Remedial Work Plan & Alternatives Analysis

Lower South Street Redevelopment Area Brownfield Cleanup Program

NYSDEC Site No. C360145

1005, 1009, 1011, 1013, and 1017 Lower South Street

City of Peekskill, Westchester County, New York

October 25, 2017

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I Joseph M. Lanaro certify that I am currently a NYS registered professional engineer and that this Remedial Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Joseph M. Lanaro, PE

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10/25/17

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EXECUTIVE SUMMARY

This Remedial Work Plan (RWP) and Alternatives Analysis (AA) outlines the activities that will serve to mitigate impacts remaining in the surface and subsurface at the Lower South Street Redevelopment Area (hereinafter referred to as the "LSS Site") in the City of Peekskill, Westchester County, NY. This RWP&AA is submitted as part of the New York State Brownfields Cleanup Program (BCP) for Site No. C360145, that is located more specifically at 1005, 1009, 1011, 1013, and 1017 Lower South Street.

The LSS Site is comprised of the Former L&L Site and the Former Global Recycling Site. The Former L&L Site was initially developed as a residence which was converted to a junkyard property in 1950. The Former Global Recycling Site was also previously used for a residence, transitioning to a wood waste processing facility and operating a transfer station for construction and demolition (C&D) waste. The City uses some of the LSS Site for storage. The January 2017 Remedial Investigation Report identified the following:

- Across the five addresses of the LSS Site, identified compounds of concern in soil consist of polycyclic aromatic hydrocarbons (PAHs) and select metals on the Former L&L Site, sporadic occurrences of select metals on the northern end of 1011 LSS, metals at the western end of 1013 LSS, and select metals and polychlorinated biphenyls (PCBs) on the Former Global Recycling Site.
- Groundwater has generally not been encountered on the LSS Site, with very limited instances of perched groundwater. No remedy is anticipated for the limited perched groundwater at the LSS Site.
- While VOCs have not been identified as a soil or groundwater contaminant at the LSS Site, approximately one fifth of vapor samples identified chlorinated VOC concentrations greater than the subslab vapor action levels. Tetrachloroethene (PCE) and/or its degradation products were reported in these samples along with compounds associated with petroleum and automotive fluids.

This RWP&AA details the process by which semi-volatile organic compounds (SVOC), metals, and PCB impacts shall be addressed and by which progress monitoring shall document the effectiveness of the remedial action. The remedial action objective is to provide engineering controls to be protective of human health and the environment, where no further remedial action is warranted.

The site remedy selected from the alternatives analyzed in the Remedial Investigation Report is the Remove Selected Soil, Install Cover System and a Sub-Slab Depressurization System (SSDS)alternative. This remedy would include selective soil removal, installation of a protective cover across the exposed surface soil on the site, and an SSDS would be installed within existing and planned buildings prior to their occupancy. This alternative could be implemented using the existing buildings and site layout or with more extensive redevelopment and changes to the LSS Site layout. The soil removal action would remove and dispose of an estimated 5,383 CY (8,074 tons) of soil from the LSS Site.

Institutional controls and a protective cover engineering control will be implemented. An environmental easement will restrict use of LSS Site groundwater, restrict future use of the site to restricted-residential purposes, and require adherence to a Site Management Plan. An engineering control in the form of a protective cover will be maintained.

This remedy is characterized as a Track 4 remedy in the Brownfield Cleanup Program.

1.0 INTRODUCTION

This Remedial Work Plan (RWP) and Alternatives Analysis (AA) for the Lower South Street Redevelopment Area was prepared to describe and evaluate the site remedy. The Lower South Street (LSS) Site is located at 1005, 1009, 1011, 1013, and 1017 LSS in the City of Peekskill, Westchester County, New York and is identified as Brownfields Cleanup Program (BCP) Site No. C360145. The 11.6-acre LSS Site is comprised of two general areas: the 2.81-acre Former L&L Salvage Site at 1005 and 1009 LSS, and the 8.79-acre Former Global Recycling Site at 1011, 1013, and 1017 LSS. The Former L&L Site was initially developed as a residence which was converted to a junkyard property in 1950. The Former Global Recycling Site was also previously used for a residence, transitioning to a wood waste processing facility and operating a transfer station for construction and demolition (C&D) waste. This RWP&AA was prepared with guidance and assistance from New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH).

This RWP summarizes the plan to mitigate and/or control identified environmental impacts and achieve the remedial action objectives for the Site. The remedial action objective (RAO) is to achieve a Track 4 (restricted-residential) cleanup for the LSS Site through mitigation or engineering controls so that further remedial action is not warranted. The AA evaluates the potential mitigation/control options that could be used to achieve the Track 4 clean-up and selection of the remedy.

Identified compounds of concern in soil consist of polycyclic aromatic hydrocarbons (PAHs) and select metals on the Former L&L Site, sporadic occurrences of select metals on the northern end of 1011 LSS, metals at the western end of 1013 LSS, and select metals and polychlorinated biphenyls (PCBs) on the Former Global Recycling Site. While VOCs have not been identified as a soil or groundwater contaminant at the LSS Site, approximately one third of vapor samples identified chlorinated VOC concentrations greater than the subslab vapor action levels. Tetrachloroethene (PCE) and/or its degradation products were reported in some of these samples along with compounds associated with petroleum and automotive fluids. The RWP&AA addresses each of these issues.

1.1 Site Description

1.1.1 Site Location and Future Use

The LSS Site is an 11.6-acre unoccupied property situated east of Lower South Street, south of Travis Lane, and west of Route 9 in the City of Peekskill, Westchester County, New York. The area is currently zoned M-2A: Industrial Design District. The intended future use is mixed-use commercial activity with possible hotel, retail, sports facility, and/or multi-family housing, for which the City plans to rezone the LSS Site to be consistent with the intended use. A map illustrating the site location is attached as **Figure 1**. The LSS Site is identified on the Westchester County Real Property Tax map as Section 32.20, Block 2 Lots 4, 5, 5.1, 6, and 7. The LSS Site and surrounding areas are shown on an orthophotograph as **Figure 2**, and a tax map as **Figure 3**.

1.1.2 Geology

Soils observed on the Former L&L Site and 1011 and 1017 LSS parcels during Chazen's 2014 Phase II Investigation and 2016 Remedial Investigation included both natural and fill material. Refusal at bedrock was encountered between 1 and 13 feet below ground surface (bgs) in most borings. Refusal was not encountered within 15 feet bgs in just four of 16 borings installed in 2014 and three of 29 borings installed in 2016. Using site investigation data and site elevation contours from the 2013 W&C report, **Figure 3** provides a bedrock contour map.

Fill thicknesses range from 1 foot to at least 15 feet thick, and consist of brick, concrete, wood, rock, and asphalt. In addition:

- Fill material at the Former L&L Site also included coal/ash and fragments of the local bedrock were encountered near the bedrock surface.
- Fill material at 1011 LSS also included tile and glass, and exhibited an odor described as burnt or septic-like in some locations.
- Approximately half of the borings at 1011 LSS included what appeared to be undisturbed sand, silt, gneiss, and/or till.
- Fill material at 1013 LSS also included glass, coal/slag/ash, C&D waste including lumber, piping, fencing, rebar, and wire.
- Fill material at 1017 LSS included coal ash, glass, plastic, scrap metal, and a coal-like material.

1.1.3 Hydrogeology

The LSS Site does not support a consistent groundwater presence in overburden. Most soil borings on the property encountered no groundwater. Perched groundwater was found above the bedrock surface during two previous investigations only in four locations, and perched groundwater was encountered only in one boring during the 2016 Remedial Investigation.

Within the underlying fractured bedrock formation, topography predicts groundwater migrates generally westward in the direction of the Hudson River. A 2014 SPLP data evaluation suggested that groundwater in the bedrock is unlikely to exceed Groundwater Quality Standards (GWQS).

Site contaminants do not present a groundwater exposure pathway due to direct ingestion as the LSS Site and surrounding properties are supplied with municipal water and sewer. The City of Peekskill's water source is Hollow Brook, which is fed by two reservoirs, each of which is located up gradient of the LSS Site.

1.1.4 Surface Water Resources

No surface water bodies are present on the LSS Site. The Hudson River is located approximately 0.30 mile to the west.

An unnamed Hudson River tributary nearest to the LSS Site is located approximately 0.08 mile to the north of the LSS Site, and outlets to Sandy Cove. Another tributary to the Hudson River, the Dickey Brook, is located approximately 0.32 miles south of the Site, flowing westward from the Blue Mountain Reservation area southeast of the City of Peekskill which includes Lake Mitchell and Lounsbury Pond. LSS Site stormwater is expected to flow towards these two tributaries and thence to the Hudson River.

1.2 Site Background

The LSS Site is currently vacant with some use by the City for storage. The LSS Site was most recently used by separate parties for two different adjoining uses: the Former L&L Salvage Site occupied 1005 and 1009 LSS for auto salvage and junkyard activities, and the Former Global Recycling Site occupied 1011, 1013, and 1017 LSS as a solid waste recycling and transfer station

The Former L&L Site has been vacated by the prior salvage and junkyard owner/operator, and it appears to have been initially developed as a residential site with a junkyard present from 1950. The Former L&L Site includes vegetated areas, an inactive scale pit, a soil pile, a pile of cobbles and boulders, and a pile of mixed debris including cobbles, boulders, and concrete, and some vehicle parts.

The 8.79-acre Former Global Recycling Site at 1011, 1013, and 1017 LSS (formerly owned by Karta Corporation) was historically used for a residence, transitioning to processing wood waste and operating a transfer station for construction and demolition (C&D) waste. An office building on the western side of 1017 LSS was constructed circa 1981. Building 6 on the eastern side of 1017 LSS was constructed in 1988-1989. Building 4 on the southern end of 1011 LSS was constructed circa 2000. Building 3 on 1013 LSS was constructed between 2002 and 2004. Two additional buildings (1 and 2) were constructed on the northern area of 1011 LSS circa 2002 and demolished between April 2004 and October 2006. Building numbering from other reports has been used here for consistency.

The office and Buildings 3, 4 and 6 remain on the Former Global Recycling Site, and paved driveways lead up to the buildings with paved areas on the front sides of the structures.

Multiple previous investigations were conducted on the LSS Site and were discussed in more detail in the Remedial Investigation Work Plan. At the Former L&L Site, multiple spill response activities were conducted between 2000 and 2011, with the most recent pre-BCP sampling occurring in 2014 by Chazen with ASP B data deliverables. At 1011 LSS, an extensive sampling program was implemented in 2011 by Tectonic supplemented in 2014 by sampling by Chazen with ASP B data deliverables. Finally, extensive sampling by Woodard and Curran (W&C) was conducted on 1013 LSS and 1017 LSS, with the latest pre-BCP 2013 site characterization data including ASP B data and associated data validation. **Figure 3** provides a summary of prior sampling and Remedial Investigation Report results that exceed the Restricted-Residential Use SCOs (RRUSCOs).

1.3 Nature and Extent of Contamination

The Chazen Companies prepared a Remedial Investigation Report dated January 2017, a Supplemental Remedial Investigation Report dated April 21, 2017 to characterize the soil stockpile, and a Supplemental Soil Gas Investigation dated September 13, 2017 to conduct additional sampling requested by NYSDOH.. The remedial investigation objective was to gather data to refine delineation of the nature and extent of contaminant impacts to soil, soil vapor, and groundwater for use in fate/transport assessment.

Across the five addresses of the LSS Site, identified compounds of concern in soil consist of polycyclic aromatic hydrocarbons (PAHs) and select metals on the Former L&L Site, sporadic occurrences of select metals on the northern end of 1011 LSS, metals at the western end of 1013 LSS, and select metals and polychlorinated biphenyls (PCBs) on the Former Global Recycling Site.

Impacts to soil have now been delineated on the Former L&L Site (metals and PAHs) and between the office and Building 6 on 1017 LSS (lead and PCBs). An area of surface soil impacts (metals and PCBs) was also identified in the center of the Former L&L Site.

PAH impacts exceeding RRUSCOs are present in the top two feet of soil across the LSS Site, were generally consistent across this urban property, and total semi-volatile organic compounds (SVOCs) are less than 100 ppm, with three exceptions that had a maximum total SVOC concentration of 403.57 ppm. There was no identified source associated with the three outliers and are considered to be associated with the urban area and site-wide fill material.

Groundwater has generally not been encountered on the LSS Site, with very limited instances of perched groundwater. Two 2010 investigation locations encountered perched groundwater east of Building 3 and west of the office building, and reported no VOC or SVOC impacts. W&C's 2012 sampling encountered perched groundwater in one test pit west of Building 3 on 1013 LSS, and reported elevated concentrations of methyl tertiary-butyl ether (MTBE), SVOCs, and lead. Chazen encountered perched groundwater in one soil boring on 1017 LSS and the water sample met groundwater quality standards (GWQSs) for volatile organic compounds (VOCs), SVOCs, and PCBs. Exceedances of GWQSs were associated with sodium that is likely due to runoff from winter road salt applications and manganese that may be associated with fill material that is prevalent across the LSS Site. No remedy is anticipated for the limited perched groundwater at the LSS Site.

While VOCs have not been identified as a soil or groundwater contaminant at the LSS Site, 5 out of 24 soil vapor samples identified chlorinated VOC concentrations greater than the subslab vapor action levels. Tetrachloroethene (PCE) and/or its degradation products were reported in these samples, along with compounds associated with petroleum and automotive fluids.

1.4 Human Health Exposure Assessment

The Remedial Investigation Report included a Human Health Exposure Assessment that is summarized as follows.

- Soil impacts at the LSS Site include metals, PAHs and PCBs that appear to be from historic automotive salvage activities and fill material. While sporadic soil vapor samples reported chlorinated VOC concentrations greater than the action levels, there is no evidence of a source, or vapor plume on or migrating from the LSS Site. Groundwater is not considered a media with SCG exceedances or a related Area of Concern. This is due to the lack of overburden groundwater at the LSS Site and infrequent perched water in fill material above bedrock.

- The LSS Site is currently vacant, locked, and fenced, and mostly paved; the City's limited usage is for storage. As such, there is no current human health exposure pathway to soil or soil/subslab

vapor contaminants under current site use conditions. The LSS Site and surrounding properties lie within a community receiving water from a municipal water supply system.

- Potential exposures during site redevelopment would be addressed by following the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP), and as presented in the description for the remedial options.

- The Alternatives Analysis evaluates how each remedial option would mitigate potential future exposures at the LSS Site.

2.0 REMEDIAL ACTION ALTERNATIVES

2.1 Remedial Goals and Remedial Action Objectives

The goal of remedial action for the LSS Site is to protect human health and the environment through administrative or engineering controls that would mitigate residual impacts or prevent exposure to affected site soil vapor, soil and groundwater to the extent feasible, consistent with DER-10. The overall goal is to attain a Track 4 clean-up of the LSS Site.

The Remedial Action Objectives (RAOs) for specific media follow.

Groundwater

RAOs for Public Health Protection

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

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation exposure to contaminants volatilizing from soil.

Soil Vapor

RAOs for Public Health Protection

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

The remedial action objectives will be attained using a presumptive remedy for the Site that includes:

- Removal and disposal of soil stockpile from the Former L&L Site.

- Excavation of impacted surface and shallow soil in northern and central parts of the Former L&L Site (metals), at the western end of 1013 LSS (metals), and between the office and Building 6 on 1017 LSS (lead and PCBs) and limited areas with elevated PAHs that exceed Restricted-Residential Use Soil Clean-Up Objectives.
- Removal or covering of remaining shallow surface soils to meet RRUSCOs for the LSS Site.
- Installation of an sub-slab depressurization system (SSDS) within existing site buildings or planned new buildings prior to occupancy. In existing buildings, floors will be checked for damage or unsealed penetrations and those areas will be sealed as needed to limit the flow of subsurface vapors into the building. In new buildings, a vapor barrier will be installed beneath the slab consistent with design plans prepared at that time. Prior to occupancy and after each building's heating, ventilation, and air conditioning (HVAC) system is installed, SSDS discharge, indoor, and outdoor air sampling will be performed. For warehouse type structures, it is anticipated that the SSDS and compliance air sampling will be focused on office areas that do not have high air exchanges due to overhead doors.

As defined in NYSDEC DER-10 (Section 4.0), remedial alternatives are evaluated based on the following criteria:

a) Overall Protection of Public Health and the Environment: This criterion evaluates exposure and residual risks to human health and the environment during or subsequent to implementation of the alternative.

b) Compliance with SCGs: This criterion evaluates whether the remedial alternative will ultimately result in compliance with SCGs, to the extent practicable.

c) Long-Term Effectiveness and Permanence: This criterion evaluates if the remedy is effective in the long-term after implementation (e.g., potential rebound). In the event that residual impacts will remain as part of the alternative, then the risks and adequacy/reliability of the controls are also evaluated.

d) Reduction of Toxicity, Mobility, or Volume with Treatment: This criterion evaluates the reduction of contaminant toxicity, mobility or volume as a result of the remedial alternative. In addition, the reversibility of the contaminant destruction or treatment is evaluated.

e) Short-Term Effectives: This criterion evaluates if the remedial alternative protects the community, workers and the environment during implementation.

f) Implementability: This criterion evaluates the remedial alternative based on its suitability, implementability at the specific site, and availability of services and materials that will be required.

g) Cost: This criterion evaluates the capital, operation, maintenance, and monitoring costs for the remedial alternative. The estimated costs are presented on a present worth basis.

h) Community Acceptance: This criterion takes into account concerns of the community regarding the proposed remedy. Any public comments and overall public perception are addressed as part of the criterion.

i) Land Use: This criterion evaluates the proposed remedial approach against the current, intended, and reasonably anticipated future use of the land and its surroundings.

2.2 Analysis of Alternatives

Based on the findings of the Remedial Investigation, an AA was performed to assess reasonable and appropriate site remediation options and to select an appropriate alternative for mitigation the site. Three alternatives determined to be relevant were considered and evaluated. These are summarized as follows and the selected alternative is identified.

2.2.1 Alternative 1: No Further Action

Under the No Further Action (NFA) alternative, no remedial actions, institutional, or engineering controls would be implemented.

No further action would leave the LSS Site in its current condition with the identified potential exposures to impacts from on-site soil and soil vapor.

This alternative was considered as a baseline in the assessment process, and will not be selected because it is not protective of human health or the environment and does not meet the remedial goals and objectives. Therefore, it is not evaluated further.

2.2.2 Alternative 2: Remove Selected Soil, Install Cover System and a SSDS

The Alternative 2 remedy would include selective soil removal, installation of a protective cover across the exposed surface soil on the site, and a sub-slab depressurization system (SSDS) would be installed within existing and planned buildings prior to occupancy. This alternative could be implemented using the existing buildings and site layout or with more extensive redevelopment and changes to the LSS Site layout. Since soil removal beneath buildings is not required to meet RRUSCOs, building demolition is not included in this alternative, although it may be included in the site redevelopment plan. As the redevelopment plan has not yet been finalized, the general plan is anticipated to include 80% of the LSS Site redeveloped with cover consisting of buildings, pavement or sidewalks, and the remaining 20% of the LSS Site redeveloped with two feet of clean fill for green space, landscaping, and storm drainage infrastructure.

Prior to occupancy, an SSDS will be installed within existing and planned buildings, and existing floors will be checked for damage and sealed as needed to limit the flow of subsurface vapors into the building. In new buildings, a vapor barrier will be installed beneath the slab. Under this alternative, an environmental easement would be issued as an institutional control to restrict site use options (e.g., restricted-residential use, no groundwater usage) and activities in the impact area (e.g., soil management plan for future excavation work).

The soil removal action would remove and dispose of an estimated 5,383 CY (8,074 tons) of soil from the following Areas of Concern (AOCs) (see **Figure 4** for locations), and most of the Former L&L Site

(approximately 2.5 acres of the 2.81-acre area) would be cleared and grubbed to allow for soil removal activities in this area. Confirmation soil samples would be collected to document soil conditions at the limits of excavations and beneath the soil stockpile.

1. AOC 1: In the northeastern corner of the Former L&L Site near SB-5 (0 to 2 inches) reported elevated lead, cadmium and copper concentrations. These metals concentrations were not reported in other nearby samples; therefore, the area of concern is estimated to be 20 feet in diameter and one to two feet deep and is expected to removal soil from LL-SB6 where total SVOCs were 403.57 ppm. Estimated volume from this area is 23 CY (35 tons), with an approximate area of 315 square feet and an excavation perimeter of 63 linear feet. This excavation work is estimated to take one quarter of a day to complete and is expected to be completed in the same day as AOC 2.

2. AOC 2: The northwestern corner of the Former L&L Site has an area of surface soil lead impacts in the LL-SB1, SB-11, SB-15, SB-17, SB-19, and SB-20 locations, and extended to approximately 2 feet at borings LL-SB1 and SB-17. Elevated lead concentrations range from approximately 400 ppm to 879 ppm. The area of surficial lead impacts is estimated to be 35 feet by 55 feet in area, and less than six inches deep. Estimated volume from this area is 36 CY (53 tons), with an approximate area of 1,925 square feet and an excavation perimeter of 180 linear feet. This excavation work is estimated to take half of a day to complete and is expected to be completed in the same day as AOC 1.

3. AOC 3: The central area of the Former L&L Site identified elevated lead concentrations (1,220 to 11,700 ppm), along with one elevated PCB sample and several other elevated metals (copper, cadmium, and mercury) in the top two inches of soil. The area of impacts is estimated to have a 130-foot radius and be two to three feet deep, based on the reported concentrations and other observations across the Former L&L Site. This area includes SB-10 that also reported elevated copper. While the deeper SB-10 sample also reported copper and cadmium exceedances in the bottom of the boring at 10 to 12 feet, the concentrations at this depth do not represent a direct exposure concern. Estimated volume from this area is 1,473 CY (2,209 tons), with an approximate area of 18,790 square feet and an excavation perimeter of 492 linear feet. For cost estimating purposes, this soil is assumed to be disposed of as non-hazardous. This excavation work is estimated to take 17 days to complete.

4. AOC 4: An area of lead with mercury impacts was identified on the western end of 1013 LSS at GB-37(6 to 7 feet) and SS2 (SITES test pit), and the impacted area appears to have been defined by multiple prior sampling events. This area is estimated to be approximate 70 feet by 30 feet, with depths ranging from 3 feet to 8 feet. Estimated volume from this area is 466 CY (699 tons), with an approximate area of 1,870 square feet and an excavation perimeter of 165 linear feet. This excavation work is estimated to take 6 days to complete.

5. AOC 5: An area of lead and PCB impacts was identified between the office and Building 6 on 1017 LSS. The concentrations are highest at TP-2 and extend outward to include SB-22 and SB-27 (lead) and to TP-1, SB-23, and SB-25 (PCBs). This lead area of concern (AOC-5a) is approximately 4 feet deep, 25 feet wide, and 20 feet long. Estimated volume from this lead in soil area is 74 CY (111 tons), with an approximate area of 500 square feet and an excavation perimeter of 90 linear feet. For cost estimating purposes, this soil is assumed to be disposed of as hazardous based on total lead concentrations. While the estimated 25-foot wide and 3-foot deep area where PCB concentrations are greater than the RRUSCO (AOC-5b) extends approximately 15 feet south of

TP-2 (for approximately 10 feet by 10 feet by three feet), the three delineating samples results just slightly exceed the SCO and range from 1.09 to 2.7 ppm. Estimated volume from this PCBs in soil area is 11 CY (17 tons), with an approximate area of 375 square feet and perimeter of 80 linear feet. This excavation work for both AOC 5a and 5b is estimated to take one day to complete.

6. AOC 6: The soil stockpile located in the southwestern corner of the Former L&L Site is approximately 3,300 CY will also be removed for disposal as Supplemental Remedial Investigation sampling results show that it does not meet the RRUSCOs for cadmium, copper, lead, or mercury. As needed, soil under the stockpile will be removed to demonstrate that remaining soil is consistent with site conditions (i.e., SVOCs may remain at concentrations consistent across the LSS Site, but other analytes will generally meet the RRUSCOs). The area of the stockpile is approximately 12,225 square feet with a stockpile perimeter of 535 linear feet. This stockpile loadout and excavation work is estimated to take 35 days to complete.

   One stockpile sample reported a TCLP lead of 5.85 mg/L, which is greater than the 5mg/L action level for hazardous material. Remaining TCLP results were well below the TCLP action level and ranged from 0.212 to 1.53 mg/L. As such, an estimated 10%, or 330 cubic yards (495 tons) of soil from the central section of the pile is expected to be disposed of as hazardous waste, and the remaining 2,970 cubic yards (4,455 tons) of the soil stockpile volume is anticipated to be disposed of as non-hazardous. The Former L&L Site pile of cobbles and boulders, pile of mixed debris including cobbles, boulders, concrete, and some vehicle parts are expected to have the metal segregated and disposed of or recycled off-site, and the aggregate be reusable for fill on the LSS Site.

The analysis of this alternative is presented below. **This alternative is the best alternative because it is protective of human health and the environment, meets the remedial goals and objectives and would achieve the Restricted Residential goals, and is economically feasible.**

Overall Protection of Human Health and the Environment

Selecting this alternative would be protective of human health and the environment and would meet the RAOs. The limited soil excavation would remove “hotspot” areas of soil impacts, the cover would prevent potential contact with remaining impacted soil, and the ventilation system would mitigate potential exposure of future occupants from potential VOC vapor identified in limited site areas.

This alternative is expected to be consistent with the planned future use of the site for both residential and commercial activities.

Compliance with Standards, Criteria and Guidance

Under this alternative, the LSS Site would comply with the SCGs as the soil removal, cover system and vapor barrier would mitigate exposure to remaining impacted soil and soil vapor.

Long-term Effectiveness and Permanence

This alternative would be effective in the long term, as exposures would be mitigated. The selected soil removal and cover system would prevent direct contact with impacted soil. The vapor barrier would mitigate potential exposures within buildings.

This alternative satisfies the RAOs. An environmental easement and Site Management Plan (SMP) would be issued with institutional controls to restrict site use options (e.g., restricted-residential use, no groundwater usage) and activities in the impact area (e.g., soil management plan for future excavation work).

Reduction of Toxicity, Mobility, and Volume with Treatment

The selected soil removal would reduce the volume and magnitude of site impacts associated with toxicity and mobility of contaminates at the site by removing soil with highest identified impacts. While the cover system and vapor barrier would not reduce the volume and magnitude of the site impacts associated with toxicity and mobility of contaminants in these Site media, the relatively low concentrations in these media is less of a concern given this remedial alternative.

Short-Term Impact and Effectiveness

Potential exposures to impacted soil during site redevelopment would be addressed by following the HASP and CAMP. Engineering controls will include dust control measures such as water application, and typical construction erosion control activities such as silt fencing to prevent off-site migration of surface soil from surface runoff from storm events. The soil excavation, loading, and hauling under this alternative is expected to take 12 weeks to implement. The SSDS installation and repair of damaged areas of flooring could be completed during this timeframe.

This alternative would be implemented coincident with Site redevelopment activities, to consolidate site construction efforts and minimize the increase to truck traffic, fossil fuel usage, truck trips, truck and heavy equipment emissions, and on-site idling. However, the removal of the planned soil volume will increase related truck traffic to transport soil off-site. Construction entrance(s) will prevent soil from being tracked off the site on truck tires. While residences are located adjoining to the site, they are located east of Route 9 from the LLS Site and the project timeframe of 12 weeks would be temporary and result in improved views for the residences looking towards the Hudson River.

This alternative would be immediately effective as the selected soil removal and protective cover would prevent contact with the soil, and the SSDS and floor sealing or vapor barrier would prevent potential VOCs from migrating into site buildings. This remedy would be effective in achieving the site RAOs. The engineering controls (i.e., SSDS, and floor seal or vapor barrier) would remain in place in place for the life of the building(s).

Implementability

This alternative is technically feasible as it would be easily implementable as part of Site redevelopment activities. It would include physical removal of impacted soil, two engineering controls (soil cover and vapor barrier), and institutional controls identified in the environmental easement and SMP. The environmental easement required to leave residual contamination in place at concentrations greater than Unrestricted Use SCOs would include a land use restrictions (i.e., restricted-residential use), groundwater use restrictions, and compliance with an approved SMP. There would be no difficulties in securing personnel, materials, equipment or access to implement and maintain this alternative.

Cost Effectiveness

This alternative would be the most cost-effective alternative and the costs are shown in the table below.

Alternative 2 Table Estimated Cost to Remove Selected Soil, Install Cover System and Vapor Barrier

TASK	UNIT	UNIT COST	QUANTITY	TOTAL COST
Soil Removal				
Total Project Management (10% of implementation)	each	$ 156,570	1	$156,570
Clear, grub, remove stumps fromFormer L&L Site	acres	$ 6,975	2.5	$17,438
Equipment rental and mobilization	CY	$ 5.00	5,382.7	$26,914
Excavate/load (90 CY/day)	days	$ 1,120	60	$67,200
Non-Hazardous Soil - Transportation and Disposal	ton	$ 162.76	7,579	$1,233,543
Hazardous soil disposal (transport, dispose)	ton	$ 450	495	$222,750
Waste Characterization Sampling for soil for off site disposal	sample	$ 1,600	13	$20,425
Confirmation Soil Sampling Post-Excavation (inlcudes QAQC samples)				
SVOCs	sample	$ 143.00	58	$8,294
Lead	sample	$ 20.00	18	$360
Metals	sample	$ 93.50	103	$9,631
PCBs	sample	$ 66.00	93	$6,138
			Soil Removal Subtotal	**$1,769,261**
Engineering/Technical oversight				
Total Project Management (5% of design)	each	$ 7,151.76	1	$7,152
Remedial Design and Project Plans	each	$ 35,000	1	$35,000
Technical Oversight (ENV Scientist/H&S) with field equipment	days	$ 1,050.00	60	$62,799
CAMP Monitoring and Reporting	week	$ 2,277.00	12	$27,237
Final Engineering Report	each	$ 18,000.00	1	$18,000
Field Office/Port-a-Johns/Utilities/etc	week	$ 1,200.00	12	$14,354
Site Security	week	$ 97.00	1,200	$116,400
			Engineering/Tehcnical Oversight Subtotal	**$280,941**
Sub-Slab Depressurization System				
Total Project Management (10% of implementation)	each	$ 11,161.20	1	$11,161
Floor sealing in existing buildings (estimated 10% of total 73,625 SF)	SF	$ 1.60	7,363	$11,780
Install SSDS in existing buildings (one point per 2,000SF; total likely to decrease	point	$ 2,500	37	$92,500
Post-SSDS install: sub-slab and indoor air sampling	event	$ 7,332	1	$7,332
			Vapor Barrier Subtotal	**$ 122,773**
Follow up Monitoring (calculated for the next ten years, but required for duration of ECs)				
Annual indoor air quality monitoring	event	$ 3,240	10	$32,400
Annual site inspections and Periodic Review Reports every five years	event	$ 2,500	10	$25,000
				$ 57,400
Alternative Subtotal				$2,230,375
Contingency (10%)				$223,038
Engineering (20%)				$446,075
Total Alternative 2 Costs				**$2,899,488**

Land Use

This alternative is consistent with the planned future use of the site for mixed-use commercial activity with possible hotel, retail, sports facility, and/or multi-family housing, as the soil removal and cover would prevent contact with the residual impacted soil, and the vapor barrier would prevent exposure to potential VOCs migrating into site buildings.

Both the soil cover and vapor barrier would be active engineering controls operating through the life of the property and an environmental easement would be issued as an institutional control identifying site use restrictions and activities in the impacted areas (e.g., soil management plan for future excavation work).

Community Acceptance

Community views on the RWP will be obtained during the public comment period, and will be addressed when the RWP is finalized. Community acceptance will be evaluated as part of the RWP process.

2.2.3 Alternative 3: Remediate to Achieve Unrestricted Use with No IC/ECs

This alternative would restore the site to pre-release conditions by an aggressive soil excavation with building demolition. To access the soil, the four buildings would need to be demolished. The process for this alternative would be as follows: conduct pre-demolition surveys for asbestos-containing materials (ACM), remove identified ACM, remove aboveground storage tank by building 4, demolish buildings and concrete slab foundations, clear and grub most of the Former L&L Site (approximately 2.5 acres of the 2.81-acre area), remove asphalt and concrete, remove and dispose of soil. For estimating purposes, 211,551 CY (317,327 tons) of soil would be removed as follows:

- Areas identified in Alternative 2. Estimated volume from this area is 5,383 CY (8,074 tons).
- The top three feet would be removed from the northern end of the Former L&L Site. Estimated volume from this area is 1,150 CY (1,725 tons).
- The top five feet of soil would be removed from 1011 LSS and the northern open area of 1013 LSS, most of the Former L&L Site, and the eastern end of 1017 LSS around the Office. Estimated volume from this area is 110,000 CY (165,000 tons).
- The top ten feet of soil would be removed from under Buildings 3 and 6, and the open space west of these buildings, the western-most 100 feet of 1013 LSS, and the northwest corner of Former L&L Site. Estimated volume from this area is 95,000 CY (142,500 tons).
- Interim screening and sampling as needed with removal of additional soil "hotspots" as needed to achieve demonstrable Track 1 Clean-up.

No follow-up remedial activities or monitoring would be required.

Overall Protection of Human Health and the Environment

Selecting this alternative would be protective of human health and the environment, would meet the RAOs, and would meet Unrestricted Use SCOs, and no institutional or engineering controls would be needed.

Compliance with Standards, Criteria and Guidance

Under this alternative, the Site would comply with the SCGs as the LSS Site would meet Unrestricted Use SCOs.

Long-term Effectiveness and Permanence

This alternative would be a permanent solution and be the most effective in the long term and satisfies the RAOs. Under this alternative no ICs or ECs would be required for the Site. The Site buildings would be demolished to provide access to the impacted soil.

Reduction of Toxicity, Mobility, and Volume with Treatment

This alternative would remove the site impacts and leave no residual contaminants at the site; therefore, there would be no remaining or associated toxicity or mobility.

Short-Term Impact and Effectiveness

This alternative would be effective in achieving the site RAOs once implemented; however, implementation would take approximately 9.4 years. During implementation, there would be increased truck traffic noise and emissions associated with demolition and excavation equipment during weekdays. Residences are located adjoining to the site and are anticipated to be adversely impacted by nearly decade-long timeframe of construction noise and truck traffic. This alternative is not considered sustainable or consistent with DER-31 based on fossil fuel usage, truck trips, truck and heavy equipment emissions, and on-site idling.

Implementability

Given the very high cost and long implementation timeframe, this alternative would not be feasible for the City (owner) or future developer to implement and as such, take a longer time to initiate. It would demolish existing site structures that are functional and useable, and require additional investment to replace them. This alternative may be technically feasible, however, would not be easily implementable, although it would not require any ICs or ECs for the Site.

Cost Effectiveness

This alternative would be the least cost-effective alternative as there are high costs associated with the excavation of soil.

The costs associated with this alternative are shown in the table below.

Alternative 3 Table Estimated Cost for Remediate to Meet Unrestricted Use SCOs with No IC/ECs

TASK	UNIT	UNIT COST	QUANTITY	TOTAL COST
Asbestos Abatement				
Asbestos survey and abatement plans	each	$ 13,000	4	$52,000
Asbestos abatement (estimated since survey has not been conducted)	SF	$ 8.00	73,625	$589,000
			Abatement Subtotal	**$641,000**
Building Demolition to Access Impacted Soil				
Building and foundation demolition	SF	$ 6.02	73,625	$443,488
C&D waste disposal	ton	$ 79.04	42,616	$3,368,247
AST removal	each	$ 5,000.00	1	$5,000
			Demolition Subtotal	**$3,816,735**
Soil Removal				
Total Project Management (10% of implementation)	each	$ 5,849,747	1	$5,849,747
Clear, grub, remove stumps fromFormer L&L Site	acres	$ 6,975	2.5	$17,438
Remove and dispose of asphalt and concrete	SF	$ 15	212,296	$3,152,013
Equipment rental and mobilization	CY	$ 5	211,551	$1,057,756
Excavate/load (90 CY/day)	days	$ 1,120	2,351	$2,632,638
Non-Hazardous Soil - Transportation and Disposal	ton	$ 163	316,832	$51,566,284
Hazardous soil disposal (transport, dispose)	ton	$ 450	495	$222,750
Waste Characterization Sampling for soil for off site disposal	sample	$ 1,600	419	$669,604
Confirmation Soil Sampling Post-Excavation (inlcudes QAQC samples)				
SVOCs	sample	$ 143.00	1350	$193,050
Metals	sample	$ 93.50	1350	$126,225
PCBs	sample	$ 66.00	1350	$89,100
			Soil Removal Subtotal	**$65,576,604**
Engineering/Technical oversight				
Total Project Management (5% of design)	each	$ 144,395.70	1	$144,396
Remedial Design and Project Plans	each	$ 45,000	1	$45,000
Technical Oversight (ENV Scientist/H&S) with field equipment	days	$ 1,050.00	2,351	$2,468,098
CAMP Monitoring and Reporting	week	$ 759.00	470	$356,816
Final Engineering Report	each	$ 18,000.00	1	$18,000
Field Office/Port-a-Johns/Utilities/etc	wk	$ 1,200.00	204	$244,800
Site Security	wk	$ 1,200.00	204	$244,800
	Engineering/Tehcnical Oversight Subtotal			**$3,521,910**
Alternative Subtotal				$73,556,249
Contingency (10%)				$7,355,625
Engineering (20%)				$14,711,250
Total Alternative 3 Costs				**$95,623,124**

Land Use

This alternative would allow planned future use of the Site to be Unrestricted.

Community Acceptance

Community views on the RWP will be obtained during the public comment period, and will be addressed when the RWP is finalized. Community acceptance would be evaluated as part of the RWP process.

This alternative is the most protective of the alternatives but is not economically feasible and does not meet green remediation goals. The alternative removes existing structures and the potential for their

redevelopment, and also modifies the site grade. The cost does not reflect the additional cost of constructing new buildings on the Site.

2.3 Selected Remedial Action Option

Based on the information available and presented above, the recommended remedy is Alternative 2 Remove Selected Soil, Install Cover System and a Vapor Barrier as it is feasible and would be protective of human health and the environment.

3.0 REMEDIAL WORK PLAN

The remedial work performed at the Site shall be conducted in accordance with the procedures described below and the previously approved Health and Safety Plan (HASP), Community Air Monitoring Plan (CAMP), and Quality Assurance Project Plan (QAPP). The HASP will be updated as needed for this remedy.

3.1 Site Preparation

Mobilization for the remedial action would include, underground utility clearances, placement of necessary construction fencing, traffic controls, support equipment and/or structures, and any or all other non-intrusive activities necessary to secure the work zone(s), required permits, and prepare the site.

Site contractors shall ensure excavation or other necessary equipment be free of contamination upon arrival at the Site.

3.1.1 Health and Safety Plan

The LSS BCP Site-Specific Health and Safety Plan (HASP) was approved by NYSDEC prior to the Remedial Investigation, and is included in Appendix A, and can be used for the remedy along with a detailed Construction HASP for the project will be prepared by the demolition and construction contractor(s) prior to commencing the work. The HASP and the Construction HASP will include directions to the nearest hospital, identify Site hazards and potential Site contaminant exposures, and specifies personal protective equipment (PPE) to be used to safeguard against the identified Site hazards.

3.1.2 CAMP Monitoring

The generic New York State Department of Health (NYSDOH) Community Air Monitoring Plan (CAMP) is included in Appendix B. The CAMP will be implemented during intrusive activities to protect downwind receptors from potential VOCs and air-born particulates emanating from the Site.

3.1.3 Waste Characterization Sampling

Prior to off-site disposal, waste characterization samples of excavated soil will be collected and analyzed, as per the requirements of the selected disposal facility. Discrete and/or composite samples will be collected. These data for disposal are not anticipated to require data validation. The soil stockpile on the Former L&L Site has already been sampled for waste characterization, although some segregation of the soil in the center of the pile is planned so that it can be re-sampled to confirm the volume that needs to be disposed of as hazardous.

The planned waste characterization profile sampling would be consistent with the disposal facility requirements, but are anticipated to be similar to the sample frequency conducted for the disposal options under the Supplemental Remedial Investigation Report dated April 21, 2016.

3.2 Soil Removal Action

3.2.1 Soil Excavation

Excavation areas are described in the Section 2.2 Alternative 2 description and the final excavation depth will vary in each identified removal area and be dependent upon the vertical extent of contaminants at each location, but will not extend below bedrock. The contractor(s) selected for this work will implement and follow a site-specific erosion control plan and storm water management plan.

After the soil is excavated, the base and sidewall of each excavation will be field screened for VOCs and lead (or other contaminants identified by waste characterization samples), with collection of confirmation samples to potentially identify:

1. Areas where additional soil removal is necessary to achieve the RRUSCOs and
2. Excavation areas for construction of building footings that may or may not require management.

3.2.2 Soil Screening Methods

Field screening of soil during all remedial excavation work will be performed by a qualified environmental professional or geologist, and will include visual and olfactory assessments of potential impacts, screening for VOCs using a photo-ionization detector (PID), and screening for lead impacts using an x-ray fluorescence (XRF) analyzer using established methods consistent with the Remedial Investigation. PCB impacts have been observed to be in areas with elevated lead concentrations; therefore, separate field screening for PCBs is not planned.

A representative number of confirmatory laboratory samples will be taken at the excavation limits to confirm whether the RRUSCOs are achieved or assess the residual concentrations left in place (see Section 3.2.8).

The following conservative field screening thresholds in parts per million (ppm) will be utilized to estimate the excavation endpoint in the field:

Estimated Field Screening Thresholds to Achieve RRUSCOs

VOCs – 100 (ppm, PID) Lead – 300 (ppm, XRF)

3.2.3 Soil Loading and Transport

Soil will be loaded into trucks or roll-off containers that have been lined with polyethylene sheeting and then covered with a solid tarp(s). To the extent practical, excavated soils will be directly loaded into trucks or roll-off containers for transport to a pre-approved waste disposal facility. Direct loading eliminates the need for the temporary stockpiling and associated management of soils on Site.

Should temporary stockpiling of soils become necessary during the remedy, soil stockpiles will be placed on and covered by sufficiently thick plastic sheeting to suppress dust and prevent infiltration from rainfall. Plastic coverings will be secured with weighted objects as appropriate.

All transport of excavated soils from the Site to the receiving disposal facility will be performed by licensed waste haulers under the provisions of 6 NYCRR Part 364, and any other applicable local and Federal regulations. Waste manifest and weigh ticket documentation will be provided for each soil load and will be included in the Final Engineering Report (FER).

3.2.4 Soil Disposal Facility

The soil disposal facility will be selected at a later date and the NYSDEC Project Manager will be informed of this selection. Waste characterization sampling will be conducted in accordance with the requirements of the selected disposal facility.

Excavated soils that meet the RRUSCO may be considered for use as fill on the LSS Site with approval of the NYSDEC Site manager.

Non-contaminated soil, as determined by confirmatory sampling, requiring excavation and removal from the Site, but not intended to be disposed at a permitted waste facility, shall be managed according to 6 NYCRR 375 regulations and the sampling requirements listed in Tables 5.4(e)4 and 10 of DER-10.

3.2.5 Backfill Materials

A Request to Import/Reuse form will be completed and submitted for NYSDEC approval prior to importing backfill materials to the LSS Site. A blank form is provided in Appendix C. The completed form will include documentation of the source of backfill materials from the excavation contractor's material management plan.

- Gravel, rock, or stone consisting of virgin materials may be used without analytical testing provided that it contains less than 10% by weight material which would pass through a size 80 sieve. Finer materials secured from a New York State permitted mine or quarry facility (or equivalent) may also be used following at least one round of characterization samples for the initial 100 cubic yards.

- Material secured form a non-permitted borrow source must be sampled and analyzed for chemical composition consistent with Table 4 of NYSDEC CP-51 and/or Table 5.4(e)10 of DER-10 to show the quality of imported material is consistent with the RRUSCOs.

- Any excess soils generated on-site from excavations for basements, footings, etc. may be reused on-site to the extent practical and placed beneath the cover, consistent with DER-10 Table 5.4(e)4 and Section 5.4(e)9.ii.

- Excess soils that cannot be reused on-site will be properly disposed of off-site.

3.2.6 Confirmatory Endpoint Sampling

Confirmatory endpoint samples will be collected from the excavations to demonstrate that the remedy has achieved the RRUSCOs. Grab sidewall and bottom samples will be collected from each excavation area consistent with DER-10 and include one sample from the bottom of the sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area. Sampling will be performed in accordance with the approved Remedial Investigation QAAP.

The following confirmation sampling is anticipated.

Analysis	**AOCs (est. number of sampling days)**	**Estimated Quantity***	**QAQC Sample Quantity****
CP-51 list SVOCs by EPA method 8260C	AOC 1 (one with AOC2) AOC 4 (two) AOC 6 (two)	3 SWL; 1 BTM 6 SWL; 2 BTM 18 SWL; 14 BTM **Total 44**	3 FD 5 EB 3x2= 6 MS/MSD **Total QAQC 14**
Total lead by EPA method 6010	AOC 2 (one with AOC1) AOC 5a (one with AOC5b)	6 SWL; 3 BTM 3 SWL; 1 BTM **Total 13**	1 FD 2 EB 1x2= 2 MS/MSD **Total QAQC 5**
Total RCRA metals by EPA methods 6010 and 7471	AOC 1 (one with AOC2) AOC 3 (four) AOC 4 (two) AOC 6 (two)	3 SWL; 1 BTM 17 SWL; 21 BTM 6 SWL; 2 BTM 18 SWL; 14 BTM **Total 82**	4 FD 9 EB 4x2= 8 MS/MSD **Total QAQC 21**
PCBs by EPA method 8082	AOC 3 (four) AOC 5b (one with AOC 5a) AOC 6 (two)	17 SWL; 21 BTM 3 SWL; 1 BTM 18 SWL; 14 BTM **Total 74**	4 FD 7 EB 4x2= 8 MS/MSD **Total QAQC 19**

*Sidewall samples indicated by SWL; Bottom samples indicated by BTM
**Field Duplicate (FD) 1 per 20; Equipment Blank (EB) 1 per day; MS/MSD 1 per 20 (one MS/MSD is tallied as two samples to be consistent with analytical costs)

Analytical results for confirmation soil samples taken at the soil removal limits will include ASP Level B data deliverables for use in the preparation of Data Usability Summary Reports (DUSRs) by a qualified third-party data validator.

Analysis for additional parameters may be included based on results of the waste characterization samples. The waste characterization results will be provided to NYSDEC when available and the post-excavation sampling adjusted accordingly.

3.3 Protective Soil Cover

Alternative 2 could be implemented using the existing buildings and site layout or with more extensive redevelopment and changes to the LSS Site layout. As the redevelopment plan has not yet been finalized, the general plan is anticipated to include 80% of the LSS Site redeveloped with cover consisting of

buildings, pavement or sidewalks, and the remaining 20% of the LSS Site redeveloped with two feet of clean fill for green space, landscaping, and storm drainage infrastructure. Fill material will meet DER-10 requirements and a demarcation layer, such as orange construction fencing, will be installed prior to placement of fill material. No demarcation layer will be installed beneath buildings or pavement.

3.4 SSDS and Vapor Barrier System

Prior to occupancy, an SSDS will be installed within existing and planned buildings. In existing buildings, floors will be checked for damage or unsealed penetrations and those areas will be sealed as needed to limit the flow of subsurface vapors into the building. In new buildings, a vapor barrier will be installed beneath the slab consistent with design plans prepared at that time. Construction design plans for new buildings shall include a permanent vapor barrier system to prevent soil vapors from migrating in to interior building spaces, and the barrier design and specifications will be submitted to NYSDEC for review when available.

Prior to occupancy and after each building's heating, ventilation, and air conditioning (HVAC) system is installed, indoor and outdoor air sampling as well as monitoring of the SSDS discharge will be performed.

For warehouse type structures, it is anticipated that the SSDS and compliance air sampling as described above will be focused on office areas that do not have high air exchanges due to overhead doors.

4.0 INSTITUTIONAL CONTROLS AND ENGINEERING CONTROLS

4.1 Institutional Controls

Imposition of institutional controls under the BCP will be defined within the approved environmental easement and the SMP. The institutional controls are combined with the engineering controls described in this remedial work plan to constitute the extent of the site remedial actions under the BCP. The institutional controls imposed on this project are anticipated to include the following:

- Requires the site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- Allows the use and development of the controlled property for restricted-residential and commercial uses provided that the long-term Engineering and Institutional Controls are employed;

- Restricts the use of groundwater underlying the property without necessary water quality treatment for intended use;

- Prohibits agriculture or vegetable gardens on the controlled property;

- Requires that all future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

- Requires that the potential for vapor intrusion be evaluated for any buildings developed on-site, and any potential impacts that are identified must be monitored or mitigated; and

- Requires compliance with the Department-approved environmental easement and Site Management Plan.

4.2 Operations, Monitoring, and Maintenance of Engineering Controls

This section addresses the operations, monitoring and maintenance, which are necessary to implement the selected site engineering controls that will consist of a protective cover across the exposed surface soil on the site, and a SSDS would be installed within existing and planned buildings prior to occupancy with floor sealing in existing buildings and vapor barrier beneath new buildings.

4.2.1 Protective Cover

Site redevelopment will include a cover, which may consist either of structures such as buildings, pavement and sidewalks, or a two-foot thick layer of soil that meets RRUSCOs.

For areas of where cover will be concrete or asphalt, the material will be of normal design thickness for the proposed use (e.g., parking lot, driveway, roadway), and may have different thicknesses for the different uses and/or traffic types.

The cover will be inspected on an annual basis to ensure it remains intact and effective in preventing direct contact with underlying contaminated media. Annual inspections will be recorded on a Site inspection form and submitted to the NYSDEC. If the owner becomes aware of any damage to the cover, they will repair the damaged cover and inform Chazen so that the repair can be included in the annual report.

4.2.2 Floor Seals and Vapor Barrier

In existing buildings, the owner will check floors for damage or unsealed penetrations on a monthly basis, and those areas will be sealed as needed to limit the flow of subsurface vapors into the building. In new buildings where a vapor barrier is installed beneath the slab consistent with design plans, the owner/s monthly inspection will document any new penetrations and how they were sealed to prevent migration at the penetration point. Monthly inspection findings will be recorded in a written log. Any indication of unusual or problematic performance will be conveyed to the project engineer and the system will be evaluated and maintained ore repaired accordingly to ensure system effectiveness. On an annual basis, the project engineer will visually inspect the system.

4.2.3 Annual Sampling

Annual sampling will include collecting an indoor air sample and one SSDS exhaust sample from each building plus one outdoor air sample for VOCs analysis via method TO-15. Annual inspections will be recorded on a Site inspection form and submitted to the NYSDEC with annual sampling results. For warehouse type structures, it is anticipated that the SSDS and compliance air sampling will be focused on office areas that do not have high air exchanges due to overhead doors

5.0 GREEN REMEDIATION GOALS OF THIS REMEDIAL WORK PLAN

Green remediation principals and techniques will be implemented to the extent feasible in the management of the remedy, as per DER-31.

Considerations for the environmental impacts of treatment technologies and remedy stewardship will be continuously evaluated over the long term operations of engineering controls. Special consideration will be applied to the following:

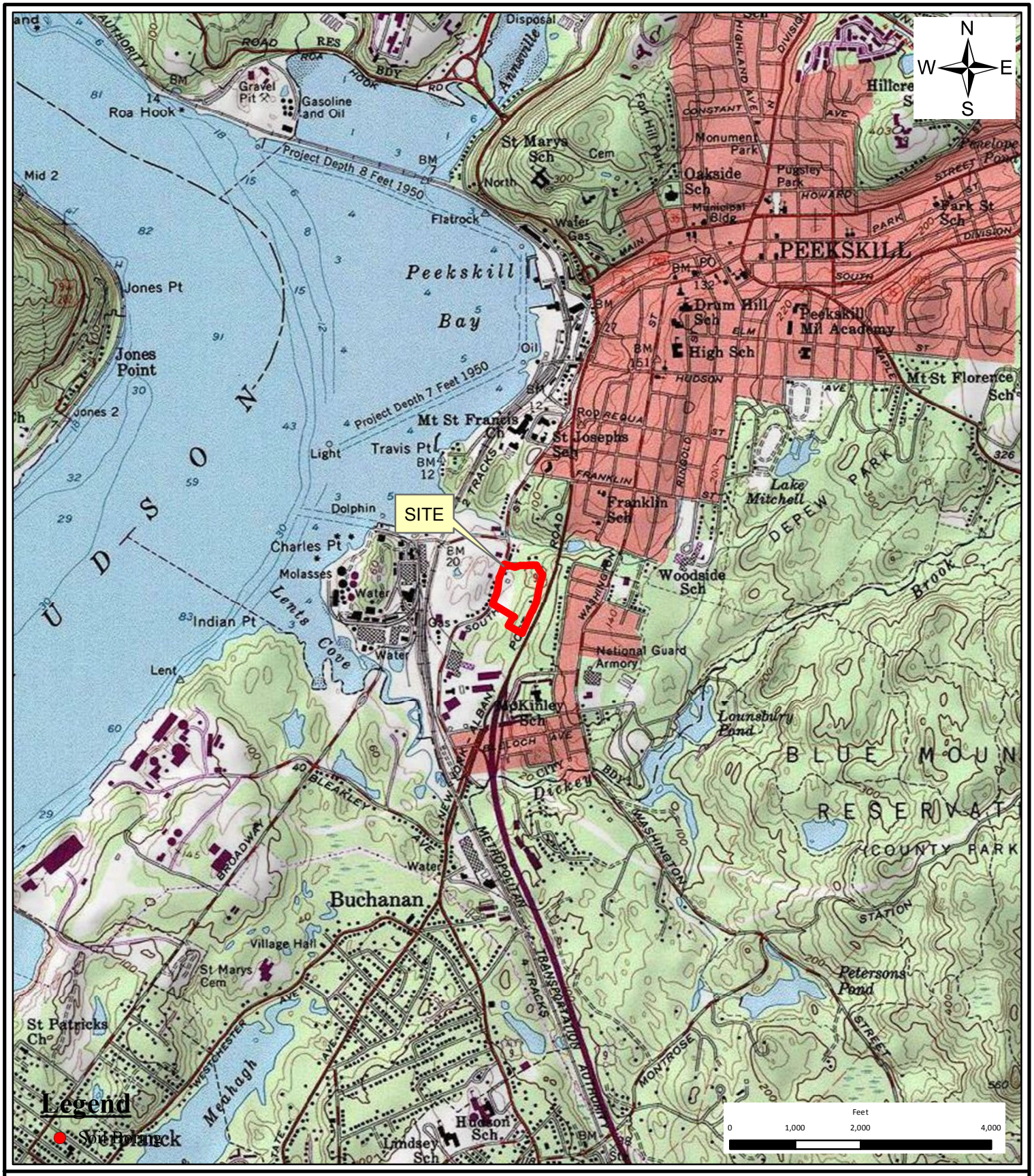
- Reducing direct and indirect greenhouse gas and other emissions;
- Minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials that would otherwise be considered a waste.

The selected remedy, Alternative 2, would comply with these goals while continuing to meet the remedial action objectives with the protection of human health and the environment.

6.0 IMPLEMENTATION SCHEDULE

Once the developer is identified, it is expected that the Brownfields Cleanup Agreement will be amended to add the developer as a volunteer, and then they will implement the proposed remedial action engineering controls (i.e., soil removal, and installation of cover and vapor barrier). These systems will be operated and maintained according to the Site Management Plan.

While the protective cover and vapor barrier will be maintained according to the SMP until NYSDEC determines that site management is no longer required, it is expected that these engineering controls will remain in effect for the LSS Site.



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547 River Street, Troy, NY 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road, Queensbury, NY 12804
Phone: (518) 812-0513

Lower South Street Redevelopment Area

Figure 1: Site Location Map

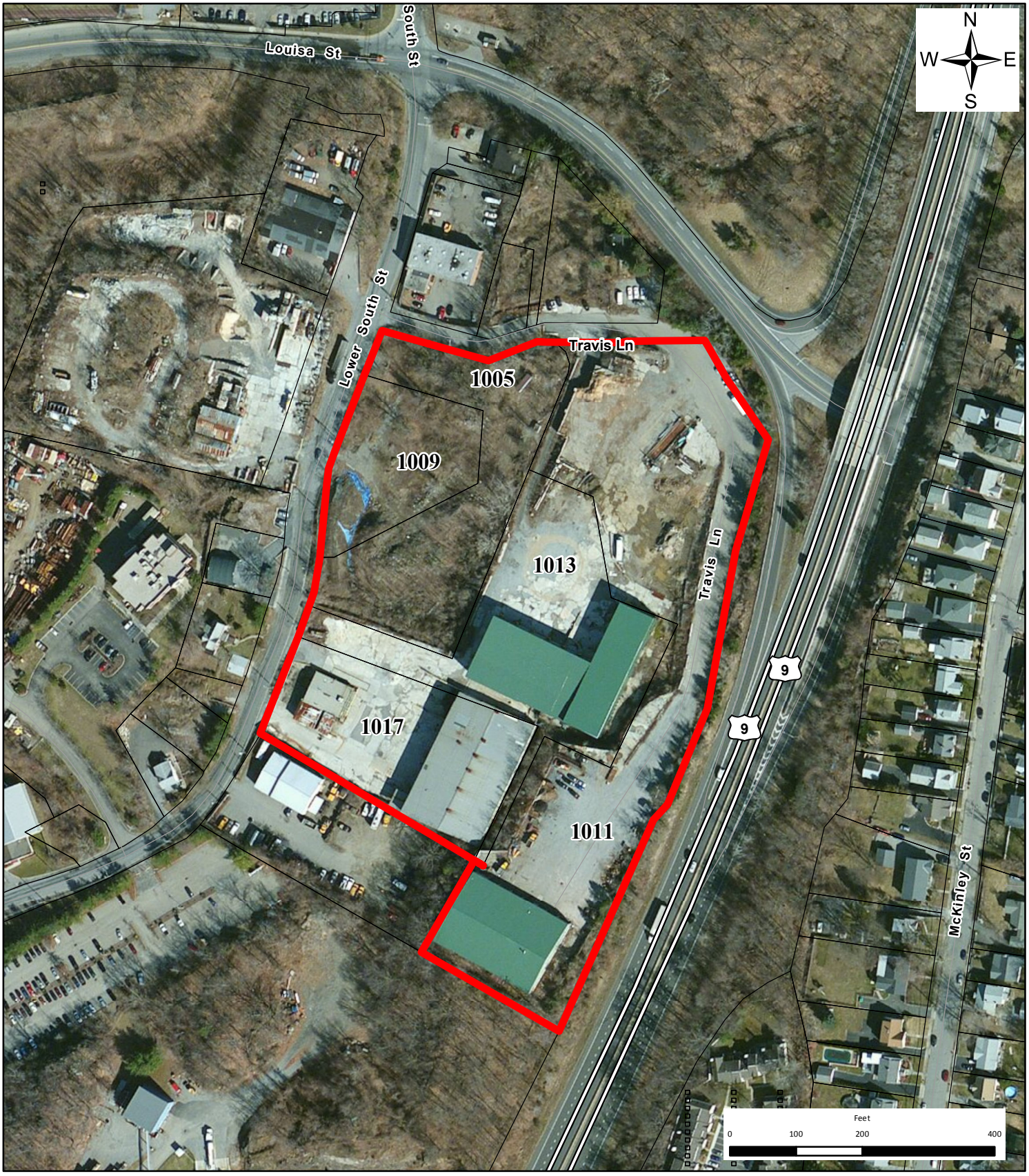
1005, 1009, 1011, 1013 and 1017 Lower South Street

City of Peekskill, Westchester County, New York

Sources: City of Peekskill 2007 Parcels Dataset; USGS Topographic Map of the Peekskill, NY Quadrangle Dated 1957, Revised 1981

Drawn:	STF
Date:	January 2015
Scale:	1 inch equals 2,000 feet
Project:	81323.07
Figure:	1

Path: X:\8\81300-81399\81323.07 Peekskill Karta Environmental Consultation\Figures\GIS\F1_Former L L Salvage and Kart Sites_SiteLocationMap_With1013 and1017.mxd



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Lower South Street Redevelopment Area

Figure 2: Site Orthophoto
1005, 1009, 1011, 1013 and 1017 Lower South Street

City of Peekskill, Westchester County, New York

Sources: NYS Department of Transportation 2008 Roads Dataset;
City of Peekskill 2007 Parcels Dataset; i-cubed 2011 orthophoto data imagery

Drawn:	STF
Date:	January 2015
Scale:	1 inch equals 200 feet
Project:	81323.07
Figure:	1

Path: X:\8\81300-81399\81323.07 Peekskill Karta Environmental Consultation\Figures\GIS\F1_Former L L Salvage and Kart Sites_Ortho_with1013 and 1017.mxd

LEGEND:

- TP-5 — TECTONIC TEST PIT LOCATION
- TP-1 — WOODARD & CURRAN TEST PIT LOCATION
- LL-SB/1011-SB — CHAZEN'S 2014 APPROXIMATE BORING LOCATIONS
- B-19 — TECTONIC BORING LOCATION
- 10 — GROUND SURFACE ELEVATION CONTOUR
- 10 — BEDROCK SURFACE CONTOUR (FEET BELOW SURFACE GRADE)

NOTES:

1. BEDROCK CONTOUR ARE APPROXIMATE AND WERE DRAWN BASED ON REFUSAL AND/OR MAXIMUM DEPTHS REPORTED ON BORING AND TEST PIT LOGS FROM THIS RI AND PREVIOUS INVESTIGATIONS.
2. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM A COMPILATION OF DATA PROVIDED BY WESTCHESTER COUNTY GEOGRAPHIC INFORMATION SYSTEMS AND ARE APPROXIMATE.

40' 0 40' 80'

BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

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rev.	date	description

LOWER SOUTH STREET REDEVELOPMENT AREA

BEDROCK CONTOUR MAP

CITY OF PEEKSKILL, WESTCHESTER COUNTY, NEW YORK

designed SK	checked ALS/WGO
date 04/21/16	scale 1"=40'
project no. 81323.07	
sheet no. 6	

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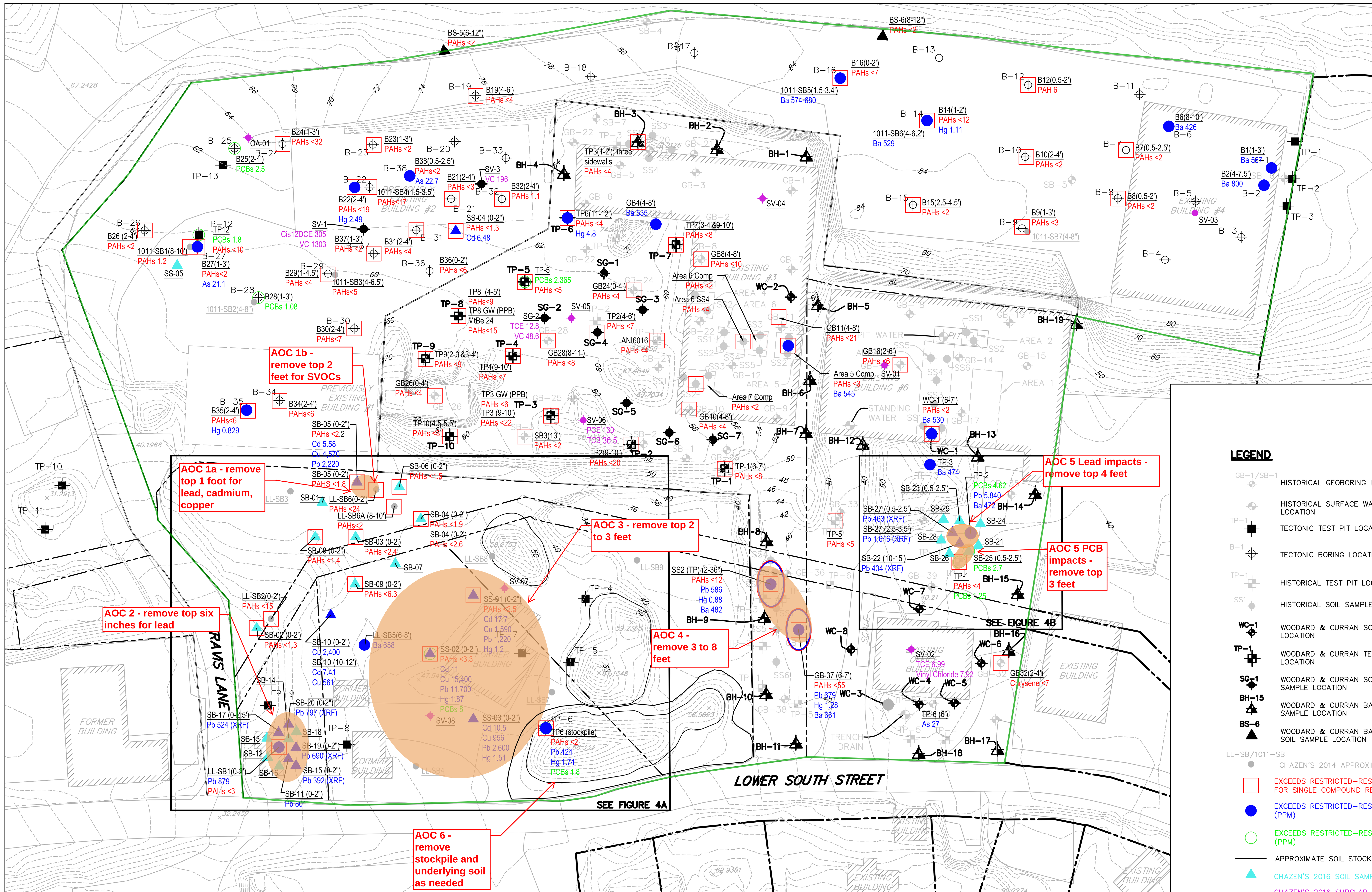

LEGEND

- HISTORICAL GEOBORING LOCATION (GB-1/SB-1)
- HISTORICAL SURFACE WATER SAMPLE LOCATION
- TECTONIC TEST PIT LOCATION (TP-1)
- TECTONIC BORING LOCATION (B-1)
- HISTORICAL TEST PIT LOCATION (TP-1)
- HISTORICAL SOIL SAMPLE LOCATION (SS1)
- WOODARD & CURRAN SOIL BORING LOCATION (WC-1)
- WOODARD & CURRAN TEST PIT LOCATION (TP-1)
- WOODARD & CURRAN SOIL GAS SAMPLE LOCATION (SG-1)
- WOODARD & CURRAN BAR HOLE SAMPLE LOCATION (BH-15)
- WOODARD & CURRAN BACKGROUND SOIL SAMPLE LOCATION (BS-6)
- CHAZEN'S 2014 APPROXIMATE BORING LOCATIONS (LL-SB/1011-SB)
- EXCEEDS RESTRICTED-RESIDENTIAL SCOs FOR SVOCs (PAH CONCENTRATION LISTED FOR SINGLE COMPOUND RELATIVE TO SCO OF 1 PPM)
- EXCEEDS RESTRICTED-RESIDENTIAL SCOs FOR METAL(S) (PPM)
- EXCEEDS RESTRICTED-RESIDENTIAL SCOs FOR PCBs (PPM)
- APPROXIMATE SOIL STOCKPILE LIMITS ON FORMER L & L SITE
- CHAZEN'S 2016 SOIL SAMPLING LOCATIONS
- CHAZEN'S 2016 SUBSLAB VAPOR, SOIL VAPOR, AND (UPWIND) OUTDOOR AIR SAMPLE LOCATIONS. CONCENTRATIONS GREATER THAN NYSDOH SVI MATRIXES ARE LISTED ($\mu g/m^3$).
- EXCEEDS RESTRICTED-RESIDENTIAL SCOs FOR METAL(S) (PPM)
- APPROXIMATE BOUNDARIES OF SOIL REMOVAL FROM AOCs with approximate removal depths.

BASE MAP:

1. WOODARD & CURRAN'S AUGUST 2013, SITE CLOSURE INVESTIGATION REPORT/FACILITY CLOSURE PLAN FOR KARTA CORP. 1013-1017 LOWER SOUTH STREET, PEEKSKILL NY

NOTES:

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM A COMPILATION OF DATA PROVIDED BY WESTCHESTER COUNTY GEOGRAPHIC INFORMATION SYSTEMS AND ARE APPROXIMATE.
2. PERCHED WATER ENCOUNTERED INFREQUENTLY. GWQS EXCEEDENCES NOTED FOR TP3 AND TP8 ARE LISTED.
3. XRF RESULTS GREATER THAN 368 PPM LEAD ARE SHOWN WHERE HYPOTHETICAL LAB RESULTS ARE PROJECTED TO EXCEED THE RESTRICTED-RESIDENTIAL SCO (440 PPM).

50' 0 50' 100'

BAR SCALE
1" = 50'
CHECK GRAPHIC SCALE BEFORE USING

0 1 2 3
ORIGINAL SCALE IN INCHES

THE Chazen COMPANIES®
Proud to be Employee Owned
Engineers
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CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.

Office Locations:

Dutchess County Office: 21 Fox Street, Poughkeepsie, New York 12601, Phone: (845) 454-3980
Capital District Office: 547 River Street, Troy, New York 12180, Phone: (518) 273-0055
North Country Office: 375 Bay Road, Queensbury, New York 12804, Phone: (518) 812-0513

rev.	date	description

LOWER SOUTH STREET REDEVELOPMENT AREA

Alternative 2 - Soil Removal Areas

1005, 1009, 1011, 1013 AND 1017 LOWER SOUTH STREET
CITY OF PEEKSKILL, WESTCHESTER COUNTY, NEW YORK

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project no. 81323.07	
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Date Printed: Nov 01, 2016, 10:45am

Appendix A

Health and Safety Plan

Health and Safety Plan
Lower South Street Redevelopment Area
Brownfield Cleanup Program
NYSDEC Site No. C360145

1005, 1009, 1011, 1013 and 1017 Lower South Street
City of Peekskill
Westchester County, New York

May 2016

THE Chazen COMPANIES®
Engineers
Environmental Professionals
Land Surveyors
Landscape Architects
Planners

Prepared for:

City of Peekskill
840 Main Street
Peekskill, NY 10566

New York State Department of Environmental Conservation – Region 3
21 South Putt Corners Road
New Paltz, New York

Prepared by:

Hudson Valley Office:
The Chazen Companies
21 Fox Street
Poughkeepsie, New York 12601

Capital District Office
(518) 273-0055

North Country Office
(518) 812-0513

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TABLES

1.0 INTRODUCTION AND OBJECTIVES

The Chazen Companies (Chazen) have prepared this Health and Safety Plan (HASP) for employees of Chazen for the Lower South Street Redevelopment Area Brownfields Cleanup (BCP) Program Site (herein after referred to as the LSS Site) located in the City of Peekskill, Westchester County, New York. This HASP is applicable to the remedial investigation as described in the Work Plan and has been prepared to specifically address potential hazards associated with the proposed scope of work.

The activities, equipment, and procedures described in this plan are designed to provide personal protection against potential environmental hazards which may be present on the work site. This plan includes delineation of site characteristics; establishes an emergency chain-of-command; details the use of basic safety equipment, personal protective equipment, and air monitoring devices, and describes equipment decontamination procedures.

The objectives of this HASP are to:

- Review the physical, chemical, and biological hazards which may be present during the proposed site investigative activities
- Specify the protective measures necessary to control those hazards
- Define emergency procedures.
- Specify training and medical qualification criteria for personnel.

This HASP must be read and understood by all Chazen personnel who perform field activities at the LSS Site.

2.0 PROJECT PERSONNEL & EMERGENCY RESPONSE CONTACTS

The personnel and emergency response contacts associated with the proposed scope of work at the site are presented below.

DIAL 911 FOR EMERGENCY IN WESTCHESTER COUNTY

Title/Project Responsibility	Name	Main Phone	Mobile/Other Phone
Project Personnel			
Project Manager	Arlette St. Romain	518-266-7328	518-260-1811
Field Operations Leader and on-site Health & Safety Representative	William Olsen Eric Orlowski	845-486-1521 845-486-1520	845-532-0602 518-928-5823
Health & Safety Officer	Kip Score	518-266-0300	518-281-6358
LSS Site Emergency Contact	James Pinto	914-734-4215	
Emergency Personnel – DIAL 911 In Westchester County			
Hospital New York-Presbyterian Hudson Valley Hospital 1980 Crompond Road Cortlandt, New York (Hospital Route Map Attached On Next Page)		**Emergency-Dial 911**	(914) 737-9000 non-emergency
City of Peekskill Fire Department		Dial 911	(914) 737-2288
City of Peekskill Police Department		Dial 911	(914) 737-8000
NYSDEC Spills Hotline		(800) 457-7362	
NYSDEC Regional Office		(845) 256-3000	
Poison Control Center		(800) 336-6997	
National Response Center		(800) 424-8802	

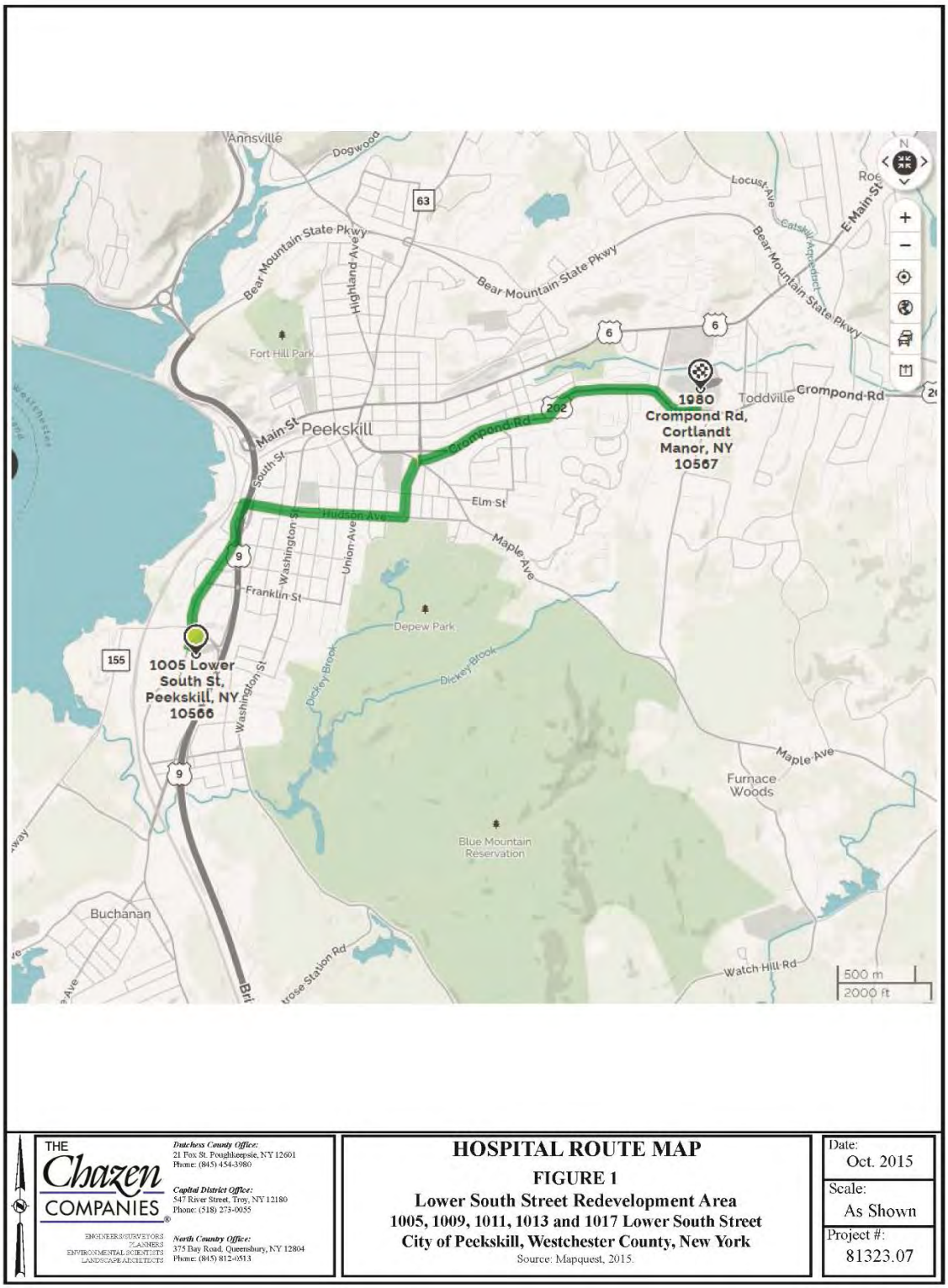
2.1 Hospital Route

New York-Presbyterian Hudson Valley Hospital is located approximately 2.9 miles from the LSS Site. The travel time from the LSS Site to New York-Presbyterian Hudson Valley Hospital is approximately nine minutes. Directions are provided below and a route plan map is shown on the following page.

Directions to New York-Presbyterian Hudson Valley Hospital:

1.	Drive NORTH on Lower South Street toward Louisa Street	0.6 miles
2.	Turn RIGHT onto HUDSON AVENUE.	0.7 miles
3.	Turn LEFT onto WELLS STREET.	0.2 miles
4.	Turn RIGHT at the 2nd cross street onto CROMPOND ROAD	0.1 miles
5.	Turn slight RIGHT onto US-202 E / CROMPOND ROAD.	1.2 miles
6.	New York-Presbyterian Hudson Valley Hospital is on the LEFT.	
	Total estimated time = 9 minutes	2.9 miles

1. **Hospital Route Map**



3.0 SITE CHARACTERIZATION

3.1 Site Location & Description

The LSS Site is an 11.43-acre property located at 1005, 1009, 1011, 1013 and 1017 Lower South Street in the City of Peekskill, Westchester County, New York. The 1005 and 1009 Lower South Street parcels (the Former L&L Site) are currently unused land containing stockpiles of soil, rock and other debris from former site operations. The 1011 and 1013 Lower South Street parcels are each developed with one-story steel buildings and are currently utilized by the City of Peekskill for Department of Public Works vehicle parking, as well as other City vehicle and equipment parking/storage. The 1017 Lower South Street parcel contains two buildings constructed by a prior owner in support of their scrap metal / recycling operations; these buildings are vacant and unused.

3.2 Historic Site Uses

The 2.81-acre Former L&L Site has been vacated by the prior salvage and junkyard owner/operator. This area includes an inactive scale pit, a soil pile (previously estimated at 14,100 cubic yards), a pile of cobbles and boulders, a pile of mixed debris including cobbles, boulders, and concrete, some vehicle parts, and vegetated areas. The Former L&L Site appears to have been initially developed as a residential site with a junkyard present from 1950.

The 8.79-acre Former Global Recycling Site (formerly owned by Karta Corporation) was previously used for a residence, processing wood waste, and operating a transfer station for construction and demolitions (C&D) waste. The Former Global Recycling Site contains four single-story, slab-on-grade buildings (building numbering from other reports is used here for consistency). The office building on the western side of 1017 LSS was constructed circa 1981, Building #6 on the eastern side of 1017 LSS was constructed in 1988-1989, Building #4 on the southern end of 1011 LSS was constructed circa 2000, and Building #3 on 1013 LSS was constructed between 2002 and 2004. Two additional buildings (#1 and #2) were constructed on the northern area of 1011 LSS circa 2002 and then demolished between April 2004 and October 2006. Paved driveways lead up to the buildings with paved areas on the fronts sides of the structures.

Various environmental investigations have occurred on the LSS Site since 2011. These investigations identified areas of the LSS Site (including some stockpiled soils) to be impacted with semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals (lead, barium, and mercury) at varying concentrations. While volatile organic compounds (VOCs) have not been identified in soil in areas of planned investigation, VOCs are included in this document as they were identified in soils that were excavated and stockpiled on the Former L&L Site. While groundwater has not been encountered in the proposed work areas, or generally at the LSS Site except for limited perched groundwater, this HASP includes groundwater in case it should be encountered.

3.3 Proposed Project Scope/Site Investigation Activities

The investigative activities proposed at the site include the following:

- Drilling with Geoprobe and/or a hollow-stem auger (HSA) rig, and sampling,
- Soil sample screening with PID and XRF spectrometer, and
- Soil sample collection.

4.0 SITE HAZARD EVALUATION AND CONTROL

The potential for exposure to chemical, physical, and mechanical hazards at the LSS Site is considered to be minimal. Hazards which may be encountered at the LSS Site are summarized in Table 1. Additional information pertaining to these hazards is provided in later sections of this HASP.

Table 1: Potential Hazards at the Site

Hazard Type	Hazard Anticipated	Associated Investigative Activities	Comments	Hazard Control Methods
Chemical	Chemicals of Concern (COCs) in Soil including SVOCs, PCBs and Metals	Drilling with Hollow stem augers or Geoprobe®, installation of soil borings, soil sample collection, XRF screening, PID headspace screening	Considered minimal	PPE, Training on Identification of COCs Safety Training & Standard Safety Operations
Physical	Slip, Trip & Fall	Any site work	Construction and Industrial equipment, and stockpiles on-site	Safety Training & Standard Safety Operations
Biological	Tick, insect bites, poisonous plants, heat/ cold-related disorders	Any site work	Considered minimal	Safety Training & Standard Safety Operations
Electrical	Working around utilities	Drilling, soil sample collection	Considered minimal to moderate	Utility Mark Out in planned boring locations, Safety Training & Standard Safety Operations

4.1 Hazard Evaluation

4.1.1 Chemical Hazards

Based on available historical information, the primary chemicals of concern (COCs) present in the proposed LSS Site work areas include SVOCs, primarily in the form of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and select metals, including lead and barium. While VOCs have not been identified in soil in areas of planned investigation, VOCs are included in this document as they were identified in soils that were excavated and stockpiled on the Former L&L Site.

Table 2 lists the potential health hazards that may be encountered where these may be encountered in the breathing zone and recommended exposure limits, as well as assessment of all primary exposure routes.

Table 2: COCs & Established Permissible Airborne Exposure Limits

COC	Time Weighted Average Airborne Limits			Short-Term Exposure Limit (ppm)	IDLH (ppm)	Primary Routes Of Exposure On Site
	OSHA PEL	NIOSH REL	ACGIH TLV			
PAHs	0.2	0.1	0.2	Not Listed	80 [Ca]	Inhalation, Dermal
PCBs	1.0	0.001	1.0	Not Listed	5 [Ca]	Inhalation, Dermal
Barium	0.5	0.5	0.5	Not Listed	50	Inhalation, Dermal
Lead	0.05	0.05	0.05	Not Listed	100 [Ca]	Inhalation, Dermal
Mercury	0.1	0.05	0.05	Not Listed	10	Inhalation, Dermal
Benzene (VOC)	1.0	0.1	0.5	5.0 (1.0 NIOSH)	500 [Ca]	Inhalation
Ethylbenzene (VOC)	100	100	100	125	800	Inhalation
Toluene (VOC)	200	100	50	150	500	Inhalation
Xylenes (VOC)	100	100	100	150	900	Inhalation

1. Some of the most common VOCs are listed above. A conservative permissible exposure limit of 5 ppm for VOCs will be used in the field as measured continuously using a portable photoionization detector (PID)

2. Air concentrations listed in http://www.cdc.gov/niosh/npg/npgd0368.html, accessed August 14, 2009.

Ca: NIOSH has identified the compounds as a potential occupational carcinogen

C: Ceiling value. Typically a 15-minute TWA that must not be exceeded at any point during the workday

IDLH: Immediately Dangerous to Life & Health

Skin designation indicates the potential for dermal absorption

OSHA PELs are legally enforceable.

RELs and TLVs are published as recommended guidelines

COCs present on the subject property are expected to vary based on location (e.g., source area, soil stockpiles, etc.).

Project investigation activities will involve potential exposure to soil and groundwater. Given the nature of the proposed project activities, the potential for site personnel to encounter the LSS Site COCs during performance of the activities outlined in the Work Plan is considered to be minimal as specified PPE and air monitoring (described later in this plan) will be utilized.

Symptoms of exposure to the COCs are summarized in Table 3.

Table 3: General Signs and Symptoms of Exposure to COCs

Compound	Signs & Symptoms of Exposure
Petroleum Hydrocarbons (including SVOCs)	Irritation to eyes, skin, nose, respiratory system; headache, nausea, staggered gait; fatigue, anorexia, lassitude (weakness, exhaustion); dermatitis
Lead	Pain, muscle weakness, abdominal pain, nausea, vomiting, diarrhea, constipation, a metallic taste.
PCBs	Respiratory tract symptoms, such as cough and tightness of the chest, gastrointestinal effects including anorexia, weight loss, nausea, vomiting, and abdominal pain, mild liver effects, and effects on the skin and eyes, such as chloracne, skin rashes, and eye irritation.
VOCs (general)	Irritation eyes, skin, nose, respiratory system; headache, nausea; fatigue, anorexia

4.1.2 Physical Hazards

Site work which occurs in the vicinity of drilling and/or excavating equipment and machinery presents a general safety hazard. Uneven ground surfaces and the presence of debris on the site presents a concern for slip, trip, and fall incidents.

The potential for heat-related stress during site work exists. Heat stress may occur even in moderate temperatures and may present any or all of the following symptoms:

Heat Rash – Result of continuous exposure to hot humid air and chafing clothes. Heat rash is uncomfortable and decreases the ability to tolerate heat.

Heat Cramps – Result of the inadequate replacement of body electrolytes lost through perspiration. Sign include severe spasms and pain in the extremities and abdomen.

Heat Exhaustion **–** Result of the increased stress on the vital organs of the body in the effort to meet the body's cooling demands. Signs include shallow breathing, pale, cool, moist skin, profuse sweating, dizziness, and listlessness.

Heat Stroke **–** Result of overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical help must be obtained immediately to prevent severe injury and/or death. Signs of heat stroke include red, hot, dry skin, absence of perspiration, nausea, dizziness, confusion and strong rapid pulse. Coma and death can result from heat stroke.

The following any or a combination of the following actions can be taken to prevent heat stress:

- Replace body fluids (water and electrolytes) lost through perspiration. Solutions may include a 0.1% salt and water solution or commercial mixes such as Gatorade and Squench. A fluid/electrolyte replacement will be used as necessary to minimize fluid loss.

- Provide cooling devices to aid in the natural body ventilation. Cooling occurs through evaporation of perspiration and limited body contact with heat absorbing protective clothing. Fans and air conditioners can assist in evaporation.

- Provide hose-down mobile shower facilities, where feasible, to cool protective clothing and reduce body temperature.

- Conduct activities early in the morning or evening during very hot weather.

- Provide shelter against heat and direct sunlight to protect personnel.

The potential for cold stress during site work exists. Working outside in cold temperatures presents a concern for cold-related disorders as described below:

Hypothermia **–** Symptoms of hypothermia include shivering, slurred speech, disorientation, and loss of coordination. Advance stages of hypothermia include feelings of warmth and reckless behavior.

Frost Bite **–** Symptoms of frostbite include cold feelings, red color to the skin, tingling, swelling, and pain. In advanced stated of frostbite, the skin will appear white in color.

To avoid cold stress, take the following precautions:

- Provide a shelter area where warmth is available.

- Wear thermal clothing applied in layers.

- Remain active in order to maintain blood circulation throughout the body.

- Maintain warm/hot drinks in the support zone.

Physical hazards are anticipated to be a concern for all site activities.

4.1.3 Biological Hazards

It is anticipated that the site field work will be performed in the fall, winter and spring months which presents some potential for biological hazards to be present. Biological hazards include poison ivy, snakes, ticks, mosquitoes, and other pests. Given the developed nature of the site, biological hazards are expected to be low, but may still be present during site activities.

4.1.3.1 Tick-Borne Disease

Ticks can carry a number of diseases. In the United States, these diseases include:

- Lyme Disease
- Ehrlichiosis
- Rocky Mountain Spotted Fever (throughout the United States but most prevalent in the east)

Lyme Disease - The disease commonly occurs in New York State in the spring and summer and is transmitted during extended attachment (minimum 24 hours) of an infected tick. Symptoms of Lyme disease usually emerge approximately two weeks after exposure and may include a rash or a peculiar red spot, like a bull's eye, which expands outward in a circular manner. The victim may have recurring headaches, weakness, a stiff neck, swelling and pain in the joints, and eventually, arthritis.

Ehrlichiosis - The disease also commonly occurs in New York State in the summer and is similarly transmitted by the bite of infected ticks. Symptoms of ehrlichiosis include more immediate muscle aches, fever, joint aches, and flu-like symptoms, but there is typically no skin rash.

Rocky Mountain Spotted Fever (RMSF) - This disease is also transmitted via the extended bite of an infected tick. The tick must be attached 4 to 6 hours before the disease-causing organism (*Rickettsia rickettsii*) becomes reactivated and can infect humans. The primary symptom of RMSF is the sudden appearance of a moderate-to-high fever. The fever may persist for 2 to 3 weeks. The victim may also have a headache, deep muscle pain, and chills. A rash appears on the hands and feet on about the third day and eventually spreads to all parts of the body. For this reason, RMSF may be confused with measles or meningitis. The disease may cause death, if untreated.

4.1.3.2 Other Biological Hazards

Poisonous plants, such as poison ivy and sumac, maybe present on the site and present a hazard for site personnel. Signs and symptoms of exposure to such poisonous plants include itching, burning, redness, rash, blistering and swelling.

Snakes may be present on the site property and present the potential for snake bites. Poisonous snakes are not expected to be present on the site, however, even bites from non-poisonous snakes can cause adverse health symptoms such as redness, swelling, and allergic reaction.

Site personnel may be exposed to mosquitoes and/or black flies during site work. While the presence of mosquitoes and/or black flies is not anticipated to be a significant health and safety concern, bites can cause adverse health symptoms such as redness, swelling, and allergic reaction.

4.1.4 Electrical Hazards

Drill rigs will be used on the site to install soil borings. The presence of overhead utilities and underground obstacles poses a hazard if equipment contacts them. As indicated in Table 1, electrical hazards are considered to be a concern for the installation of borings on the site.

4.1.5 Radiological Hazards

A handheld x-ray fluorescence (XRF) spectrometer will be used to field screen lead content in soil. The Niton Model XL2 GOLDD XRF will be rented by Chazen and maintained by the rental company, EcoRental Solutions. Chazen personnel who operate the XRF have had training in the equipment operation and its safety procedures.

The Niton Model XL2 analyzer contains an x-ray tube which emits radiation only when the user turns the x-ray tube on. When the x-ray tube is on and the shutter is open, as during a measurement, the analyzer emits a directed radiation beam. Reasonable effort will be made to maintain exposures to radiation as far below dose limits as is practical. This is known as the ALARA (As Low as Reasonably Achievable) principle. For any given source of radiation, three factors will help minimize radiation exposure: shorter time, greater distance, and increased shielding. Specific precautions include:

- Avoid holding the front of the analyzer when the x-ray tube is energized and the shutter is open. Never point the instrument at yourself or anyone else when the shutter is open and the x-ray tube is energized. Never look into the path of the primary beam.
- Ensure sample sizes are larger than the XRF's measurement window.
- There are no X-ray tube specific US Department of Transportation (DOT) or International Air Transport Association (IATA) radiation regulations regarding shipping the Niton XL2 analyzer. It is recommended that the analyzer be shipped in its carrying case and an over-pack to protect the sensitive measuring equipment inside the analyzer. The battery pack is disconnected from the analyzer prior to shipment.
- The XRF is secured when not in use.

4.2 Hazard Control

4.2.1 Hazards Associated With Soil Sampling

Soil sampling consists of the installation of soil borings using a hydraulic, direct-push drilling rig or hollow stem auger rig and the collection of soil samples from the soil borings for analysis. The hazards associated with the collection of soil samples are considered to be minimal and include dermal exposure to soil contaminants, inhalation exposure to contaminants, and slip, trip, and fall hazards from scattered debris and irregular walking surfaces.

All drillers must possess required state or local licenses. The driller is responsible for the safe operation of the drill rig. The driller is responsible for providing and following his own HASP, which must be reviewed and approved by Chazen. The driller is responsible for ensuring that the drill rig is in proper condition and is properly used. Rig conditions will be evaluated daily prior to the start of work.

Prior to any subsurface sampling or remedial activities, underground utilities must be located using facility plans and the Dig Safely NY Program (1-800-962-7962). In addition, a utility markout of the planned boring areas is planned. These protective measures will be taken to minimize the potential health and safety risks associated with investigation activities near underground utility lines.

If drilling activities are conducted in the vicinity of overhead power lines, the rig should be positioned such that no part of the drilling rig is within OSHA's maximum clearance values, which are provided in the following table:

Nominal AC Line Volatge (kV)	Minimum Clearance Distance (feet)
Up to 50	10
51 to 200	15
201 to 350	20
351 to 500	25
501 to 750	35
751 to 1,000	45
Over 1,000	Per Utility Owner

To control dermal exposure during soil sampling activities, a minimum of Modified Level D PPE should be worn as described in Section 6.0 of this HASP.

Based on available information, VOCs are not a COC in the planned work areas. However, as a standard precaution, the potential for inhalation exposure to airborne COCs will be evaluated and controlled during site activities as a general safety precaution.

Air monitoring will be performed during site work to evaluate airborne concentrations of VOCs and particulates to which site workers may be exposed. Air monitoring control measures are discussed in Section 6.0 of this HASP. A Community Air Monitoring Program (CAMP) is also required for this site, although the CAMP does not address site health and safety.

General safety precautions will be employed on-site to control for slip, trip, and fall hazards.

4.2.5 Physical Hazards

4.2.5.1 Biological Hazards

Ticks

The best way to prevent tick borne diseases is to avoid tick bites. Preventative measures to reduce the potential for tick bites include, but are not limited to, the following:

- Where possible, land scheduled for eventual clearing should be cleared of brush and overgrown vegetation in advance of environmental investigation.
- Wearing long pants and long sleeved shirts
- Tucking shirts into pants. Tucking pants into socks or boots, or using tape to close the opening where they meet.

- Using an EPA approved insect repellant or arachnicide (pesticide) which is effective for ticks, such as DEET (N,N-diethyl-m-toluamide) or pyrethrin. Be sure to heed all precautionary information, and be aware that some people are sensitive to these chemicals.

- Wearing light colored clothing so that a tick can be seen more easily.

- Changing clothes when you return from an area where ticks may be located.

- Showering to wash off any loose ticks, followed by self-examination for ticks.

- Throughout the work day, perform Tick Checks and Removal Procedures as follows:

    - Check clothing for ticks. If you find a tick, do a more thorough tick check.

    - Inspect parts that bend (back of knee, between fingers and toes, underarms), pressure points where clothing presses against skin (underwear elastic, belts, neck); other common areas (belly button, around or in ear, hairline, and top of head).

    - Once indoors, do a final tick check and change clothes.

    - If you are in a tick infested area or an area known to have disease carrying ticks, perform checks on a more regular basis

    - Remove unattached ticks promptly.

    - Remove attached ticks are removed using fine pointed tweezers:

        1. The mouth parts of the tick are grasped with the tweezers as close to the skin as possible

        2. Apply firm steady pressure upward until the tick releases - do not jerk, twist, squash or squeeze the tick

        3. Clean the wound and the tweezers with an antiseptic

Do not use petroleum jelly, nail polish remover, or prick or burn the tick. These actions can cause infected secretions to enter the wound.

<u>Plants</u>

Preventative measures will be implemented to avoid contact with poisonous plants on the site property. These measures will include, but are not limited to, the following activities:

- Wear clothing that covers arms and hands if possible

- Frequently wash exposed skin

- Avoid skin contact with objects or protective clothing that have touched the plants

- Treat every surface that may have touched the plant as contaminated, and practice contamination avoidance

- If skin contact is made, the area should be washed immediately with soap and water and observed for signs of reddening.

Snakes

All personnel walking through vegetated areas must be aware of the potential for encountering snakes. If a snake bite occurs, apply a constriction band and wash the area around the wound to remove any unabsorbed venom.

4.2.5.2 Heat Stress

When feasible, the most stressful site activities should be performed during the coolest parts of the day. Site workers will be instructed to stay hydrated throughout the day. An intake of 5 to 7 ounces of fluids every 15 to 20 minutes is recommended.

Site workers will be monitored for the signs and symptoms of heat stress during work activities. The signs and symptoms of heat stress are dizziness, vomiting, hot, dry skin, rapid heartbeat, throbbing headache, rash, cramps, chest pain, muscle spasms, pain in the hands, feet, or abdomen, loss of coordination, and decreased cognitive ability.

Site workers expressing or demonstrating any of these symptoms will be immediately excused of their duties and instructed to rest in a cool environment. Site work/rest cycles will be determined based on ambient conditions and based on guidance pertaining to heat stress provided by OSHA and NIOSH.

4.2.6 General Health and Safety Controls

4.2.6.1 Communications System

Telephones will be available on site and both on-site and off-site project personnel will be accessible for communication. If there is a lack of cell phone signal at the site, then personnel should locate the closest public payphone prior to work commencement. Personnel should also be trained in the use of standard hand signals for health and safety. Personnel in the work zone will use the following standard hand signals:

- Hand gripping throat ----- Can't breathe

- Grip partner's wrist or both hands around waist ----- Leave area immediately

- Hands on top of head ----- Need assistance

- Thumbs up ----- OK, I am all right, I understand

- Thumbs down ----- No, negative

4.2.6.2 Basic Safety Equipment

Safety equipment will be kept on site for monitoring and responding to emergency situations. Basic safety equipment will include, but is not limited to, the following:

- ABC type fire extinguishers
- First Aid kits
- Air Monitoring Equipment (for particulates and VOCs)
- Reference books containing basic first-aid procedures and information

*4.*2.6.3 *Safe Work Practices*

All Chazen personnel and all subcontractors working on site are expected to follow established safe work practices for their specialties (i.e., excavators, surveying, etc.). The need to exercise caution in the performance of specific work tasks is frequently made more acute due to:

- Weather conditions
- Restricted mobility and reduced peripheral vision caused by protective gear
- The need to maintain the integrity of the protective equipment

Work at the LSS Site will be conducted in accordance with established protocols and guidelines for the safety and health of all involved. General safety practices employed at the LSS Site will include but are not limited to the following:

- No smoking, eating, or drinking in an exclusion zone or before personnel decontamination. Ingestion of contaminants is the second most likely means of introducing toxic substances into the body.
- In any unknown situation, always assume the worst conditions and plan responses accordingly.
- Personal protective equipment is never 100% effective, so all personnel must minimize contact with potentially contaminated material. Do not place equipment on potentially contaminated ground. Do not sit or kneel on potentially contaminated material. Avoid standing in or walking through puddles or stained soil.
- Avoid heat and other work stresses related to the wearing of protective equipment and clothing. Work breaks should be scheduled *(and actually taken)* to prevent stress-related accidents or fatigue.
- As often as possible, the handling of contaminated materials should be done remotely. Every effort should be made to identify the contents of containers found on-site before they are handled.

- Personnel must be observant of not only their own immediate surroundings, but also of others.

- Rigorous contingency planning and dissemination of plans to all personnel minimizes the impact of rapidly changing safety protocols in response to changing site conditions.

- Personnel must be aware that chemical contaminants may mimic or enhance symptoms of other illnesses or intoxication. Avoid field work while feeling ill. Company policies prohibit use of alcohol while working.

The site Health and Safety Officer or their designee will maintain project Health and Safety records in a safe and secure manner. Since there is no on-site location to maintain the Health and Safety records, they will be retained in Chazen's Poughkeepsie office.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Site workers will be provided with the appropriate personal protective equipment (PPE) and will be trained on the use of this equipment. PPE will be selected to provide an appropriate level of protection against known and reasonably anticipated site hazards. Given the available data, the level of PPE selected for the LSS Site is a modified Level D which will include the items listed in Table 4.

Table 4: Site-Specific PPE Components

Area	PPE Item
Head	Hard Hat (OSHA approved)
Feet	Work Boots (steel-toed, unless conducting electromagnetic survey)
Skin	Nitrile Gloves
Hearing	Ear Plugs/Hearing Protection
Vision	Safety Glasses

The level of PPE should be continually evaluated and will be modified as necessary, depending on site conditions. If upgraded PPE appears necessary, the scope and necessity of work must be examined, and if the exposure cannot be avoided the level of PPE must be upgraded to one of, or a combination of the following levels:

Level C protection consists of:

(a) Full-face air-purifying respirator

(b) Tyvek or Poly-tyvek coveralls

(c) Chemical-resistant gloves taped to coveralls

(d) Chemical-resistant boots taped to coveralls

Level B protection consists of:

(a) Level C protection for the body, plus

(b) Positive pressure Self-contained Breathing Apparatus (SCBA) or a tethered cascade breathing system.

It will be the responsibility of the Health and Safety Officer to insure that all personnel and subcontractors are knowledgeable of the level of personal protection required in all work situations. Further, it is the obligation of the Health and Safety Officer to see that proper equipment is worn and work rules are observed. All subcontractors are responsible for supplying their personnel with the necessary equipment.

6.0 AIR MONITORING

Air monitoring for volatile organic compounds and particulates will be periodically performed in the work area breathing zone during outdoor site activities. Monitoring will be performed with a hand-held PID and particulate meter. Results will be compared to exposure values listed in Table 2 and appropriate responsive action taken, as needed, including moving to upwind locations, reducing scale or pace of work advance, or adjustments of PPE.

Periodic air monitoring will also be conducted as described in the CAMP, to document ambient concentrations of particulates and VOCs at the downwind perimeter of the work zone and at an upwind location.

7.0 TRAINING & MEDICAL SURVEILLANCE

7.1 Personnel Safety Training

As part of Chazen policies and in conformance with OSHA requirements for personnel conducting hazardous waste investigation, or assessments on site where they may be exposed to hazardous wastes, Chazen field personnel working on this site shall have received a minimum of 40 hours of comprehensive health and safety training (29 CFR 1910.120) and an annual 8 hour refresher course.

All workers must recognize and understand the potential hazards to health and safety that are associated with the investigation activities and must be thoroughly familiar with programs and procedures contained in the safety plan.

The objectives of Chazen training program, for employees involved in hazardous site activities are:

- To make workers aware of the potential hazards they may encounter.
- To provide the knowledge and skills necessary to perform the work with minimal risk to the health and safety of the workers.
- To make workers aware of the purpose and limitations of safety equipment.
- To ensure that workers can safely avoid or escape from emergencies.

7.2 Medical Surveillance

All Chazen personnel meeting applicable exposure criteria are currently involved in a medical monitoring program, in accordance with 29 CFR 1910.120.

Based on the proposed scope of work, the potential for exposure to site COCs is considered to be negligible following the heath and safety procedure described herein. Medical monitoring for common COCs is performed as part of the existing Chazen medical monitoring program. Any provisions for alterations to the existing medical surveillance program will be made by the Health & Safety Officer based on the site characterization and job hazard analysis.

8.0 WORKING ZONE

The primary work area around the drill rig and sampling vehicles will have a nearby area for decontamination (primarily hand washing). The LSS Site investigation work is not expected to be hazardous or to necessitate the establishment of Exclusion, Contamination Reduction, or Support Zones; however, the following sections are provided, should these zones be needed.

8.1 Exclusion Zone

An Exclusion Zone will be established around areas where work activities will occur. The Exclusion Zone will be cordoned off while work is in progress. Entry to and exit from this area will be provided only to those persons directly involved in the work activities and only if the prescribed level of personal protection is worn.

The personnel working in the Exclusion Zone will be the health and safety officer, work crews, and specialized personnel. All personnel within the Exclusion Zone must wear the level of protection required by the site safety plan. All personnel in the Exclusion Zone will be HAZWOPER health and safety trained.

8.2 Contamination Reduction Zone

If needed, a Contamination Reduction Zone (CRZ) will be established at the perimeter of the exclusion zone, where personal decontamination will take place. The CRZ is a transition zone between contaminated and uncontaminated areas of the site.

When personnel, equipment, or materials suspected to be contaminated are taken out of the exclusion zone, they will be properly contained, or decontaminated in the CRZ.

8.3 Support Zone

The Support Zone is considered the area outside the CRZ. The Support Zone will be reserved for the support vehicle and for clean equipment storage. It is separated from the CRZ, and is considered a "Clean" area. Only uncontaminated or decontaminated personnel or materials may enter this zone from the CRZ.

The support vehicle serves as the communications center, clean storage area, and source of emergency assistance for field operations. Certain safety equipment (i.e. fire extinguisher, first aid kit, etc.) are stored in the support vehicle.

9.0 DECONTAMINATION

Use of mechanized equipment (see QAPP) and PPE serve to minimize worker contact with site contaminants. However, procedures may be necessary to remove and/or minimize contaminants that have accumulated on equipment and personnel.

9.1 Personnel and Equipment Decontamination

All personnel and equipment leaving the work zone must be decontaminated. Decontamination procedures prior to leaving Level "D" areas will consist of brushing loose soil from clothing and equipment, washing equipment and clothing with water and a mild detergent. Disposable gloves, scoops, paper towels and any Tyvek suits will be discarded in trash receptacles provided within these areas. All wastes generated in Level "D" areas will be bagged and disposed of on site without any additional restrictions.

If Level C working conditions are required, a decontamination work area will need to be established. If needed, this will involve establishing a plastic-lined work table, and plastic liner to "catch" wash solutions and contaminated soil. When exiting the work zone, workers will enter the decontamination zone. Instruments, sample containers, and reusable equipment will be placed on a plastic covered table. These items will be cleaned with the appropriate cleaning solutions. The workers will then decontaminate their protective clothing. Disposable items will be discarded in trash receptacles which will be provided within the decontamination area.

10.0 EMERGENCY/CONTINGENCY PLAN

10.1 Personnel Roles, Lines of Authority, and Communication

The Health & Safety Officer (HSO) or the on-site designee is the primary authority for directing site operations under emergency conditions. All Health and Safety related emergency communications both on and off site will be directed through the Health and Safety Officer.

10.2 Site Evacuation

The emergency response capabilities of the local authorities and agencies will be assessed prior to the initiation of work.

Prior to the evacuation of any off site area, the Exclusion Zone and the CRZ will be expanded. Monitoring of the expanded CRZ will be conducted to determine if offsite evacuation is truly necessary.

When the HSO determines that conditions may actually warrant the evacuation of downwind residences and commercial operations, local agencies will be notified and assistance requested. Designated personnel will initiate evacuation of the immediate off site area without delay.

All work crews should be aware of surrounding conditions including the wind conditions while working outdoors. When conditions warrant moving away from a work site, the field crew will relocate up wind. If site access is restricted, or limited in any way, the crew may be instructed by the HSO to evacuate the site rather than move upwind, especially if an upwind withdrawal moves the field crew away from an acceptable escape route.

If conditions warrant a site evacuation, the field crew will proceed upwind of the work site and will notify the HSO or their designated representative. If the decontamination area is upwind and more than 500 feet from the work site, the crew will pass through the decontamination area to remove their outer suits. Following decontamination, the field crew will proceed to the support vehicle and an assessment of the situation will be made by the HSO, or their designated representative. As soon as it is practical, and as additional information about site conditions is received from the field crew, the situation will be communicated to the Health and Safety Supervisor, Health and Safety Manager, the project manager, and if applicable the appropriate local emergency response agencies.

10.3 Emergency Medical Treatment and First Aid

First aid will be available to any person injured. A First Aid Kit will be on hand. The injured person may be transported to a medical center for further examination and treatment. The preferred transport method is a professional emergency transportation service; however, if this option is not readily available or would result in excessive delay, other transport is authorized.

> *Under no circumstances should an injured person transport themselves to a medical facility for treatment, no matter how minor the injury may appear.*

If an injury occurs in the Exclusion Zone, provisions for decontamination of the victim will be made. However, if injuries are deemed life-threatening, then normal decontamination

procedures may be dispensed with. In such cases arrangements will be made with the emergency response personnel to provide the necessary containment or decontamination.

10.4 Spill Response

Should an equipment release occur from a vehicle or equipment being used on the LSS Site, the spill will be reported to NYSDEC Spill hotline within 48 hours, unless the spill is

1. Less than 5 gallons,
2. Contained and controlled,
3. Not impacting water or land, AND
4. Cleaned within 2 hours.

The LSS Site is not a registered Petroleum Bulk Storage facility.

Appendix B

Community Air Monitoring Plan

New York State Department of Health
Generic Community Air Monitoring Plan

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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Appendix C

NYSDEC Request to Import/Reuse Fill or Soil Form

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that would pass a size 80 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised August 2014