herpetological Associates, Inc.: Herpetological services related to protection of the Northern Cricket Frog.
- In Focus Environmental Consulting: Wetland restoration consulting services, including wetland inspections.

NYSDEC retained Land to perform the remedial construction. Land performed soil and sediment excavation and disposal, implemented the CAMP and collected waste characterization and endpoint sampling. Land retained the following subcontractors for on-site project work:

- Classic Environmental, Inc: Asbestos abatement activities associated with the controlled demolition of the dilapidated buildings.
- Cloverleaf Nurseries, Inc.: Seeding and planting, and wetland monitoring services.
- S.Y. Kim Land Surveyor, P.C.: Land surveying services.
- Tank Specialists Plus: UST cleaning and disposal services.

4.2.2 Site Preparation

A pre-construction meeting was held with NYSDEC and all contractors on November 1, 2017. Documentation of agency approvals required by the RD is included in ***Appendix C***. Other non-agency permits relating to the remediation project are provided in ***Appendix D.*** All SEQRA

requirements and all substantive compliance requirements for attainment of applicable natural resource or other permits were achieved during this Remedial Action.

Special work requirements were incorporated into the RD to protect the Northern Cricket Frog and its habitat, with work phasing designed to accommodate the life cycle of the Cricket Frog. The RD required that all intrusive work completed within the designated wetland and lake remediation area be completed between December 1 and March 15, and upland work be completed between June 1 and August 15. Based on the timing of the contract between NYSDEC and Land, the project was scheduled to begin with the wetland/lake remediation.

Land mobilized to the Site on January 17, 2018. Following mobilization, clearing and grubbing activities were completed, including the pruning and removal of trees. The aboveground portion of removed trees were later chipped and used as mulch for plantings. However, several large logs were preserved for later use as habitat during restoration as requested by NYSDEC. Stumps with roots and soil were disposed during the soil excavation program as described in Section 4.3.2. In accordance with the RD, the NYSDEC also selected and marked trees to protect during construction, as feasible. Temporary facilities and utilities including a construction fence with gates, staging and storage areas, office trailers, portable toilets, electrical power and lighting, stabilized construction entrance and roadway and CAMP equipment were established for use. Electrical power was provided by generators during the first phase of work. A NYSDEC-approved project sign was erected at the project entrance and remained in place during all phases of the Remedial Action.

Prior to initiation of excavation activities, Land accessed the Site to perform an initial site survey, including a mark-out of site utilities, site features and excavation areas. As described in Section 4.1.5, soil erosion and sediment controls were installed around the work area, including the frog exclusion drift fence on land (serving as a silt fence) and turbidity curtain on water. The drift fence was installed along the access road and wetland area for the first phase of the project. In addition, plastic liner over hay bales were placed around the soil and sediment staging area.

Land completed the wetland/lake intrusive work prior to the end of the March 15 Cricket Frog work window. Land secured the Site for the shutdown period between the two Cricket Frog work windows, including decontamination of equipment, general housekeeping, and locking gates. Land conducted weekly inspections of the Site during the shutdown period to ensure all erosion and sediment controls were maintained, and the security of the Site.

Land re-mobilized to the Site on June 27, 2018 to begin the upland phase of remedial construction. The frog exclusion drift fence was completed around the perimeter of the remediation area to encompass the entire upland work area. Additional clearing and grubbing was completed as necessary. A dedicated power drop was supplied by Orange and Rockland Utilities to provide power to the trailers.

As indicated in Section 4.2.1, D&B contracted with Herpetological Associates, Inc. (HA) to support the protection of the Northern Cricket Frog during construction. These protection measures included the following prior to each phase of work: preparing a Cricket Frog encounter plan for the workers and providing training to the work crew; performing sweeps of the work areas to capture and remove any animals; and inspecting and approving the construction of the frog exclusion drift fence. As discussed further in Section 4.10, HA inspected any adjustments that were required in the configuration of the drift fence, and any intrusive work completed outside the Cricket Frog work windows. Reports provided by HA on their completed protection measures are provided in ***Appendix E***.

4.2.3 General Site Controls

The Site and trailer area was surrounded by a fence. The fences and gates were closed and locked when no activities were occurring on Site. Camera surveillance of the Site, including the equipment, materials, supplies, personnel, incidentals and office trailers, was provided throughout the performance of the work.

All personnel and visitors were required to sign in and sign out with Land upon arrival and departure. Warning signs were placed on the perimeter fence to alert passersby and discourage trespassing.

As discussed in Section 4.3 of this FER, all excavated soil was fully characterized prior to any excavation activities. However, soil was inspected/screened by D&B to ensure that the soil was appropriate for the intended disposal facility before being shipped off-site by truck. D&B signed all soil disposal manifests on behalf of NYSDEC, and a log of waste transportation including soil quantity, location of excavated soil, manifest number and truck license plates was maintained by D&B personnel. Land was responsible for maintaining records of all particulate and VOC levels on-site throughout Site activities as part of the CAMP.

Decontamination of equipment by pressure washing was performed on a decontamination pad prior to departure from the Site, as needed. Excess decontamination water was maintained on-site and properly disposed off-site. A stabilized construction pad was installed at the exit of the Site. Decontamination was performed outside the excavation area, in the vicinity of the Site entrance.

As discussed in Section 4.1.4, care was taken so that contaminated and non-contaminated soil were not mixed. Soil was stockpiled on a sediment staging pad during the wetland/lake excavation, and within the contaminated area during the upland excavation. Excavated soil and sediment were loaded onto trucks for off-site disposal from these staging areas. Stockpiles were surrounded with suitable erosion controls and covered by plastic sheeting during non-working hours to prevent windblown dust or erosion.

4.2.4 Nuisance Controls

Techniques employed during excavation and other material handling activities at the Site to minimize dust generation and the tracking of soil off-site included:

- Installing stabilized construction entrance at Pine Hill Road;

- Tarping/covering containers;
- Restricting vehicle speeds to 10 miles per hour;
- Covering of stockpiles;
- Minimization of material stockpiling on-site; and
- Installing drift fence and turbidity curtain.

In order to minimize the potential for dust or soil traveling off-site, trucks were loaded on top of plastic sheeting placed at the soil loading location. The sheeting was swept clean with a broom prior to trucks departing the loading area. Trucks transporting soil off-site were covered prior to leaving the Site. Trucks exited the Site at the stabilized construction entrance at Pine Hill Road, and the street was cleaned periodically to prevent tracking of soil into the surrounding neighborhood. To the greatest extent possible, truck arrival times were staggered to minimize staging of trucks. When necessary, trucks queued alongside the work trailers on Glenmere Avenue.

Drivers of trucks leaving the Site with soil were instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. Land prepared a traffic control plan, which detailed the routing of truck traffic during the course of the work, including ingress and egress to the Site and off-site truck routes to and from the Site. Generally, trucks were routed via Pine Hill Road and Galet Road to Route 94, and then east to Route 17A, limiting the driving of trucks through residential neighborhoods. Land was responsible for coordinating with the off-site transportation and disposal companies to ensure that transport times were coordinated in the most efficient way and off-site queuing was limited.

There were no complaints made by the public to D&B or Land during any phase of the remedial construction.

4.2.5 CAMP Results

As discussed in Section 4.1.6, Land maintained a Community Air Monitoring Program (CAMP) during all ground intrusive work, including one upwind and three downwind stations

each equipped with a RAE Systems MiniRAE 3000 PID for volatile compounds, and a TSI DustTrak-II particulate meter for dust. Action levels were provided in Section 4.1.6. Copies of all field data sheets relating to the CAMP are provided in electronic format in ***Appendix F***. Action levels were not met or exceeded during remedial construction.

4.2.6 Reporting

Daily reports were prepared by D&B and provided electronically by e-mail to NYSDEC by the end of the following day. Daily reports included: weather and site conditions; work objective for the day; personnel on-site with arrival and departure times; equipment on-site; health and safety information; remedial construction activities performed including samples collected and problems encountered; a trucking summary; and photographs. Monthly reports were not required. The daily reports for the project are included in electronic format in ***Appendix G.***

Weekly progress meetings were also held during construction between Land, D&B and NYSDEC. These meetings included a discussion of health and safety, progress of construction in accordance with the project schedule, and potential problems or changes and their impact on cost or schedule. Meeting minutes were prepared by D&B, and distributed to Land and NYSDEC for review and approval. The approved meeting minutes are included in ***Appendix G***.

4.3 Contaminated Materials Removal

The following contaminated media was removed as part of the remedial construction:

- The remnants of dilapidated Buildings 1 through 7 were demolished and disposed off-site, several of which exhibited asbestos-containing materials and lead-based paint. All debris piles present within the remediation area were also disposed off-site. A description of the building demolition and disposal is provided below in Section 4.3.1.

- Upland soil impacted by metals was excavated and disposed off-site to depths ranging from approximately 0.5 foot to 8 feet below grade. The overall quantity of upland soil excavated was approximately 6,485 tons. As discussed in Section 2.2, the SCOs for the contaminants of concern for this project were the Unrestricted Use SCOs, including 63

mg/kg for lead and 13 mg/kg for arsenic. A description of the soil excavation and disposal is provided below in Section 4.3.2.

- Wetland soil and lake sediment impacted by metals was excavated and disposed off-site to depths ranging from approximately 0.5 foot to 2 feet below grade or lake bottom. The overall quantity of wetland soil and lake sediment excavated was approximately 394 tons. For wetland soil, the SCOs for the contaminants of concern (lead and arsenic) were the Unrestricted Use SCOs, same as for the upland soil. For lake sediment, the SCOs were the sediment Severe Effect Levels (SELs), including 110 mg/kg for lead and 33 mg/kg for arsenic. A description of the wetland soil and lake sediment excavation and disposal is provided below in Section 4.3.2.

- One UST was discovered during the soil excavation, and was cleaned, excavated and disposed off-site. A description is provided in Section 4.3.3.

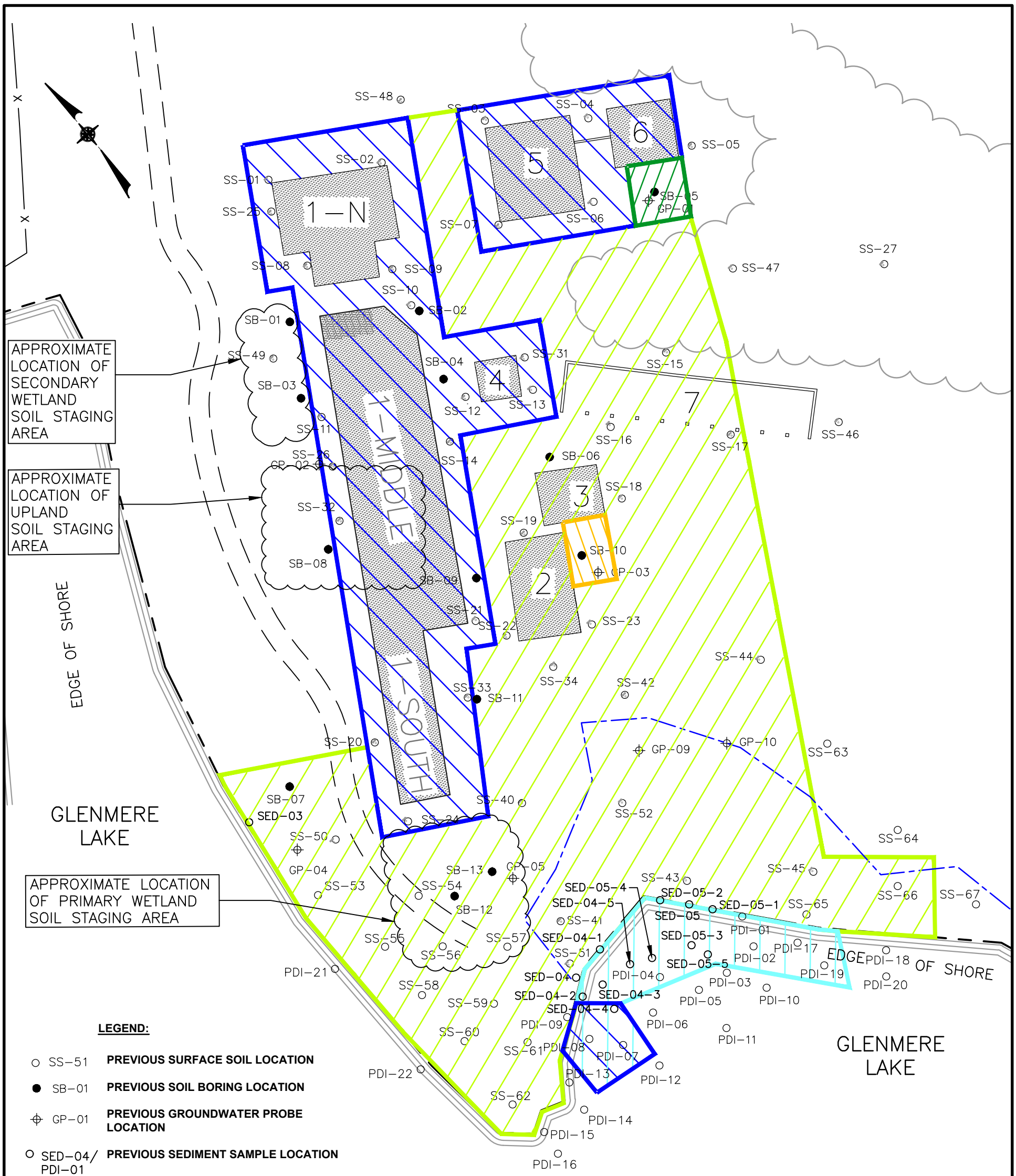
- Water from soil/sediment staging pads and excavations was containerized and disposed off-site. A description of the water collection and disposal is provided in Section 4.3.4.

An Excavation Plan depicting where excavations were performed, and the former location of the dilapidated buildings, is provided as ***Figure 4-1***. All deviations from the area of soil/sediment excavation specified in the RD are discussed in Section 4.10. The following subsections describe each medium or waste stream removed.

4.3.1 Building Demolition

As depicted on ***Figure 4-1***, the scope of work included the demolition and off-site disposal of dilapidated Buildings 1 through 7, including their concrete foundations. Buildings 1-North, 1-Middle, 1-South, 5 and 6 were previously determined to contain asbestos-containing material (ACM). These same buildings as well as Building 4 were also previously determined to contain lead-based paint. Neither ACM nor lead-based paint were identified in Buildings 2, 3 and 7.

Land utilized the services of a subcontractor (Classic Environmental, Inc.) to perform the controlled demolition of the structures. The buildings were dilapidated and unsafe to enter, and were condemned by Orange County in a letter dated September 12, 2017 (included in ***Appendix D***). The New York State Department of Labor (NYSDOL) issued variance 18-0637 on June 12, 2018 to allow for disposal of concrete as non-ACM. The variance was subsequently



LEGEND:

- SS-51 — **PREVIOUS SURFACE SOIL LOCATION**
- SB-01 — **PREVIOUS SOIL BORING LOCATION**
- GP-01 — **PREVIOUS GROUNDWATER PROBE LOCATION**
- SED-04/ PDI-01 — **PREVIOUS SEDIMENT SAMPLE LOCATION**
- **MAXIMUM EXTENT OF WETLAND AREA ADJACENT TO SHORELINE OF LAKE**
- **SITE BOUNDARY**
- **DESIGN LIMITS OF EXCAVATION TO 0.5 FOOT DEPTH**
- **DESIGN LIMITS OF EXCAVATION TO 1 FOOT DEPTH**
- **DESIGN LIMITS OF EXCAVATION TO 2 FOOT DEPTH**
- **DESIGN LIMITS OF EXCAVATION TO 5 FOOT DEPTH**
- **DESIGN LIMITS OF EXCAVATION TO 8 FOOT DEPTH**
- 2 — **FORMER LOCATION AND ID NUMBER OF DILAPIDATED BUILDINGS**

SOURCE: ALTA / ACSM. LAND TITLE SURVEY, WILLIAM D. YOUNGBLOOD LAND SURVEYING , P.C, APRIL 21, 2008

D&B ENGINEERS AND ARCHITECTS, P.C.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
GLENMERE LAKE PROPERTY

EXCAVATION PLAN

0 40'

FIGURE 4-1

F:\3150-20E\3150-20E-FIG 4-1 - rev 3.dwg, 5/24/2019 10:41:08 AM, dbcadd

amended to use water without surfactant for wetting of debris to protect the Northern Cricket Frog. The variance and amendment are also included in ***Appendix D***. With the exception of the methods covered under the variance, all of the asbestos abatement activities were performed in accordance with the provisions of the Contract Documents and the New York State Department of Labor's Industrial Code Rule (ICR) 56.

Asbestos Project Monitoring and Air Sampling Technician activities were performed by D&B under direct contract to NYSDEC, including inspection services and the collection of air samples for asbestos by Phase Contrast Microscopy (PCM). D&B's project monitoring is summarized in the Asbestos Abatement Closeout Report provided in ***Appendix H***, including the air monitoring results. As indicated in the Asbestos Abatement Closeout Report, asbestos concentrations did not exceed the United States Environmental Protection Agency (USEPA) clearance level of 0.01 fibers per cubic centimeter (f/cc). Land also performed the CAMP during building demolition as described in Section 4.1.6. As indicated in Section 4.2.5, Action levels were not met or exceeded during remedial construction. The asbestos closeout documentation provided by Land and Classic is provided as ***Appendix I***.

To prepare for the demolition activities, Classic established an exclusion zone around the buildings to be demolished with orange snow fencing, asbestos and lead hazard caution tape and warning signs. Classic mobilized a trailer-mounted decontamination trailer with hot and cold running water, showers, clean room, equipment room and posting board upon which company licenses and air monitoring results were posted. Classic excavated a trench around the buildings, and lined the trench with polyethylene sheeting to control any wastewater generated while wetting the building materials during demolition. Land was granted permission by the Village of Florida to draw water from Glenmere Lake for dust control on the project. Classic utilized a tanker truck and trash pump to draw water from Glenmere Lake to continuously wet the building materials during demolition and material handling activities.

Building demolition was performed by a 350-size excavator with mechanically operated bucket and thumb attachment. Building materials were continuously wetted, systematically removed, stockpiled, and processed into smaller pieces for transportation and disposal. Once

processed, the building waste materials were wetted again, and loaded into trailers for off-site disposal, lined with 6-mil polyethylene sheeting. Note that the concrete slabs were removed for all buildings. For Building 1-North which had a basement, foundation walls were removed to a depth of 2 feet below grade. The Contractor also removed all debris piles with suspect ACM within the limits of the project area. Following demolition, approximately 2 inches of soil was scraped with an excavator bucket around the foundations of the buildings. Soil located within the dust suppression water containment area was also scraped clean, and included with the asbestos waste. In addition, any areas where visible demolition debris remained were scraped clean. The scraped soil was included with the asbestos waste for disposal.

The wastes were segregated for disposal. The types of wastes included asbestos waste (building materials, debris piles and scraped soil), and clean concrete. The concrete slabs/foundations from buildings previously identified as containing ACM were decontaminated prior to disposal to remove any residual asbestos. Information regarding waste disposal is provided below in Section 4.3.1.1.

4.3.1.1 Building Demolition Waste Disposal Details

As described above, lead-based paint was previously identified in most of the buildings. To determine if the building waste should be classified as a hazardous waste, Land and Classic collected representative waste classification samples from the buildings prior to demolition in accordance with ASTM E-1908. The building materials were determined to be non-hazardous for lead based on toxicity characteristic leaching procedure (TCLP) analysis. Therefore, all building materials, with the exception of concrete, were disposed as asbestos waste. Analytical results are provided in ***Appendix J***.

Building demolition activities were completed between July 5 and July 25, 2018. ***Table 4-1*** shows the total quantities of each category of material removed from the Site and the disposal locations.

Table 4-1
Building Demolition Waste Volumes and Facilities

Disposal Facility	Disposal Facility Address	Waste Category	Weight of Waste Removed (Tons)
Ontario County Landfill	1879 Route 5 and 20 Stanley, NY 14561	Asbestos Waste (building materials, debris piles, scraped soil)	469.40
E. Tetz & Sons, Inc.	63 Cemetery Rd Middletown, NY 10940	Clean Concrete	486.44

Footnotes:
Total weight for each facility determined from manifests and weight tickets.

One transporter company, Classic Environmental, Inc., was responsible for the trucking of building demolition waste under Part 364 Permit number 5A-718. Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in ***Appendix K.*** Manifests and bills of lading are included in asbestos closeout documentation in ***Appendix I.***

4.3.2 Soil and Sediment

As shown on ***Figure 4-1***, the scope of work included the excavation and off-site disposal of upland soil, wetland soil and lake sediment. ***Figure 4-1*** depicts the planned locations and extent of the excavations, with depths ranging from 0.5 foot to 8 feet below grade in the upland excavation area, and from 0.5 foot to 2 feet below grade or lake bottom in the wetland/lake excavation area.

The extent of the excavation area was revised during construction activities. As-built drawings of the final remedial excavation areas, stamped by a licensed land surveyor, are included as ***Drawing 1*** for the wetland/lake area, and ***Drawing 2*** for the upland area. Drawings are provided at the end of this section of the report. These drawings provide elevations following excavation, as well as the final excavation depths achieved below original grade. Note the excavation area was significantly expanded due to detections of lead and/or arsenic in endpoint soil samples at concentrations above Unrestricted Use SCOs, primarily in the upland area. In some areas, there was a reduction in the excavation area based on field conditions, such as the presence of bedrock.

Endpoint sample results and actions taken due to exceedances of Unrestricted Use SCOs are discussed in Section 4.4, and deviations from the RD are discussed in Section 4.10. The following summarizes the anticipated volume of excavation in the RD compared to the actual volume of excavation completed during construction:

- Wetland/Lake Area: 325 cubic yards (cy) anticipated, and 339 cy excavated
- Upland Area: 2,150 cy anticipated, and 4,020 cy excavated.

Disposal details are provided below in Section 4.3.2.1.

4.3.2.1 Soil and Sediment Disposal Details

Land collected five waste characterization samples during construction for their selected soil disposal facility, Hazleton Creek Properties. Three samples were collected from stockpiled soil in February 2018. Due to volume of soil generated, two additional waste characterization samples were collected in July and August 2018. In accordance with the requirements of Hazleton Creek, the samples were analyzed for the following:

- VOCs;
- Semivolatile organic compounds (SVOCs);
- Priority pollutant metals; and
- Polychlorinated biphenyls (PCBs).

The February 2018 samples also included TCLP metals analysis to ensure that the soil was non-hazardous. A summary of the samples collected to characterize the waste, and associated analytical results are summarized in ***Appendix J.*** Note that a TCLP lead concentration of 213 mg/l was detected in waste characterization sample GL-WC-02 collected in February 2018, exceeding the Resource Conservation and Recovery Act (RCRA) Maximum Concentration of Contaminants for Toxicity Characteristic level of 5.0 mg/l. Since this was an anomalous result compared to the other samples and historical data, the sample was re-processed and analyzed by the laboratory at

Land's request. The analysis showed all samples to be non-hazardous. All of the data, including the hazardous TCLP lead result and historical TCLP lead sample results from previous investigations, was compiled in a waste profile and sent to Hazleton Creek Properties for approval. Hazleton Creek Properties accepted the soil and sediment from the Site for disposal as non-hazardous material. Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in ***Appendix K.***

Wetland soil and lake sediment was removed from the Site between January and March 2018 and upland soil between July and August 2018. ***Table 4-2*** shows the total quantities of each category of material removed from the Site and the disposal locations. Note that ***Table 4-2*** also includes soil excavated as part of deviations to the RD as described in Section 4.10 (i.e. additional excavation due to endpoint soil sample results). Five transporter companies were responsible for the trucking of all soil. These companies and their Part 364 permit numbers are as follows: Nickabellas Trucking Corp. (NJ-950), Valiant Contracting, LLC (NJ-896), Justin Xpress LLC, (NJ-1065), Cedar Hill Trucking, Inc. (4A-314) and Vega JC Trucking, LLC (NJ-972).

Table 4-2
Soil Disposal Volumes and Facilities

Disposal Facility	Disposal Facility Address	Waste Category	Weight of Waste Removed (Tons)
Hazleton Creek Properties	282 South Church Street, Hazleton, PA 18201	Upland Soil, Non-Hazardous	6,376
Hazleton Creek Properties	282 South Church Street, Hazleton, PA 18201	Wetland Soil and Lake Sediment, Non-Hazardous	394
Ontario County Landfill	1879 Route 5 and 20 Stanley, NY 14561	Tree Stumps and Attached Soil, Non-Hazardous	109
Totals	--	--	6,879

Footnotes:
Total weight for each facility determined from manifests and weight tickets.

Manifests and bills of lading are included in electronic format in ***Appendix L.*** Due to the additional excavation completed, the total weight of soil disposed during construction was 6,879 tons compared to the anticipated weight of 4,241 tons from the RD. Note that Hazleton Creek

Properties did not accept the tree stumps from the Site. Ontario County Landfill accepted the tree stumps and attached soil for disposal based on the waste characterization data discussed above.

4.3.3 Underground Storage Tanks

During upland soil excavation activities, one abandoned UST was encountered on July 31, 2018 at an approximate depth of 0.5 foot below grade immediately adjacent to the southeast corner of Building 1-South, as documented in the daily reports provided to the NYSDEC and attached to this report as ***Appendix G***. The surveyed location of the identified UST is depicted on ***Drawing 2***. Land observed that the tank contained a liquid sludge with a petroleum odor. Land moved the tank to a containment pad and contacted Tank Specialists Plus (TSP) to clean the tank. TSP arrived the same day on July 31, 2018 and determined that the tank was a 1,000-gallon waste oil UST with approximately 15-20 gallons of waste oil. TSP cut, pumped out and cleaned the tank. Following the UST cleaning activities, the UST interiors were inspected and observed to be free of sludge/residual oil, and Land loaded the UST on the TSP truck for off-site disposal. UST closure documentation from TSP is provided in ***Appendix M***.

Upon the removal of the UST, the surrounding soil was inspected for evidence of contamination, such as staining or odors and soil was screened with a photoionization detector (PID) for the presence of VOCs. Some staining and petroleum odor were observed beneath the UST with elevated PID readings. Land called in a spill to NYSDEC, and was issued Spill No. 1804677. Petroleum impacted soil immediately around the UST that was not part of the RD was excavated. Note that excavation was completed to bedrock below the tank and to the north, west and south sides. Following excavation, a total of 5 additional endpoint soil samples were collected around the tank location. Documentation sampling is discussed in Section 4.4. Spill No. 1804677 was subsequently closed, as documented in ***Appendix M***.

It should be noted that the UST did not appear to be registered with the NYSDEC. A NYSDEC Petroleum Bulk Storage (PBS) registration application form was completed by D&B and submitted to NYSDEC in a letter dated May 24, 2019. UST closure documentation is provided in ***Appendix M***.

4.3.3.1 UST Disposal Details

One UST was cleaned on July 31, 2018 by TSP. Approximately 15-20 gallons of non-hazardous petroleum product (waste oil) was taken to TSP and ultimately disposed at Luzon Environmental Services at 1246 Glen Wild Road, Woodridge, NY. The tank was disposed of as scrap metal by TSP. The soil excavated from immediately surrounding the UST was sampled for VOCs, SVOCs, priority pollutant metals and PCBs for waste characterization, and the soil was disposed of as petroleum contaminated soil at Hazleton Creek Properties. The total soil volume removed is included in the totals in the soil disposal discussion in Section 4.3.2. The waste characterization analytical results are summarized in ***Appendix J***.

4.3.4 Water

Water which drained from the sediment removed from Glenmere Lake was captured in the material pad sump and transferred to the on-site poly storage tank for proper characterization and off-site disposal. In addition, storm water which collected in the soil staging area was regularly pumped into the storage tank. Although large scale dewatering of the Site was not required to complete the excavation, localized dewatering was required in several areas of the Site where groundwater entered open excavations. These areas included the Building 1-North basement and the 5-foot depth and 8-foot depth excavation areas, which are depicted on ***Drawing 2***. Water pumped from these areas was also placed in the on-site poly storage tank for subsequent off-site transportation and disposal.

4.3.4.1 Water Disposal Details

Land collected one waste characterization sample from the on-site poly storage tank during construction for their selected water disposal facility, Tradebe Environmental Services, LLC. In accordance with the requirements of Tradebe, the sample was analyzed for Target Analyte List (TAL) metals, PCBs, chemical oxygen demand (COD) and pH. The analytical results are provided in ***Appendix J.*** The data was compiled in a waste profile and sent to Tradebe for approval. Tradebe

accepted the water from the Site for disposal as non-hazardous construction water. Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in ***Appendix K.***

Water from the Site was disposed off-site in March and August 2018. ***Table 4-3*** shows the total quantities of each category of material removed from the Site and the disposal locations. Tradebe Trans., LLC (Part 364 Permit No. CT-048) was responsible for the transportation of all water. Manifests and bills of lading are included in electronic format in ***Appendix L.***

Table 4-3
Water Disposal Volumes and Facilities

Disposal Facility	Disposal Facility Address	Waste Category	Volume of Waste Removed (Gallons)
Tradebe T&R of Bridgeport, LLC	50 Cross Street, Bridgeport, CT 06610	Construction Water, Non-Hazardous	11,300
Tradebe T&R Northeast, LLC	136 Gracey Avenue, Meriden, CT 06451	Construction Water, Non-Hazardous	12,000
Totals	--	--	23,300

Footnotes:
Total volume for each facility determined from manifests.

4.4 Remedial Performance/Documentation Sampling

Upon reaching the final excavation depths, endpoint samples were collected in accordance with the RD and NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, as well as Land's December 2017 RAWP. The endpoint samples were collected by Land from the sidewalls and base of the excavation to confirm that cleanup objectives had been achieved. Samples in the upland area were collected using a disposable polyethylene scoop. For wetland soil and lake sediment, the excavator was utilized to reach the sampling locations guided by GPS equipment, and collected from the excavator bucket using scoops. Where slumping occurred in underwater excavation areas in the wetland and lake sediment, the sidewall samples were collected from the base of the excavation at the perimeter.

Each excavation area of different depth for both the wetland/lake and upland areas was considered a separate excavation area for determining the sampling frequency. In accordance with DER-10, endpoint samples were collected at the following frequency:

- For excavation areas up to 300 feet in perimeter, one sample was collected from the top of each sidewall for every approximately 30 linear feet of sidewall and one sample was collected from the excavation bottom for every approximately 900 square feet of bottom area.

- For excavation areas greater than 300 feet in perimeter, one sample was collected from the top of each sidewall for every approximately 100 linear feet of sidewall and one sample was collected from the excavation bottom for every approximately 2,500 square feet of bottom area.

Based on the excavation extent in the RD, a total of 27 endpoint samples (8 bottom and 19 sidewall samples) were collected in the wetland/lake area and 63 endpoint samples (27 bottom and 36 sidewall samples) were collected in the upland area. The locations of all endpoint samples are depicted on ***Drawing 1*** for the wetland/lake area and ***Drawing 2*** for the upland area. Endpoint samples were collected for laboratory analysis of arsenic and lead by United States Environmental Protection Agency (USEPA) Method 6010. The three sidewall and one bottom sample collected from the 8 foot excavation upland area (G.L.-B(8.0)-1A, G.L.-SW(8.0)-1A, G.L.-SW(8.0)-2A and G.L.-SW(8.0)-3A) were also analyzed for VOCs by USEPA Method 8260 due to observed petroleum odors in the excavation. Five additional endpoint samples were also collected on each side and below the UST that was discovered and removed during remedial activities (see Section 4.3.3). The 5 endpoint samples (UST-N, UST-S, UST-E, UST-W and UST-B) were analyzed for VOCs, SVOCs by USEPA Method 8270 and PCBs by USEPA Method 8082. All data were compared to the Unrestricted Use SCOs. In addition, lake sediment samples were compared to the sediment Severe Effect Levels (SELs). Tables summarizing all endpoint sampling are included in ***Appendix N***, and all exceedances of SCOs are highlighted. ***Table N-1*** in ***Appendix N*** provides the wetland/lake area endpoint sample data, and ***Table N-2*** provides the upland area data.

A QA/QC plan and Sampling and Analysis Plan (SAP) describing sampling procedures and field documentation were prepared by Land (see Sections 4.1.2 and 4.1.3). One blind duplicate and one matrix spike/matrix spike duplicate (MS/MSD) sample was submitted for every 20

endpoint samples collected. All endpoint samples were submitted to Chemtech of Mountainside, New Jersey, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory. In addition, D&B obtained 15 split endpoint soil samples from Land for quality control purposes, including 5 samples from the wetland/lake sediment area and 10 samples from the upland area. These split samples were analyzed for lead and arsenic by Eurofins/Spectrum Analytical of Agawam, Massachusetts, a NYSDOH ELAP certified laboratory. One of the split samples was from the 8-foot upland excavation area and included VOC analysis. The split sample results are included in ***Appendix N***.

Data Usability Summary Reports (DUSRs) were prepared by Land's third party data validator, Environmental Data Services, Inc., for all data generated in this remedial performance evaluation program. These DUSRs are included in ***Appendix N***, and associated raw data is provided electronically in ***Appendix O.*** Land submitted all data to the NYSDEC in EQuIS electronic data deliverable (EDD) format, and the data was accepted by NYSDEC

As presented on ***Table N-1*** in ***Appendix N***, arsenic and lead were detected at concentrations below their respective SCOs and SELs in the endpoint samples collected from the wetland/lake area, with the exception of bottom endpoint soil sample GL-SED-21B (Sample 21). This sample, located in the wetland area with a design excavation depth of 0.5 foot, exhibited a lead concentration of 121 mg/kg, above the Unrestricted Use SCO of 63 mg/kg. D&B and NYSDEC directed Land to conduct additional excavation of 0.5 foot in a 20 foot by 20 foot area centered on Sample 21. Three additional bottom endpoint samples were also collected (Samples 21A, 28 and 29), one within the additional excavation at a total depth of 1 foot and two to the west of Sample 21 to ensure the cleanup was complete in that area. The three additional samples exhibited lead and arsenic below SCOs.

As presented on ***Table N-2*** in ***Appendix N***, lead and/or arsenic were detected at concentrations above their respective Unrestricted Use SCOs in 32 of the 63 initial endpoint samples collected from the wetland area. D&B and NYSDEC directed Land to conduct additional excavation and collect follow-up endpoint soil samples as follows:

- Bottom endpoint sample exceedance in 0.5 foot excavation: Land excavated an additional depth of 6" in the bottom area represented by the sample, and resampled only for the constituent(s) which exceeded in the original sample.

- Bottom endpoint sample exceedance in 2 foot excavation: Land excavated an additional depth of 1 foot in the area represented by the sample, and resampled only for the constituent(s) which exceeded in the original sample.

- Sidewall endpoint sample exceedance in 0.5 foot excavation: Land expanded the excavation outward an additional 4 feet, and laterally to a distance halfway to the closest sidewall sample. Land resampled only for the constituent(s) which exceeded in the original sample.

- Sidewall endpoint sample exceedance in 2 foot or 5 foot excavation: Land expanded the excavation outward an additional 2 feet, and laterally to a distance halfway to the closest sidewall sample. Land resampled only for the constituent(s) which exceeded in the original sample.

Land performed this additional excavation and sampling at each location until sample results were below Unrestricted Use SCOs, bedrock was encountered or Land was directed to stop by D&B and NYSDEC. A total of 49 additional endpoint soil samples were collected in the upland area. The results of first, second and third follow up samples are also provided in ***Table N-2*** in ***Appendix N***. In addition, all follow-up sample results are summarized in ***Table N-3***. Only 7 endpoint sample locations did not achieve results below Unrestricted Use SCOs. The decisions regarding these 7 locations are summarized in the Notes column on ***Table N-2***, and are discussed further in Section 4.6, Contamination Remaining at the Site.

It should be noted that the VOC results for the endpoint soil samples collected from the 8-foot excavation upland area were all detected below Unrestricted Use SCOs. The five additional endpoint samples collected on each side and below the UST that was discovered also exhibited concentrations below Unrestricted Use SCOs. These sample results are summarized in ***Table N-4*** in ***Appendix N***.

4.5 Imported Backfill

When endpoint soil sample results were below Unrestricted Use SCOs or were approved by NYSDEC, the areas represented by each endpoint soil sample were backfilled as soon as possible.

For the wetland/lake area, approximately 321 cy of backfill was placed to restore this area to original grade. The backfill was a custom blend of 3 parts topsoil to 1 part sand produced by ORI Supplies, located at 895 Pulaski Highway, Goshen, NY. The chemical analytical results for the backfill are provided in ***Appendix P***, along with the assessment and approvals by D&B and NYSDEC. The NYSDEC approved the backfill with several nutrients at higher concentrations than detected in pre-remediation samples, since natural processes are anticipated to reduce concentrations. ***Drawing 3*** depicts the extent and final elevations of backfill placement in the wetland/lake area.

For the upland area, approximately 3,041 cy of backfill was placed to restore this area to 0.5 foot below original grade, to be finished with topsoil as discussed in Section 4.7. The backfill was produced by E. Tetz and Sons, Inc., located at 68 Tetz Rd, Chester, NY. The chemical analytical results for the backfill are provided in ***Appendix P***, along with the assessment and approvals by D&B and NYSDEC. ***Drawing 4*** depicts the extent, fill thickness and final elevations of backfill placement in the upland area. The backfill placed in the upland area was compacted in accordance with the RD and the August 21, 2018 email from Land, including proof rolling with three passes of the roller in addition to standard proctor testing. Based on the August 21, 2018 email from Land which was approved by D&B, the 95% density specified in the RD was not required. The approved compaction testing results are provided in ***Appendix P***.

4.6 Contamination Remaining at the Site

The following discussion summarizes the remaining contamination identified at the Site based on the endpoint soil samples collected following the remedial actions discussed above, as well as the pre-remedial investigation activities conducted at the Site. Any endpoint soil samples

which exhibited concentrations above Unrestricted Use SCOs but were subsequently removed by additional excavation and the cleanup confirmed by follow-up endpoint soil samples as described in Section 4.4 are not included in this discussion. The discussion is organized by soil, sediment and groundwater samples.

Soil

Remaining endpoint soil sample locations and a summary of contaminants exceeding their respective Unrestricted Use SCOs are depicted on ***Drawing 2***. A summary of remaining pre-remedial investigation soil samples exhibiting concentrations above Unrestricted Use SCOs is depicted on ***Drawing 5***. In addition, ***Table 4-4*** and ***Table 4-5*** provided below summarize the remaining soil samples where metals and organic compounds, respectively, were detected at concentrations above Unrestricted Use SCOs.

Table 4-4
Summary of Metal Exceedances Remaining in Soil

Sample ID	Sample Date	Constituent	Concentration (mg/kg)	Unrestricted Use SCO (mg/kg)	Notes
Endpoint Soil Samples					
G.L.-B(0.5')-A10b	8/10/2018	Arsenic	18	13	Marginally above SCO
G.L.-B(0.5')-A4b	8/6/2018	Lead	70.9	63	Scraped to bedrock
G.L.-SW(0.5')-A4	7/30/2018	Lead	297	63	Excavated to wetland edge
G.L.-SW(0.5')-A7d	8/15/2018	Arsenic	15.3	13	Marginally above SCO
G.L.-B(2.0'W)-A2	8/1/2018	Lead	208	63	Scraped to bedrock
G.L.-SW(2.0'E)-A4b	8/7/2018	Arsenic	15.5	13	Marginally above SCO
G.L.-SW(2.0'E)-A9c	8/10/2018	Arsenic	13.2	13	Marginally above SCO
Pre-Remedial Investigation Soil Samples					
SB-03 (2.5 to 4.5 feet)	10/24/2008	Cadmium	2.62	2.5	--
		Nickel	31.4	30	--
		Silver	5.98	2	--
SB-07 (2 to 4 feet)	10/24/2008	Arsenic	17.8	13	--
		Mercury	0.405	0.18	--
		Silver	4.41	2	--
SB-08 (6 to 8 feet)	10/24/2008	Manganese	1,640	1,600	--
		Nickel	33.7	30	--
		Silver	5.93	2	--

Table 4-4 (continued)
Summary of Metal Exceedances Remaining in Soil

SB-09 (4 to 6 feet)	10/23/2008	Arsenic	15.6	13	--
		Lead	74	63	--
		Mercury	0.303	0.18	--
		Silver	4.38	2	--
SB-11 (4 to 6 feet)	10/23/2008	Cadmium	2.51	2.5	--
		Silver	6.35	2	--
SB-12 (0.5 to 2.5 feet)	10/23/2008	Cadmium	2.51	2.5	--
		Silver	5.48	2	--
SB-13 (3 to 5 feet)	10/23/2008	Nickel	30.1	30	--
		Silver	6.02	2	--
SB-15 (10 to 12 feet)	10/22/2008	Silver	2.96	2	--
GP-08 (11 to 12 feet)	10/22/2008	Silver	3.01	2	--
SS-29	10/27/2008	Cadmium	2.56	2.5	--
		Silver	3.77	2	--
SS-30	10/27/2008	Cadmium	2.79	2.5	--
		Silver	4.43	2	--
SS-35	10/27/2008	Cadmium	3.56	2.5	--
		Lead	72.8	63	--
		Mercury	0.213	0.18	--
		Silver	5.32	2	--
SS-63	1/17/2013	Lead	86.3 J	63	--
SS-64	1/17/2013	Zinc	116	109	--

Notes:
mg/kg: Milligrams per kilogram
J: Estimated Value

Table 4-5
Summary of Organic Compound Exceedances Remaining in Soil

Sample ID	Sample Date	Constituent	Concentration (ug/kg)	Unrestricted Use SCO (ug/kg)
SB-07 (2 to 4 feet)	10/24/2008	4,4'-DDE	3.5	3.3
SB-12 (0.5 to 2.5 feet)	10/23/2008	4,4'-DDE	7	3.3
SS-27	10/27/2008	4,4'-DDE	290	3.3
		4,4'-DDT	62	3.3
SS-28	10/27/2008	4,4'-DDE	25	3.3
SS-29	10/27/2008	Benzo(b)fluoranthene	1,300	1,000
		Indeno (1,2,3-cd)pyrene	600	500
		4,4'-DDE	5.5 J	3.3

Notes:
ug/kg: Micrograms per kilogram
J: Estimated Value

Only 7 upland endpoint sample locations did not achieve results below Unrestricted Use SCOs. As indicated in ***Table 4-4***, 4 of the 7 sample locations exhibited arsenic at concentrations

between 13.2 mg/kg and 18 mg/kg after multiple rounds of additional excavation and sampling, only marginally above the Unrestricted Use SCO of 13 mg/kg. Two of the 7 locations exhibited lead at concentrations above the Unrestricted Use SCO of 63 mg/kg, and additional excavation was completed to bedrock. Therefore, additional samples were not collected. For the remaining endpoint soil sample, sidewall sample G.L.-SW(0.5)-A4, additional excavation was completed to remove the soil between this sample and the adjoining wetland area, which was previously excavated. Additional excavation and sampling was not required beyond the border with the wetland area. There was no remaining contamination associated with the endpoint soil samples collected from the wetland area.

Based on the endpoint soil sample results, the remedy has achieved an Unrestricted Use cleanup as per Section 5.4 (b) (2) (i) of DER-10.

For documentation purposes, historical soil data from pre-remedial investigation where Unrestricted Use SCOs were exceeded have also been provided. These exceedances were detected on-site outside the limits of the remediation area outlined in the ROD and RD. As indicated above on ***Table 4-4***, ***Table 4-5*** and ***Drawing 5***, these concentrations were generally marginally above SCOs and did not consist of the contaminants of concern (lead and arsenic). The only historical exceedances of contaminants of concern remaining outside the remedial area include the following soil samples:

- Surface soil sample SS-35 exhibited lead at a concentration of 72.8 mg/kg, above the Unrestricted Use SCO of 63 mg/kg.
- Surface soil sample SS-63 exhibited lead at a concentration of 86.3 mg/kg, above the Unrestricted Use SCO of 63 mg/kg.
- Subsurface soil sample SB-07 (2 to 4 feet) exhibited arsenic at 17.8 mg/kg, above the Unrestricted Use SCO of 13 mg/kg.
- Subsurface soil sample SB-09 (4 to 6 feet) exhibited arsenic at 15.6 mg/kg, above the Unrestricted Use SCO of 13 mg/kg, and lead at 74 mg/kg, above the Unrestricted Use SCO of 63 mg/kg.

Soil borings SB-07 and SB-09 were completed within the western portion of the remedial area, and surface soil sample SS-63 was collected approximately 10 feet to the east of the remedial area. Similar to endpoint soil samples discussed above, these concentrations were marginally above their respective Unrestricted Use SCOs.

Sediment

For documentation purposes, the remaining pre-remedial investigation sediment samples exhibiting concentrations above SELs are depicted on ***Drawing 5*** and summarized on ***Table 4-6***. There was no remaining contamination associated with the endpoint sediment samples collected from the lake area.

These exceedances were detected on-site outside the limits of the remediation area outlined in the ROD and RD. As indicated on ***Table 4-6*** and ***Drawing 5***, these concentrations were generally marginally above SELs and did not consist of the contaminants of concern (lead and arsenic). The only historical exceedance of contaminants of concern remaining outside the remedial area was sediment sample SED-02 collected from 0 to 6 inches, which exhibited lead at a concentration of 231 mg/kg, above the SEL of 110 mg/kg. SED-02 was collected on the shoreline downgradient of the pump house on the eastern portion of the Site.

Table 4-6
Summary of Exceedances Remaining in Sediment

Sample ID	Sample Date	Constituent	Concentration (mg/kg)	Sediment Severe Effect Level (mg/kg)
SED-01	10/29/2008	Copper	134	110
		Silver	3.12	2.2
		Total PCBs	0.42	0.014*
SED-02	10/29/2008	Copper	225	110
		Lead	231	110
		Silver	3.21	2.2
SED-03	10/29/2008	Silver	4.61	2.2
PDI-14 (12-24")	1/16/2013	Manganese	1,280 J	1,100
PDI-15 (0-6")	1/16/2013	Iron	41,700	40,000
PDI-15 (6-12")	1/16/2013	Iron	41,600 J	40,000

Table 4-6 (continued)
Summary of Exceedances Remaining in Sediment

PDI-16 (0-6")	1/16/2013	Manganese	1,240 J	1,100
PDI-16 (6-12")	1/16/2013	Iron	41,900 J	40,000
		Manganese	3,340 J	1,100
PDI-16 (12-24")	1/16/2013	Iron	44,400	40,000
		Manganese	4,500	1,100
PDI-18 (12-24")	1/17/2013	Manganese	1,150 J	1,100

Notes:
mg/kg: Milligrams per kilogram
* : Compound compared to Wildlife Bioaccumulation Criteria
J: Estimated Value

Groundwater

In 2008, four groundwater probe samples were collected on-site as part of a Site Investigation, and several metals were detected above Class GA groundwater standards in those samples. For documentation purposes, these metal detections are depicted on ***Drawing 5*** and summarized on ***Table 4-7***.

The majority of the metal exceedances were detected in unfiltered samples, which can be elevated due to suspended particles and not representative of actual water quality. In the filtered samples, only iron, sodium and manganese were detected above Class GA standards, and not the contaminants of concern (lead and arsenic).

It should be noted that the vast majority of soil and sediment contamination was addressed through the completion of the remedial excavation activities described in this FER. The remaining contamination described above does not generally consist of the contaminants of concern and are marginally above remedial goals. Therefore, the remedial actions were successful in achieving an Unrestricted Use cleanup as outlined in the ROD, and a SMP with additional site controls is not required.

4.7 Site Restoration

Final site cover and restoration consisted of the placement of topsoil in the upland area, and seeding/planting in both the upland and wetland/lake areas. ***Drawing 6*** depicts the extent, thickness and final elevations of topsoil placement in the upland area. A final as-built drawing of the Site, including final site cover, elevations, placement of planted trees, the configuration of fencing and the site boundary, and other site features is included as ***Drawing 7***.

Table 4-7
Summary of Exceedances Remaining in Groundwater

Sample	Date	Constituent	Concentration (ug/l)	Class GA Standard (ug/l)
GP-07 (Unfiltered)	10/22/2008	Chromium	97.4	50
		Iron	59,600	300
		Lead	71.6	25
		Manganese	2,150	300
		Sodium	27,500	20,000
GP-07 (Filtered)	10/22/2008	Iron	2,110	300
		Sodium	25,800	20,000
GP-08 (Unfiltered)	10/22/2008	Chromium	75.8	50
		Iron	107,000	300
		Lead	171	25
		Manganese	8,900	300
		Nickel	110	100
		Sodium	26,800	20,000
GP-08 (Filtered)	10/22/2008	Manganese	3,100	300
		Sodium	22,800	20,000
GP-09 (Unfiltered)	10/24/2008	Iron	11,600	300
		Manganese	2,170	300
		Sodium	36,700	20,000
GP-09 (Filtered)	10/24/2008	Iron	642	300
		Manganese	1,770	300
		Sodium	36,600	20,000
GP-10 (Unfiltered)	10/29/2008	Iron	26,700	300
		Lead	32.8	25
		Manganese	1,380	300
GP-10 (Filtered)	10/29/2008	Iron	776	300

Notes:
ug/l: Micrograms per liter

For the wetland/lake area, backfilling to original grade following remedial excavation is described in Section 4.5. Land and their subcontractor Cloverleaf prepared several documents regarding wetland restoration as required in the RD which were approved by D&B and NYSDEC, including a wetlands planting plan, a wetlands restoration monitoring plan and Invasive Species Management Plan. These plans, included in ***Appendix Q***, describe the planting details, monitoring procedures for one year following the restoration and a plan to manage invasive species. The approved wetland seed mixes are also included in ***Appendix Q***.

The seeding of grasses and planting of shrubs in each wetland zone defined in the RD (Zone A through Zone D) were completed as per the approved plans on May 10 and May 24, 2018, respectively. The extent of each zone was adjusted in the field based on the water level at the time of restoration. Wetland plantings included the following shrubs: button bush, swamp loosestrife, water smartweed, arrow arum, marsh fern and sensitive fern. In accordance with the RD, Cloverleaf attempted to identify existing wetland vegetation from outside the disturbed area for replanting within the restoration area. Although wetland plants suitable for transplantation were not identified, several cattail tubers preserved from the excavation activities were replanted in the restoration area at the request of NYSDEC. Pesticides and fertilizers were not utilized in the wetland restoration area. D&B's wetland consultant, InFocus Environmental Consulting, conducted site visits in May 2018 and September 2018 to inspect the wetland restoration and reports from InFocus are provided in ***Appendix Q***.

Land and Cloverleaf performed monitoring and maintenance of the wetland restoration in accordance with the RD, including site visits to ensure the restoration area is watered, monitor growth, control invasive species, collect soil and hydrologic samples and measurements, and determine if any plant replacements are required. Land and Cloverleaf will conduct a site visit and issue an annual monitoring report in Spring 2019, which will be reviewed and included in ***Appendix Q*** of this FER.

For the upland area, a topsoil cover layer of approximately 6 inches was placed over an area of approximately 76,457 square feet to restore this area to original grade. Refer to ***Drawing 6***

for the extent of topsoil placement. The topsoil was produced by Dick's Concrete, located in Chester, NY. The chemical analytical results for the topsoil are provided in ***Appendix P***, along with the assessment and approvals by D&B and NYSDEC.

Land and their subcontractor Cloverleaf prepared an upland planting plan, included in ***Appendix Q***, describing the trees to be planted and a brief summary of some of the methodology to be used in conjunction with the RD requirements. The approved upland seed mix and hydromulch is also included in ***Appendix Q***.

Hydroseeding utilizing the approved seed mix was completed on September 13, 2018, with hand seeding in areas that the hydroseeding could not reach. A total of 135 trees were planted on October 9 and 10, 2018, including 45 each of the following tree species: red maple, eastern white pine and balsam fir. Based on site conditions, the recent digging of the trees and the time of year, Cloverleaf made a field decision to not completely remove the burlap and wire cages around the root ball of the trees during planting. After discussions with NYSDEC, Land and Cloverleaf agreed to plant additional trees in accordance with the RD to supplement the trees already planted. A total of 49 additional red maple trees were planted on April 10, 2019, and supplemental hand seeding was conducted. Pesticides and fertilizers were not utilized in the upland restoration area.

Land and Cloverleaf performed monitoring and maintenance of the upland restoration in accordance with the RD, including site visits to ensure the restoration area is watered, monitor growth, control invasive species, and determine if any plant replacements are required. Land and Cloverleaf will guarantee the life of all plants for the "period of establishment", which is 1 year from acceptance of the plantings (two growing seasons). At the end of the "period of establishment", Land and Cloverleaf will remove all stakes, wire, hose and tree trunk wrapping in accordance with the RD.

Several large logs reserved during the site preparation tree removal were placed in the upland area for habitat restoration as requested by NYSDEC (see ***Drawing 7***). In addition, biodegradable erosion control mats were placed around the Site in wet areas to temporarily stabilize the Site during the establishment of new vegetation.

4.8 Engineering Controls

The remedy for the site did not require the construction of any engineering control (EC) systems.

4.9 Institutional Controls

The remedy for the site did not require any institutional controls (ICs).

4.10 Deviations from the Remedial Design

Several changes were made to the RD for the Site throughout remedial activities. These changes are documented in four proposed change orders (PCOs), two field orders (FOs) and three requests for information responses (RFIs), as well project correspondence such as emails and meeting minutes. These approved changes to the RD are provided in ***Appendix R***. The PCOs will be incorporated into one final change order upon project closeout. In general, the changes to the remedial plan were necessitated by field conditions and did not impact the efficacy of the remedy. The details of these changes are as follows:

PCO No. 1 – Additional Wetland Area Soil Staging Pad

At the start of excavation activities in the wetland/lake area, Land staged the wetland and lake sediment that was excavated on a sediment pad in accordance with the RD. The NYSDEC directed that Land preserve trees in the location where the RD indicated that the pad should be located. In order to preserve the trees, Land reoriented the sediment pad so that the pad was located between the construction access road and the wetland area. As a result, the staged sediment prevented access to the wetland area for purposes of filling the excavated area.

When approval for off-site disposal of the sediment took longer than was anticipated by Land, there was the possibility that filling of the wetland and lake excavation areas would not be

completed before March 15, which is the end of the period in which work with heavy machinery is allowed in the wetland/lake area due to the presence of the Northern Cricket Frog. Therefore, NYSDEC directed the construction of a second pad and the moving of the staged sediment to the new pad in order to access the wetland and lake excavation area for filling. Note that the approximate location of the original and additional sediment pads is depicted on ***Figure 4-1***.

PCO No. 2 – Cleanup of Discovered UST

A previously unknown 1,000-gallon waste oil UST was encountered on July 31, 2018. The cleaning and removal of the UST, and additional soil excavation and collection of endpoint soil samples are discussed in Section 4.3.3 and Section 4.3.3.1 of this FER. NYSDEC Spill No. 1804677 was issued and was subsequently closed by NYSDEC.

PCO No. 3 – Additional Soil Excavation

As described in Section 4.3.2, the excavation area was significantly expanded due to detections of lead and/or arsenic in endpoint soil samples at concentrations above Unrestricted Use SCOs, primarily in the upland area. Endpoint sample results and additional excavation actions completed due to exceedances of Unrestricted Use SCOs are discussed in Section 4.4. Any remaining contamination is discussed in Section 4.6.

There were some reductions in the planned excavations. As depicted on ***Drawing 2***, bedrock was encountered along the western half of the upland area prior to the intended excavation depth. Where bedrock was encountered, Land scraped the soil to the bedrock using a toothed excavator bucket and manual shoveling to dislodge pockets of soil as feasible and the excavation was terminated. In addition, the planned excavation area was reduced along the western side of the peninsula on the southern end of Site and near the willow tree in the lake sediment area. These deviations are discussed in further detail below in this section of FER. Overall, however, more soil than anticipated in the RD required excavation and disposal, additional endpoint soil samples were collected, additional fill was required, and a greater area required restoration. The approximate additional totals are summarized on **Table 4-8**.

Table 4-8
Summary of Additional Excavation and Related Items

Contract Item	Anticipated Contract Totals	Actual Construction Totals	Difference
Excavation Wetland/Lake Area	325 cy	339 cy	+14 cy
Excavation Upland Area	2,150 cy	4,020 cy	+1,870 cy
Endpoint Samples	130	145	+15
Backfill Upland Area	1,250 cy	3,041 cy	+1,791 cy
Transportation and Off-Site Disposal of Soil	4,241 tons	6,879.5 tons	+2,638.5 tons
Site Restoration Upland Areas	1.4 acre	1.76 acre	+0.36 acre

It should be noted that Land re-mobilized to the Site for the upland remediation on June 27, 2018, beyond the June 1 start of the Cricket Frog work window. With the additional excavation that was required, intrusive work with heavy equipment extended beyond the August 15 end of the work window. The NYSDEC allowed work to continue only with continuous oversight by Herpetological Associates to ensure the protection of the Cricket Frog. HA provided 16 additional days of oversight beyond August 15 in order to allow Land to complete the project. HA's report is provided in ***Appendix E***.

PCO No. 4 – Trailer Laydown/Staging Area

As part of the remedial construction, the trailer laydown/staging area along Glenmere Avenue was graded with gravel/stone. The RD specified that this area be restored with topsoil/seed as part of demobilization. However, at the request of the property owner (Orange County), the area was left as gravel/stone.

FO No. 1 – Willow Tree

The RD specified that Land was to protect a willow tree located outside the excavation limits of the lake sediment area during remedial construction. However, Land's initial survey found the tree was located partially within the excavation area. Therefore, NYSDEC directed Land to move the willow tree from the excavation area prior to excavation of the lake sediment and return it following excavation. Even with the moving of the tree, Land could not access the southeast corner of the lake sediment area for excavation because branches of the willow tree were extending into the area and were encased in ice and buried in the sediment. Therefore, approximately 3 yards of lake sediment designated for removal were left in place to avoid damaging the willow tree, as documented in meeting minutes included in ***Appendix R***. The area which was not excavated is depicted on ***Drawing 1***.

Note that endpoint samples exhibiting contaminants of concern below Unrestricted Use SCOs and SELs were collected in the vicinity of the willow tree. In addition, the location of all historical sediment samples utilized to define the excavation area were within the achieved limits of excavation.

FO No. 2 – Temporary Erosion Control

As discussed in Section 4.7, a total of 135 trees were planted in October 2018. Cloverleaf made a field decision to not completely remove the burlap and wire cages around the root ball of the trees during planting. After discussions with NYSDEC, 49 additional trees were planted in accordance with the RD in April 2019 in the following Spring. Documentation of the agreement to plant additional trees is provided in ***Appendix R***. During the Winter, NYSDEC directed Land to remove any remaining drift fence and to place biodegradable erosion control fabric for temporary erosion control prior to the final tree plantings in April 2019.

RFI No. 1 – Fill Testing

At the request of Land in RFI No. 1, D&B provided clarification on the testing required for wetland fill. As indicated in the response to RFI No. 1 provided in ***Appendix R***, the soil density and percent moisture tests were eliminated and laboratory methods were updated for total kjeldahl nitrogen, nitrate-nitrite and ORP. Imported material and testing were discussed in Section 4.5.

RFI No. 2 – CAMP Requirements

In RFI No. 2, Land requested relief from VOC monitoring during CAMP activities. Relief was not granted and there was no change to the RD.

RFI No. 3 – Water Discharge Testing

In the response to RFI No.3, D&B clarified the testing and treatment requirements that Land would have to meet in order to discharge construction water to Glenmere Lake. This ultimately resulted in no change to the RD since Land opted to dispose of all construction water off-site as discussed in Section 4.3.4 and Section 4.3.4.1.

Excavation Area on Peninsula

Prior to the upland excavation work, NYSDEC directed Land to move the excavation limits in the southwest portion of the Site on the peninsula approximately 10 feet to the east from the waterline to the top of the bank in order to protect existing trees on the bank and prevent erosion. The final upland excavation limits are depicted on Drawing 2. Note that sidewall endpoint soil samples exhibiting contaminants of concern below Unrestricted Use SCOs were collected in this area. In addition, the location of all historical surface soil samples utilized to define the excavation area were within the achieved limits of excavation.

Building 1-N Basement Floor

In accordance with the RD, Land constructed two drainage openings in the basement floor slab of Building 1-N. With NYSDEC approval, Land utilized the basement to temporarily store tree stumps prior to off-site disposal. Therefore, the openings were not fully finished with gravel and geotextile while the stumps were stored. As Land was removing the tree stumps for disposal, sections of the decayed concrete slab were removed in the process, and groundwater filled the basement. Land attempted to pump out the water but it rapidly refilled with groundwater. Land proposed filling the foundation with stone to the top of groundwater, apply a layer of filter fabric, and then general fill and topsoil to grade. NYSDEC approved this approach in lieu of completing the drainage openings.

LEGEND:

- ⊗ −0.4 — DEPTH SPOT GRADE
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- O — POST AND RAIN FENCE
- X — CHAINLINK FENCE
- CRICKET/FROG FENCE
- UTILITY POLE
- GUIDE RAIL
- OH — OVERHEAD UTILITY LINE
- FALLEN WILLOW TREE TO BE PRESERVED
- LIMITS OF EXCAVATION
- SAMPLE 2 — SAMPLE LOCATION

0 10 20 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A DECEMBER 14, 2017 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.
5. THIS SURVEY WAS PERFORMED UNDER ICE AND SNOW CONDITIONS. OTHER FEATURES MAY EXIST.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

SITE LOCATION MAP
N.T.S.

ABANDONED DILAPIDATED BUILDING

CRICKET/FROG FENCE

CRICKET/FROG FENCE

LIMITS OF EXCAVATION TO 0.5' DEPTH

PZ-1

PZ-2

PZ-3

Area A

Area B

Area C

WETLAND AREA

GLENMERE LAKE

48" DECIDUOUS TREE

AREA OF ADDITIONAL EXCAVATION

EDGE OF EXCAVATED AREA

LIMITS OF EXCAVATION TO 1' DEPTH

LIMITS OF EXCAVATION TO 2' DEPTH

Sample 18 Sample 19 Sample 20 Sample 21 Sample 21A Sample 22 Sample 23 Sample 24 Sample 25 Sample 26 Sample 27 Sample 28 Sample 29

SAMPLE 1 SAMPLE 2 SAMPLE 3 SAMPLE 4 SAMPLE 5 SAMPLE 6 SAMPLE 7 SAMPLE 8 SAMPLE 9 SAMPLE 10 SAMPLE 11 SAMPLE 12 SAMPLE 13 SAMPLE 14 SAMPLE 15 SAMPLE 16 SAMPLE 17

NMB
LAND SURVEYING
PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

NO.	DATE	REVISIONS DESCRIPTION	BY
1	3/5/18	ADDITIONAL LOCATION OF WILLOW TREE	AJK

STATE OF NEW YORK — LICENSED LAND SURVEYOR — 050724

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

POST EXCAVATION SURVEY OF THE WATER AREAS
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT
GLENMERE LAKE PROPERTY
TOWN OF CHESTER
COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 3-5-2018
DRAWN BY: AJK	JOB No. 6502	DWG No. POST EXCAVATION
SCALE: 1"=10'	SHEET 1 OF 1	

G.L.-SW(2.0'E)-A4b		
8/7/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Arsenic	15.5	13

G.L.-SW(2.0'E)-A9c		
8/10/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Arsenic	13.2	13

G.L.-SW(0.5')-A7d		
8/15/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Arsenic	15.3	13

G.L.-B(0.5')-A10b		
8/10/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Arsenic	18	13

G.L.-SW(0.5')-A4		
7/30/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Lead	297	63

G.L.-B(2.0'W)-A2		
8/1/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Lead	208	63

G.L.-B(0.5')-A4b		
8/6/2018		
Endpoint Soil Exceedances		
Metals (mg/kg)	Conc.	Unrestricted Use SCO
Lead	70.9	63

SITE LOCATION MAP

N.T.S.

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A AUGUST 2, 2018 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.
5. SAMPLE POINTS SHOWN ARE LABELED AND PLACED PER THE DIRECTION OF LAND REMEDIATION INC.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

LEGEND:

- −0.5 — GROUND SPOT DEPTHS
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- O — POST AND RAIN FENCE
- X — CHAINLINK FENCE
- UTILITY POLE
- GUIDE RAIL
- OH — OVERHEAD UTILITY LINE
- LIMIT OF DESIGN EXCAVATION
- LIMIT OF COMPLETED EXCAVATION
- FALLEN WILLOW TREE TO BE PRESERVED
- BEDROCK
- G.L.-SW/B2.0-A7 — SAMPLE LOCATION AND DEPTH (SW =SIDEWALL/B = BOTTOM)
- G.L.-SW/B0.5-A7b — ADDITIONAL SAMPLE LOCATION (SW =SIDEWALL/B = BOTTOM)
- G.L.-SW/B0.5-A7c — ADDITIONAL SAMPLE LOCATION (SW =SIDEWALL/B = BOTTOM)
- G.L.-SW/B0.5-A7d — ADDITIONAL SAMPLE LOCATION (SW =SIDEWALL/B = BOTTOM)
- DESIGN LIMITS OF EXCAVATION TO 0.5 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 2 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 5 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 8 FOOT DEPTH

0 20 40 Feet

SYK

S.Y. KIM LAND SURVEYOR, P.C.
260 OSBORNE ROAD, ALBANY, N.Y. 12211
PHONE : (518) 785-3969 FAX: (518) 785-1608

REVISIONS			
NO.	DATE	DESCRIPTION	BY

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

BOTTOM OF EXCAVATION SURVEY
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT
GLENMERE LAKE PROPERTY
TOWN OF CHESTER

COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 11-5-2018
DRAWN BY: AJK	JOB No. 6502	DWG No. EXCAVATION

SCALE: 1"=20' — SHEET 1 OF 1

LEGEND:

- ⊗ −0.4 — DEPTH SPOT GRADE
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- —O— POST AND RAIN FENCE
- —X— CHAINLINK FENCE
- —□— CRICKET/FROG FENCE
- UTILITY POLE
- GUIDE RAIL
- —OH— OVERHEAD UTILITY LINE
- FALLEN WILLOW TREE TO BE PRESERVED
- LIMITS OF EXCAVATION
- SAMPLE 2 — SAMPLE LOCATION

0 10 20 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A DECEMBER 14, 2017 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.
5. THIS SURVEY WAS PERFORMED UNDER ICE AND SNOW CONDITIONS. OTHER FEATURES MAY EXIST.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

SITE LOCATION MAP
N.T.S.

ABANDONED DILAPIDATED BUILDING

LIMITS OF EXCAVATION TO 0.5' DEPTH

48" DECIDUOUS TREE

WETLAND AREA

PZ-1 PZ-2 PZ-3

Sample 25 534.4 — PZ-1 — 533.9 — 534.9 — 533.2 — Sample 24 — Sample 19 — 533.5 — Sample 26 — 534.5 — 532.6 — 531.8 — Sample 20 — 531.8 — 533.7 — Sample 23 — 531.6 — 531.6 — Sample 21A — Sample 21 — Sample 29 — 531.7 — Sample 22 — Sample 28 — 532.9 — Sample 18 — 531.6 — SAMPLE 15 — 531.8 — SAMPLE 13 — 531.8 — SAMPLE 14 — PZ-3 — SAMPLE 16 — 531.6 — SAMPLE 7 — SAMPLE 8 — 529.9 — 531.5 — SAMPLE 12 — 530.8 — 529.7 — 534.6 — SAMPLE 11 — Sample 27 — SAMPLE 17 — SAMPLE 6 — SAMPLE 10 — 531.3 — 530.8 — 530.8 — SAMPLE 9 — 529.6 — SAMPLE 5 — 531.4 — SAMPLE 1 — 527.9 — SAMPLE 4 — SAMPLE 3 — SAMPLE 2 — 530.5 — 528.0

AREA OF ADDITIONAL EXCAVATION

EDGE OF EXCAVATED AREA

LIMITS OF EXCAVATION TO 1' DEPTH

LIMITS OF EXCAVATION TO 2' DEPTH

CRICKET/FROG FENCE

CRICKET/FROG FENCE

GLENMERE LAKE

SYK
S.Y. KIM LAND SURVEYOR, P.C.
260 OSBORNE ROAD, ALBANY, N.Y. 12211
PHONE : (518) 785-3969 FAX: (518) 785-1608

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	3/5/18	ADDITIONAL LOCATION OF WILLOW TREE	AJK

STATE OF NEW YORK — NATHAN M. BURROWS — 050724 — LICENSED LAND SURVEYOR

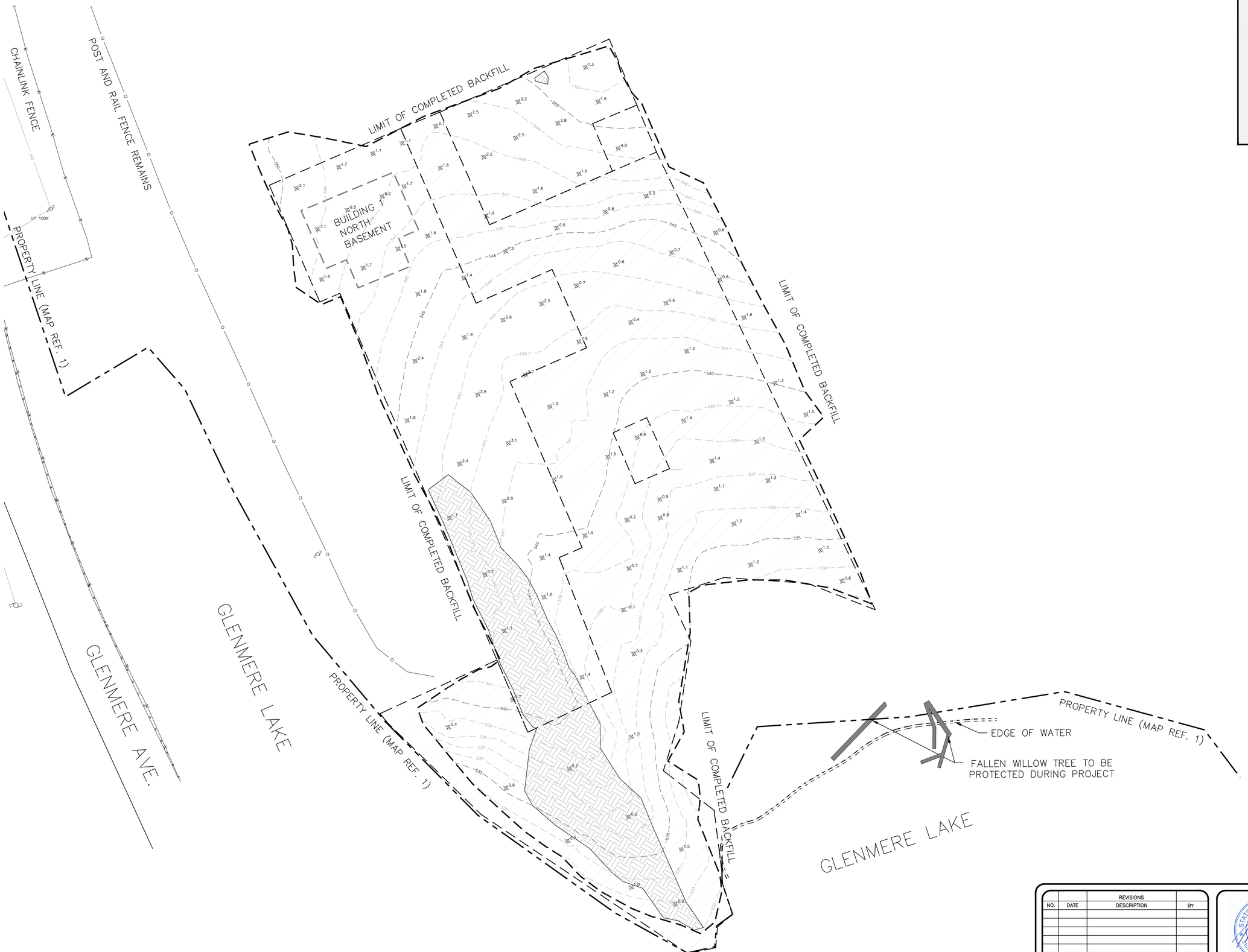
NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

BACKFILL SURVEY OF THE WATER AREAS
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT
GLENMERE LAKE PROPERTY
TOWN OF CHESTER

COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 3-13-2018
DRAWN BY: AJK	JOB No. 6502	DWG No. BACKFILL

SCALE: 1"=10' — SHEET 1 OF 1



SITE LOCATION MAP

N.T.S.

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A AUGUST 2, 2018 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

LEGEND:

- 1.1 — GROUND SPOT DEPTHS
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- o — POST AND RAIN FENCE
- X — CHAINLINK FENCE
- UTILITY POLE
- GUIDE RAIL
- OH — OVERHEAD UTILITY LINE
- LIMIT OF DESIGN EXCAVATION
- LIMIT OF COMPLETED BACKFILL
- FALLEN WILLOW TREE TO BE PRESERVED
- BEDROCK

0 20 40 Feet

SYK

S.Y. KIM LAND SURVEYOR, P.C.
260 OSBORNE ROAD, ALBANY, N.Y. 12211
PHONE : (518) 785-3969 FAX: (518) 785-1608

NO.	DATE	REVISIONS DESCRIPTION	BY

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

COMMON FILL SURVEY

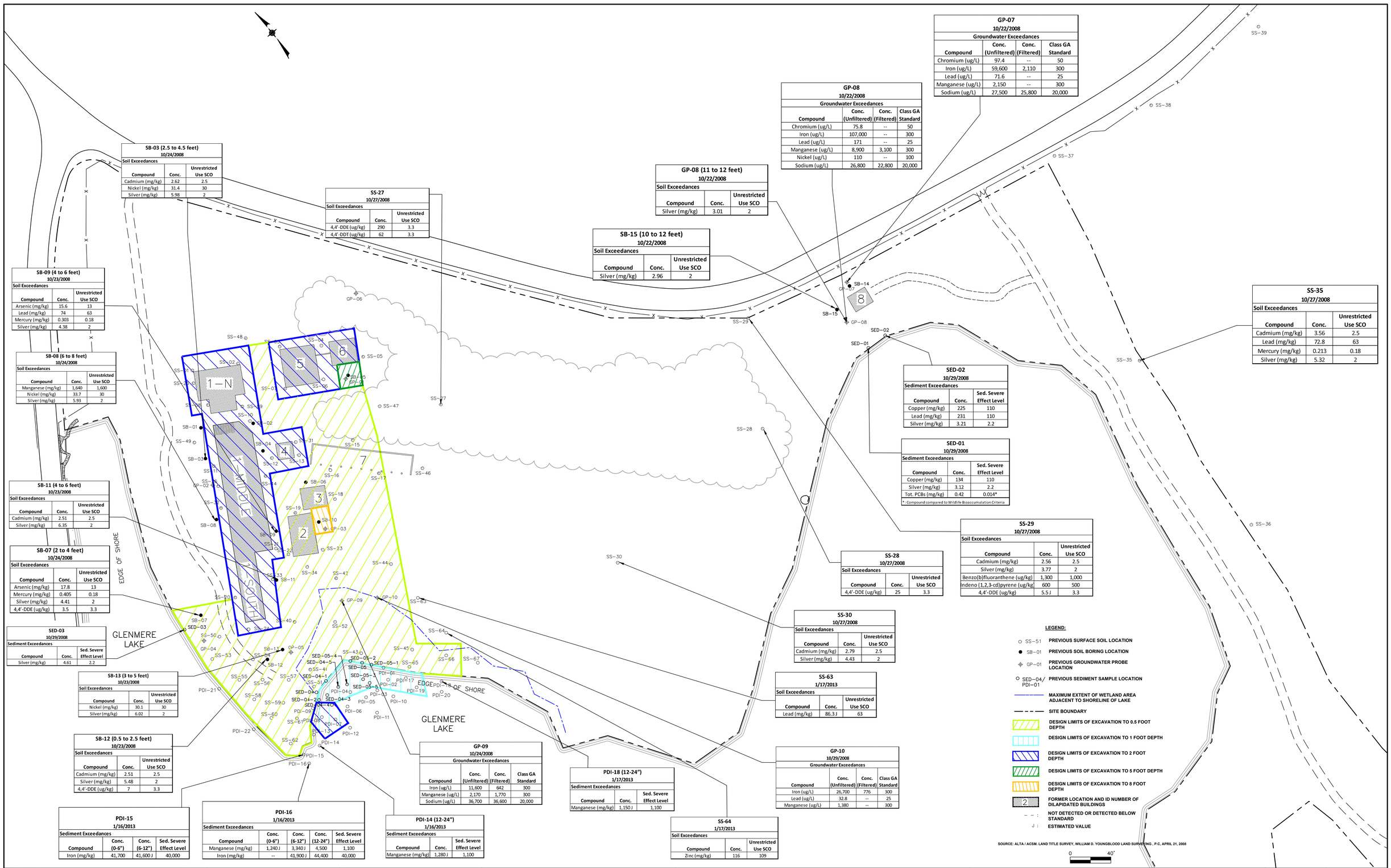
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT

GLENMERE LAKE PROPERTY

TOWN OF CHESTER

COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 11-5-2018
DRAWN BY: AJK	JOB No. 6502	DWG No. EXCAVATION
SCALE: 1"=20'	SHEET 1 OF 1	



SB-03 (2.5 to 4.5 feet)
10/24/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	2.62	2.5
Nickel (mg/kg)	31.4	30
Silver (mg/kg)	5.98	2

SS-27
10/27/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
4,4'-DDE (ug/kg)	290	3.3
4,4'-DDT (ug/kg)	62	3.3

GP-08 (11 to 12 feet)
10/22/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Silver (mg/kg)	3.01	2

SB-15 (10 to 12 feet)
10/22/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Silver (mg/kg)	2.96	2

GP-08
10/22/2008
Groundwater Exceedances

Compound	Conc. (Unfiltered)	Conc. (Filtered)	Class GA Standard
Chromium (ug/L)	75.8	--	50
Iron (ug/L)	107,000	--	300
Lead (ug/L)	171	--	25
Manganese (ug/L)	8,900	3,100	300
Nickel (ug/L)	110	--	100
Sodium (ug/L)	26,800	22,800	20,000

GP-07
10/22/2008
Groundwater Exceedances

Compound	Conc. (Unfiltered)	Conc. (Filtered)	Class GA Standard
Chromium (ug/L)	97.4	--	50
Iron (ug/L)	59,600	2,110	300
Lead (ug/L)	71.6	--	25
Manganese (ug/L)	2,150	--	300
Sodium (ug/L)	27,500	25,800	20,000

SB-09 (4 to 6 feet)
10/23/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Arsenic (mg/kg)	15.6	13
Lead (mg/kg)	74	63
Mercury (mg/kg)	0.303	0.18
Silver (mg/kg)	4.38	2

SB-08 (6 to 8 feet)
10/24/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Manganese (mg/kg)	1,640	1,600
Nickel (mg/kg)	33.7	30
Silver (mg/kg)	5.93	2

SB-11 (4 to 6 feet)
10/23/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	2.51	2.5
Silver (mg/kg)	6.35	2

SB-07 (2 to 4 feet)
10/24/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Arsenic (mg/kg)	17.8	13
Mercury (mg/kg)	0.405	0.18
Silver (mg/kg)	4.41	2
4,4'-DDE (ug/kg)	3.5	3.3

SED-03
10/29/2008
Sediment Exceedances

Compound	Conc.	Sed. Severe Effect Level
Silver (mg/kg)	4.61	2.2

SB-13 (3 to 5 feet)
10/23/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Nickel (mg/kg)	30.1	30
Silver (mg/kg)	6.02	2

SB-12 (0.5 to 2.5 feet)
10/23/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	2.51	2.5
Silver (mg/kg)	5.48	2
4,4'-DDE (ug/kg)	7	3.3

PDI-15
1/16/2013
Sediment Exceedances

Compound	Conc. (0-6")	Conc. (6-12")	Sed. Severe Effect Level
Iron (mg/kg)	41,700	41,600 J	40,000

PDI-16
1/16/2013
Sediment Exceedances

Compound	Conc. (0-6")	Conc. (6-12")	Conc. (12-24")	Sed. Severe Effect Level
Manganese (mg/kg)	1,240 J	3,340 J	4,500	1,100
Iron (mg/kg)	--	41,900 J	44,400	40,000

PDI-14 (12-24")
1/16/2013
Sediment Exceedances

Compound	Conc.	Sed. Severe Effect Level
Manganese (mg/kg)	1,280 J	1,100

GP-09
10/24/2008
Groundwater Exceedances

Compound	Conc. (Unfiltered)	Conc. (Filtered)	Class GA Standard
Iron (ug/L)	11,600	642	300
Manganese (ug/L)	2,170	1,770	300
Sodium (ug/L)	36,700	36,600	20,000

PDI-18 (12-24")
1/17/2013
Sediment Exceedances

Compound	Conc.	Sed. Severe Effect Level
Manganese (mg/kg)	1,150 J	1,100

SS-64
1/17/2013
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Zinc (mg/kg)	116	109

GP-10
10/29/2008
Groundwater Exceedances

Compound	Conc. (Unfiltered)	Conc. (Filtered)	Class GA Standard
Iron (ug/L)	26,700	776	300
Lead (ug/L)	32.8	--	25
Manganese (ug/L)	1,380	--	300

SED-02
10/29/2008
Sediment Exceedances

Compound	Conc.	Sed. Severe Effect Level
Copper (mg/kg)	225	110
Lead (mg/kg)	231	110
Silver (mg/kg)	3.21	2.2

SED-01
10/29/2008
Sediment Exceedances

Compound	Conc.	Sed. Severe Effect Level
Copper (mg/kg)	134	110
Silver (mg/kg)	3.12	2.2
Tot. PCBs (mg/kg)	0.42	0.014*

* : Compound compared to Wildlife Bioaccumulation Criteria

SS-28
10/27/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
4,4'-DDE (ug/kg)	25	3.3

SS-29
10/27/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	2.56	2.5
Silver (mg/kg)	3.77	2
Benzo(b)fluoranthene (ug/kg)	1,300	1,000
Indeno (1,2,3-cd)pyrene (ug/kg)	600	500
4,4'-DDE (ug/kg)	5.5 J	3.3

SS-30
10/27/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	2.79	2.5
Silver (mg/kg)	4.43	2

SS-63
1/17/2013
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Lead (mg/kg)	86.3 J	63

SS-35
10/27/2008
Soil Exceedances

Compound	Conc.	Unrestricted Use SCO
Cadmium (mg/kg)	3.56	2.5
Lead (mg/kg)	72.8	63
Mercury (mg/kg)	0.213	0.18
Silver (mg/kg)	5.32	2

LEGEND:

- SS-51 — PREVIOUS SURFACE SOIL LOCATION
- SB-01 — PREVIOUS SOIL BORING LOCATION
- GP-01 — PREVIOUS GROUNDWATER PROBE LOCATION
- SED-04/PDI-01 — PREVIOUS SEDIMENT SAMPLE LOCATION
- MAXIMUM EXTENT OF WETLAND AREA ADJACENT TO SHORELINE OF LAKE
- SITE BOUNDARY
- DESIGN LIMITS OF EXCAVATION TO 0.5 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 1 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 2 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 5 FOOT DEPTH
- DESIGN LIMITS OF EXCAVATION TO 8 FOOT DEPTH
- 2 — FORMER LOCATION AND ID NUMBER OF DILAPIDATED BUILDINGS
- – – : NOT DETECTED OR DETECTED BELOW STANDARD
- J : ESTIMATED VALUE

SOURCE: ALTA / ACSM. LAND TITLE SURVEY, WILLIAM D. YOUNGBLOOD LAND SURVEYING , P.C. APRIL 21, 2008

0 40'

NO.	DATE	REVISION	INT.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

PROJECT ENGINEER:	DRAWN BY:
AC	KA
DESIGNED BY:	CHECKED BY:
SR	AC

D&B ENGINEERS AND ARCHITECTS, P.C.

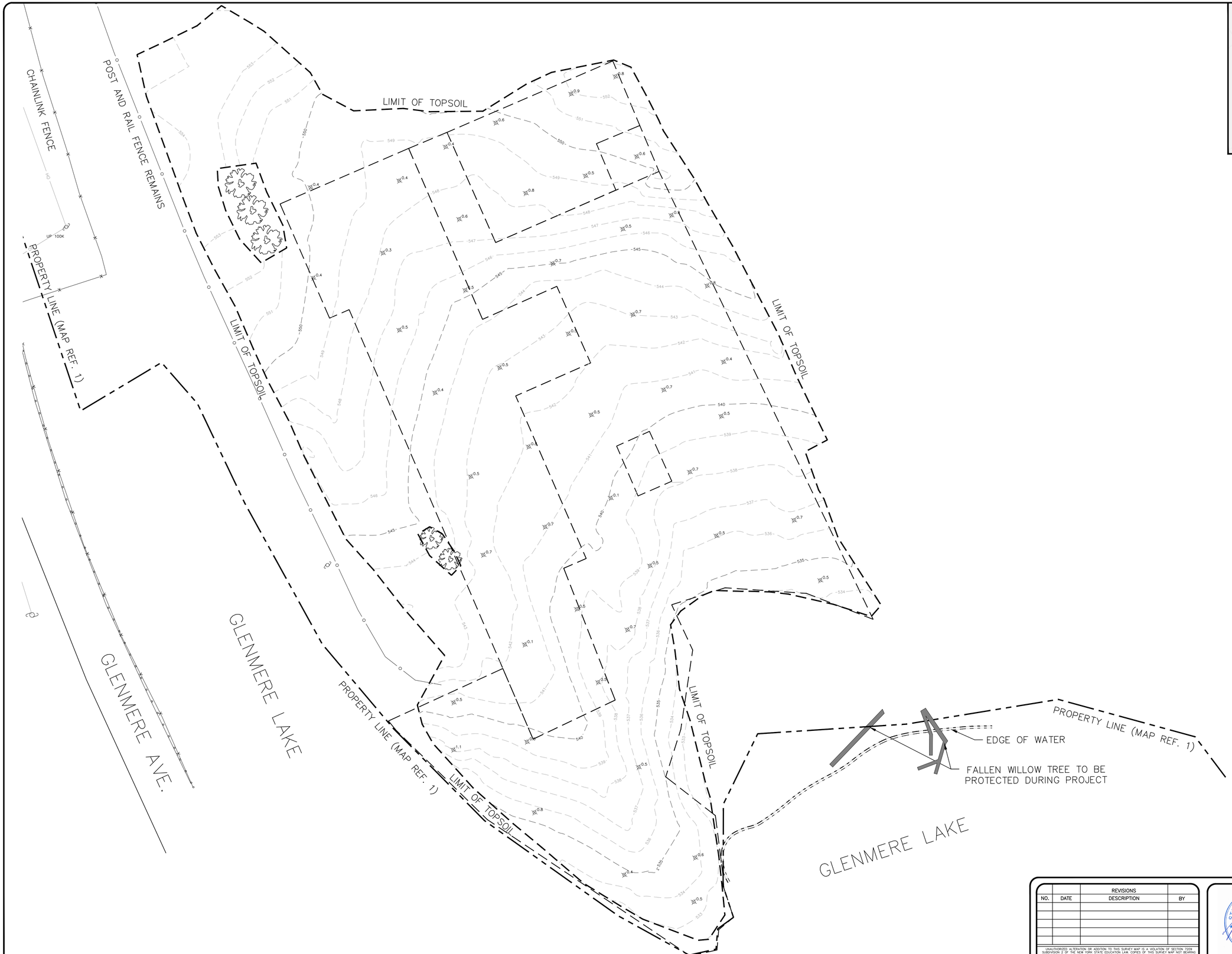
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ORANGE COUNTY — NEW YORK

GLENMERE LAKE PROPERTY

CONTRACT NO.

REMAINING CONTAMINATION SUMMARY OF EXCEEDANCES

PROJECT NO.	DRAWING NO.
3150-20E	5
DATE: MAY 2019	
SCALE: 1"=40'	



SITE LOCATION MAP

N.T.S.

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A AUGUST 2, 2018 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

LEGEND:

- 0.5 — GROUND SPOT DEPTHS
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- O — POST AND RAIN FENCE
- X — CHAINLINK FENCE
- UTILITY POLE
- GUIDE RAIL
- OH — OVERHEAD UTILITY LINE
- LIMIT OF DESIGN EXCAVATION
- LIMIT OF TOPSOIL
- FALLEN WILLOW TREE TO BE PRESERVED

0 20 40 Feet

SYK

S.Y. KIM LAND SURVEYOR, P.C.
260 OSBORNE ROAD, ALBANY, N.Y. 12211
PHONE : (518) 785-3969 FAX: (518) 785-1608

NO.	DATE	REVISIONS DESCRIPTION	BY

STATE OF NEW YORK — NATHAN M. BURROWS — 050724 — LICENSED LAND SURVEYOR

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

POST CONSTRUCTION SURVEY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT

GLENMERE LAKE PROPERTY

TOWN OF CHESTER

COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 11-5-2018
DRAWN BY: AJK	JOB No. 6502	DWG No. POST CONSTRUCTION
SCALE: 1"=20'	SHEET 1 OF 1	

SITE LOCATION MAP

N.T.S.

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A APRIL 26, 2019 FIELD SURVEY.
2. SURVEY SHOWN WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACT THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
3. THE HORIZONTAL DATUM USED FOR THIS SURVEY IS NAD83 PER MAP REFERENCE 1.
4. THE VERTICAL DATUM USED FOR THIS SURVEY IS NAVD88 PER MAP REFERENCE 1.

MAP REFERENCES

1. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, GLENMERE LAKE PROPERTY CONTRACT D010013" DATED JUNE 2017 AND PREPARED BY D&B ENGINEERS AND ARCHITECTS, P.C.

LEGEND:

- 548.6 — GROUND SPOT ELEVATIONS
- 540 — MAJOR CONTOURS
- 538 — MINOR CONTOURS
- O — POST AND RAIN FENCE
- X — CHAINLINK FENCE
- UTILITY POLE
- GUIDE RAIL
- OH — OVERHEAD UTILITY LINE
- LIMIT OF DESIGN EXCAVATION
- LIMIT OF TOPSOIL/RESTORATION
- FALLEN WILLOW TREE TO BE PRESERVED
- MULCH
- PLACED LOGS
- PLACED DECIDUOUS TREE
- PLACED EVERGREEN TREE
- PRE-EXISTING TREE

0 30 60 Feet

SYK

S.Y. KIM LAND SURVEYOR, P.C.
260 OSBORNE ROAD, ALBANY, N.Y. 12211
PHONE : (518) 785-3969 FAX: (518) 785-1608

REVISIONS			
NO.	DATE	DESCRIPTION	BY

STATE OF NEW YORK — NATHAN M. BURROWS — 050724 — LICENSED LAND SURVEYOR

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

POST CONSTRUCTION SURVEY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REMEDIATION PROJECT GLENMERE LAKE PROPERTY

TOWN OF CHESTER

COUNTY OF ORANGE — STATE OF NEW YORK

SURVEYED BY: AJK	CHECKED BY: NMB	DATE: 5-22-2019
DRAWN BY: AJK	JOB No. 6502	DWG No. POST CONSTRUCTION
SCALE: 1"=30'	SHEET 1 OF 1	