

5 WEST 125TH STREET
NEW YORK, NEW YORK

REMEDIAL ACTION WORK PLAN

NYC VCP NUMBER: 13CVCP115M
E-DESIGNATION SITE NUMBER: 11EHAN269M

PREPARED FOR:

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
H2M	Holzmacher, McLendon & Murrell, P.C.
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound

OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Hardik P. Parekh, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 5 West 125th Street Site 11EHAN269M and 13CVCP115M.

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Hardik P. Parekh
Name

089064
NYS PE License Number


Signature

02/14/2013
Date



EXECUTIVE SUMMARY

CA 5-15 125th Street LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 27,500-square foot site located at 5 West 125th Street in Manhattan, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The property is located on 125th Street between 5th Avenue and Lenox Avenue. The site is bounded to the north and south by 126th Street and 125th Street respectively and by abutting buildings to the east and west in the Harlem neighborhood of Manhattan, New York (Figure 1). The site has an area of approximately ±0.59-acre and is currently a vacant inactive construction site that had been excavated to approximately eleven-feet below sidewalk grade in 2008. This site is currently owned by the RCGL 125th Street, LLC. Historically, the site was operated as a YMCA and associated dormitories, a commercial parking lot and residential dwellings. According to the New York City Department of City Planning, the subject property is designated as E-201 (CEQR number 07DCP030M), Block 1723, Lots 31, 45 and 144.

The properties adjoining the site consist of residential to the north and northwest and commercial development to the east, south and southwest. A site plan of the property is provided as Figure 2.

Summary of Proposed Redevelopment Plan

The proposed site use consists of a 4-story commercial building with one cellar level that will occupy the entire site footprint. Based on preliminary architectural schematics prepared by Rosenbaum Design Group, the proposed cellar slab will be at el 3.5 (approximately 16.5-feet below sidewalk grade) and the usable cellar area is required to be at least 19,000 ft² excluding any mechanical rooms.

Groundwater was observed to be approximately 3.5 to 4-feet below the current site grade during the May 2011 Phase II Environmental Investigation completed by Langan. Based on the current development plans the site will be excavated below the groundwater table to allow for the construction of the building cellar. Dewatering will be completed as part of the site redevelopment activities.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. Entire property will be excavated additional 3.5 feet from the existing grade. Final excavation depths will be around 14 feet from street grades.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.

7. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
8. Removal of underground storage tanks, if any are encountered, and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations.
9. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
11. As part of new development, installation of a vapor barrier and waterproofing layer beneath the building slab and outside building sidewalls.
12. As part of new development, construction and maintenance of an engineered composite cover over the entire Site consisting of a 4” concrete building slab across the building footprint to prevent human exposure to residual soil/fill remaining under the Site.
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
15. If Track 1 cleanup is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
16. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries and lists any changes from this RAWP.

17. If Track 1 is not achieved, continued registration as an “E” Designated property and listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

Community Protection Statement

The Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities. This cleanup plan also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Remedial Investigation and Cleanup Plan. Under the NYC VCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses. Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

Qualitative Human Health Exposure Assessment. An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

Health and Safety Plan. This cleanup plan includes a Health and Safety Plan that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration. This plan includes many protective elements including those discussed below.

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Mr. Joseph Loesch and can be reached at 631-252-0230 from 8:00 AM to 5:00 PM.

Worker Training. Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan. Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager Joseph at 631-252-0230 Loesch or NYC Office of Environmental Remediation Project Manager William Wong at 212-341-0659.

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be

summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Storm-Water Management. To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm water management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:00 AM to 5:00 PM.

Signage. While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program, provides project contact names and numbers, and locations of project documents can be viewed.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Joseph Loesch at 631-252-0230, the NYC Office of Environmental Remediation Project Manager William Wong at 212-341-0659, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

Utility Mark-outs. To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal. All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations and required permits will be obtained.

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held

instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management. Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

Trucks and Covers. Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

Imported Material. All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

Equipment Decontamination. All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

Housekeeping. Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at the New York Public Library, south of the site as well as in the document repository section within OER website (www.nyc.gov/oer).

Long-Term Site Management. To provide long-term protection after the cleanup is complete, if the remedial action does not remove all soil that exceeds unrestricted soil standards, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

CA 5-15 125th Street LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 5 West 125th Street in the Harlem section of New York, New York (the Site). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternative analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current usage

The subject property is located on 125th Street between 5th Avenue and Lenox Avenue. The site is bounded to the north and south by 126th Street and 125th Street respectively and by abutting buildings to the east and west in the Harlem neighborhood of Manhattan, New York (**Figure 1**). The site has an area of approximately ±0.59-acre and is currently a vacant inactive construction site that had been excavated to approximately eleven-feet below sidewalk grade in 2008. This site is currently owned by the RCGL 125th Street, LLC. Historically, the site was operated as a YMCA and associated dormitories, a commercial parking lot and residential dwellings. According to the New York City Department of City Planning, the subject property is designated as E-201 (CEQR number 07DCP030M), Block 1723, Lots 31, 45 and 144.

The properties adjoining the site consist of residential to the north and northwest and commercial development to the east, south and southwest. A site plan of the property is provided as **Figure 2**.

1.2 Proposed Redevelopment Plan

The proposed site use consists of a 4-story commercial building with one cellar level that will occupy the entire site footprint. Based on preliminary architectural schematics prepared by Rosenbaum Design Group, the proposed cellar slab will be at el 3.5 (approximately 16.5-feet below sidewalk grade) and the usable cellar area is required to be at least 19,000 sq ft excluding any mechanical rooms.

Groundwater was observed to be approximately 3.5 to 4-feet below the current site grade during the May 2011 Phase II Environmental Investigation completed by Langan. Based on the current development plans the site will be excavated below the groundwater table to allow for the construction of the building cellar. Dewatering will be completed as part of the site redevelopment activities.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 Description of Surrounding Property

The properties adjoining the site consist of residential to the north and northwest and commercial development to the east, south and southwest. Additionally, two-day care facilities are identified on the 124th Street within 250-feet of the subject property. No other sensitive receptors were identified within 500-feet of the subject property. **Figure 2** shows the surrounding land usage.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 5 West 125th Street*”, dated July 2011 (RIR).

The following previous environmental reports were completed for the subject property:

- Phase I Environmental Site Assessment (ESA) Report dated 11 August 2008 prepared for RCG Longview Debt Fund IV, L.P. and Capital One Bank c/o RCG Longview, prepared by EBI Consulting of Burlington Massachusetts and submitted to NYCOER on 15 April 2011;

- Phase II Subsurface Investigation Workplan (SIW) dated 15 April 2011 prepared by Langan, revised 18 May 2011 based on NYCOER comments made on 16 May 2011; and,
- Phase II Subsurface Investigation Report dated 25 July 2011 prepared by Langan.
- 125th Street Acoustical Measurement Protocol dated 15 June 2011 prepared by Cerami Associates, Inc.

A copy of the ESA report and SIW were provided previously under separate cover.

Phase I ESA (2008)

The August 2008 ESA was completed for Block 1723 Lots 31, 45, 140 and 144. The property that is the subject of this Work Plan is limited to Lots 31, 45 and 144, Lot 140 is not part of the proposed redevelopment. Historic use of the site was identified as a YMCA and associated dormitories and residential and commercial buildings. Following the demolition of the YMCA and associated buildings, the site was redeveloped as a parking lot and residential dwellings, as shown on the 1951 Sanborn Fire Insurance map. The use of these properties was consistent through the 1992 Sanborn map. No Recognized Environmental Conditions (RECs) were identified in the Phase I ESA report.

The Phase I ESA documents that groundwater samples were collected to obtain a NYCDEP Bureau of Wastewater Treatment permit for the discharge of groundwater from the dewatering system that was installed to be operated during the excavation of foundations for the building previously proposed at the site. Groundwater samples were reportedly collected and tested for polychlorinated biphenyls via United States Environmental Protection Agency (EPA) Method 608, semivolatile organic compounds by EPA Method 625 and volatile organic compounds by EPA Method 624. None of these compounds were reported above the laboratory method detection limits.

Phase II SIW (2011)

Based on the findings of the Phase I ESA a Phase II SIW was developed to assess subsurface conditions at the site via the collection of soil and groundwater samples. The findings of this investigation are detailed in Section 4.0 below.

Phase II Site Investigation Report (2011)

In order to address NYCOER requirements pertaining to the (E)-designation of the site, soil, and groundwater sampling as part of a Phase II Environmental Investigation was completed by Langan. The scope of work for the Phase II Environmental Investigation was designed to assess the RECs identified in the Phase I ESA.

The scope of work was designed to:

- Identify the potential presence and extent of impacted soil, and/or groundwater at the site;
- Determine contaminant(s) of concerns that may be encountered during site redevelopment activities for incorporation into a construction Health and Safety Plan, if necessary; and,
- Evaluate remediation options for any impacted soil vapor, soil, and/or groundwater in accordance with NYSDEC and NYCOER regulations, if required.

The AOCs identified for this site include:

1. Historic fill is present at the Site from grade to a depth ranging from 4 to 21 feet below sidewalk grade. Currently, entire site has been excavated to a depth of approximately 11-feet below sidewalk grade as part of the previous site development. Historic fill is identified to be between 3 to 4-feet in thickness from the current site grade.

Summary of the Work Performed under the Remedial Investigation

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);

2. Completion of eight soil borings and collection of two soil samples per boring to assess soil conditions and potential health and safety issues regarding soil disturbance during the proposed site renovation;
3. Installation and sampling of three monitoring wells in order to assess site groundwater conditions; and,
4. Completion of a Phase II Subsurface Investigation Report.

Summary of Environmental Findings

1. Elevation of the property is approximately 25 feet.
2. Depth to groundwater is approximately 14.5 to 15 feet at the Site. Approximately, 3.5 to 4-feet below the current site grade.
3. Groundwater flow is generally from west to east beneath the Site.
4. Depth to bedrock is at the Site is approximately 48 to 63-feet below sidewalk grade.
The stratigraphy of the Site, from the surface down, consists of fill overlying successive strata of sand, silt and clay, glacial till, and rock. The fill layer, consisting of sand and gravel with brick, concrete, wood, and miscellaneous debris, was observed throughout the site to depths of approximately 4 to 21-feet below sidewalk grade. The fill material is underlain by a 6 to 18-foot thick layer of loose to medium dense fine to coarse sands, followed by silt and clay and an approximately 6-foot thick layer of glacial till. Bedrock, consisting of a gneiss and marble, was encountered at depths ranging from approximately 48 to 63-feet below sidewalk grade.
5. Soil/fill samples collected during the RI showed no detectable concentrations of PCBs. No VOCs were detected in soil, except for trace levels (2.3 ppb) of tetrachloroethene in one soil sample. Select SVOCs, all polycyclic aromatic hydrocarbons (PAHs) including benzo(a)anthracene (4.37 ppm), benzo(a)pyrene (3.99 ppm), benzo(b)fluoroanthene (3.06 ppm), benzo(k)fluoroanthene (2.1 ppm), chrysene (4.22 ppm), and indeno(1,2,3-cd)pyrene (2.17 ppm) were identified in two of sixteen soil samples at concentrations found above

their Track 1 Unrestricted Use and Track 2 Restricted Commercial Use SCOs. Pesticides including 4,4-DDE (0.0214 ppm), 4,4-DDT (0.0814 ppm), dieldrin (0.0064 ppm) and heptachlor(0.09 ppm) were detected above their Track 1 Unrestricted Use SCOs in four shallow sample but below their Track 2 Restricted Commercial SCOs. Several metals including barium, chromium, lead, mercury and zinc were detected above Track 1 Unrestricted Use SCOs and of these, none exceeded Track 2 Restricted Commercial SCOs in soil samples. Overall, these results are consistent with levels of pesticides, SVOCs, and metals found at sites throughout NYC with historic fill material. All concentrations for SVOCs, metals and pesticides are also below Restricted Residential numbers.

6. Groundwater samples collected during the RI showed no detectable PCBs or SVOCs. One pesticide, 4,4-DDD was in one of three groundwater samples at concentrations below NYSDEC Groundwater Quality Standards (GQS). One VOC tetrachloroethene was detected in 1 groundwater samples at trace levels (1 ppb), below its GQS. Three metals, iron, manganese and sodium, were detected above GQSs in dissolved groundwater samples.
7. Soil vapor sampling was not conducted because the site is already excavated to 11 feet depths. Groundwater is about one to two feet below existing grade and would yield unreliable results. When additional excavation is complete into the groundwater throughout the entire site for the building slab, there will be no onsite soil vapor.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this site.

2.0 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

Soil

- Prevent direct contact with contaminated soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Groundwater

- Prevent direct exposure to contaminated groundwater.

Soil Vapor

- Prevent exposure to potential contaminants in off-site soil vapor.
- Prevent migration of potential off site soil vapor into dwelling and other occupied structures.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedence of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance;
- Land use; and
- Sustainability.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

Alternative 1 involves

- Removal of all soil/ fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs has been achieved with post-excavation endpoint sampling. Based on the results of the remedial investigation, it is expected that this alternative would require excavation to a depth of four to five feet to remove all historic fill at the Site. Additional excavation for development purposes would take place to a depth of approximately 4 feet from existing surface, which is at or below groundwater table. If soil/ fill containing analytes at concentrations above Track 1

Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- Installation of a vapor barrier system beneath the basement foundation and behind foundation sidewalls to grade as part of development.

Alternative 2 involves

- Removal of all soils exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 has been achieved with post-excavation endpoint sampling. Additional excavation for development purposes would take place to a depth of approximately four feet from existing surface, which is at or below groundwater table, and it is anticipated that remaining soils would be below Track 4 SCOs. However, if soil/fill containing SVOCs or metals at concentrations above Track 4 SCOs are still present at the base of the excavation, additional excavation would be performed to ensure complete removal of soil that does not meet SCOs.
- Placement of a composite cover over the entire site to eliminate exposure to remaining soil/fill.
- Placement of a vapor barrier beneath the foundation slab and along foundation side walls up to grade.
- Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved Site Management Plan to ensure long-term management of these engineering and institutional controls including the performance of periodic inspections and certification that the controls are performing as they were intended; and
- Continued registration as an “E” Designated property to ensure that future owners of the site continue to maintain these controls as required.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing contaminated soil/fill exceeding Track 1 SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater. Potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). There would be minimal potential for contact with contaminated groundwater after remediation is complete as it is neither used nor anticipated to be accessible after the remedial action. Potential future migration of soil vapors from off-Site into the new building would be prevented by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls, as part of development.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs as well as by placement of institutional and engineering controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing institutional controls including continued registration as an "E" designated property and a Site Management Plan would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater. Potential exposure to contaminated soils or groundwater during construction would be minimized by implementing an approved Soil/ Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as it would be prohibited

by the deed notice. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls.

3.2. BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

Alternative 1 would achieve compliance with the remedial goals, SCGs and RAOs for soil through removal to Track 1 Unrestricted Use SCOs and groundwater protection standards. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls, as part of development. Focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs.

Alternative 2 would achieve compliance with the remedial goals, SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls. A site management plan would ensure that controls remained protective for the long term. Similar to the Track 1 alternative, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs.

Short-term effectiveness and impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

Both alternatives have similar-short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would employ appropriate measures to prevent short term impacts, including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Health and Safety Plan (CHASP) will be protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-site contamination by permanently removing all impacted soil/ fill and enabling unrestricted usage of the property.

Alternative 2 would provide long-term effectiveness by removing most on-site contamination and attaining Track 4 SCOs, establishing engineering controls including a composite cover system across the Site, establishing Institutional Controls including use restrictions, a Site Management Plan, and continuation of the “E” designation to memorialize these controls for the long term. The SMP will ensure long-term effectiveness of all Engineering and Institutional Controls by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of unrestricted use SCOs.

Alternative 2 would remove most of the impacted soil/fill present on the Site, and any remaining soil/fill beneath the new building would meet Track 4 SCOs. Alternative 1 would eliminate a greater total mass of contaminants on Site.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

Both Alternatives are feasible and implementable. They use standard materials, services, and well-established technology. The reliability of these remedies is also high. There are no specific difficulties associated with any of the activities proposed, which utilize standard industry methods.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

The capital costs associated with the both alternative are similar since the soils will have to be excavated to the required depth for the foundation of the proposed development as it would be to achieve the Track 1 SCOs. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Both remedial actions provide for protection of public health and the environment and minimize potential contaminant exposures. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Attachment B.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Voluntary Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural

resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, which are appropriate for its planned commercial use. Improvements in the current brownfield condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land, making them safer and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources.

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

Both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is the Track 1 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. Entire property will be excavated additional 3.5 feet from the existing grade. Final excavation depths will be around 14 feet from street grades.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
7. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
8. Removal of underground storage tanks, if any are encountered, and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations.

9. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
11. As part of new development, installation of a vapor barrier and waterproofing layer beneath the building slab and outside building sidewalls.
12. As part of new development, construction and maintenance of an engineered composite cover over the entire Site consisting of a 4” concrete building slab across the building footprint to prevent human exposure to residual soil/fill remaining under the Site.
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
15. If Track 1 cleanup is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
16. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries and lists any changes from this RAWP.
17. If Track 1 is not achieved, continued registration as an “E” Designated property and listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including prohibition of the following: (1) vegetable gardening and farming; (2) use of

groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and soil/Fill management

Track 1 Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are listed in Table 3. If Track 1 is not achieved, the following Track 4 Site-Specific SCOs will be used:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
Total SVOCs	250 ppm
Lead	1,000 ppm
Mercury	2.0 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 3. With exception of a 10-foot setback on the eastern and western sides of the subject property to aid in the stabilization of the adjacent buildings, the current redevelopment plans will require that the entire site be excavated to allow for the installation of the building foundation system.

Discrete contaminant sources (such as hotspots) identified during the remedial action will be horizontally and vertically identified by GPS or surveyed. This information will be provided in the RCR.

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is 5,000 cubic yards. The proposed disposal locations for Site-derived impacted materials are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

<u>Disposal Facility</u>	<u>Waste Type</u>	<u>Estimated Quantities</u>
Malanka Landfill, Secaucus, NJ	Historic Fill	5,000 cubic yards

End-Point Sampling

Based on completion of the Phase II Investigation, which identified only the presence of historic fill on the site, no further soil investigation is recommended on the subject property. As the proposed site development basement, pile caps, and utility pits will require excavation of the majority of the soil located on the subject property to an approximate depth of 25-feet below sidewalk grade, all impacted historic fill within the excavation area will be excavated for off-site disposal. Handling and management of the soil will be conducted in accordance with the Remedial Action Workplan. End point sampling map will be determined provided through stipulation letter.

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. To evaluate attainment of Track 1 Unrestricted Use SCOs, if pursued, confirmation endpoint samples will be analyzed for the full list of VOCs, SVOCs, PCBs, Pesticides, and Metals. To evaluate attainment of Track 4 SCOs, endpoint samples will be analyzed for analytes with above-listed Track 4 Site-Specific SCOs. The end-point sampling and testing will be performed promptly following excavation and be completed prior to any Site development activities. Planned end-point sampling locations are shown in Figure 6.

If hotspots are encountered during the remedial action, remedial performance end-point sampling frequency will consist of the following:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:

- For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
 4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Based on the Phase II Investigation sampling, H2M recommends five (5) endpoint samples will be collected from the post-remediation excavation. Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs for end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for trigger analytes (those for which SCO exceedence is identified) utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;

- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e. spills hotline) will be performed.

Quality Assurance/Quality Control

One duplicate soil sample for each of 20 samples collected will be analyzed to maintain property quality assurance and quality control (QA/QC) and detect any lab artifacts. For this project, H2M will collect one duplicate sample during the endpoint sampling. The duplicate sample will be analyzed for the same parameters as the endpoint samples.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 3. At this time the reuse or importing of soil is not anticipated as part of the site redevelopment activities.

4.3 Engineering Controls

Engineering Controls are not required for a Track 1 remedial action. If Track 1 Unrestricted Use SCO's are not achieved, Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. In this case, the Site will have two primary Engineering Control (EC) Systems: (1) composite cover system consisting of concrete building slab across the building footprint and (2) a vapor barrier system. If Track 1 is achieved, these elements will be built as part of the development plan.

Composite Cover System

If Track 1 Unrestricted Use SCOs are not achieved, exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will be comprised of:

- “4” inches concrete building slab across the building footprint.

In this case, the composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Vapor Barrier System

Although the low concentrations of semi-volatile organic compounds in soil and low concentrations of tetrachloroethene in groundwater do not dictate the need for installation of a vapor barrier below the proposed building, a vapor barrier in the form of a waterproofing layer will be installed below the building floor slab and along the foundation walls. The vapor barrier will extend throughout the area occupied by the footprint of the new building which is to be constructed at the Site. The specifications for installation will be provided to the construction management company and the foundation contractor or installer of the liner. The VBS will be installed under the direct oversight of a Site Engineer.

The vapor barrier will consist of Grace Preprufe 300R, Preprufe 160R, and Bituthene 4000 below grade system foundation damp-proofing material in conjunction with sealing of joints with Preprufe LT tape and Bituthene EdgeGuard tape. The vapor barrier layer will provide a barrier to water, moisture, and gas, and is chemically resistant. The proposed vapor barrier is anticipated to be protective of the building occupants, as the marginally impacted VOC groundwater (tetrachloroethene at 0.67 µg/l in MW-2) is well below the NYSDEC Groundwater Quality Standard of 5 µg/l.

The Remedial Closure Report will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

Institutional Controls

Institutional Controls (IC) are not required for a Track 1 remedial action. However, if Track 1 Unrestricted Use SCOs are not achieved, ICs will be incorporated into this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR.

If Track 1 Unrestricted Use SCOs are not achieved, Institutional Controls for this remedial action are:

- Continued registration of the E-Designation for the property. Description of all ECs and ICs in an OER-approved Site Management Plan. Property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted annually and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for commercial use and will not be used for a higher level of use without prior approval by OER.

4.4 Site Management Plan

If Track 1 Unrestricted Use SCOs are not achieved, Site Management will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. A Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by the DCR and this RAWP. If the Track 1 goal is achieved, a SMP will not be required. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by March 31 of the year following the reporting period.

4.5 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors to the contaminants of concern (COC) that are present at or migrating from the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a

QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This assessment was prepared in accordance with the Appendix 3B and Section 3.3(b)8 of the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Historic fill is present at the site from grade to approximately 3 feet below existing grade. Based on the results of the RIR, the contaminants of concern are:

Soil:

- Metals, including barium, chromium, lead, mercury and zinc were detected above Track 1 Unrestricted Use SCOs but below Track 2 Restricted Commercial SCOs;
- SVOCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene exceeding Track 2 Restricted Commercial SCOs; and
- The pesticide including 4,4-DDE, 4,4-DDT, dieldrin and heptachlor were identified below Track 2 Restricted Commercial SCOs.
- All concentrations for SVOCs, metals and pesticides are also below Restricted Residential numbers.

Groundwater:

- The VOC tetrachloroethene was detected in 1 groundwater samples at trace levels (1 ppb) and below GQS; and
- The pesticide 4,4-DDD was in one of three groundwater samples at concentrations below GQS.

Nature, Extent, Fate and Transport of Contaminants

Concentrations of PAHs, Pesticides and Metals are present within the historic fill at the Site. This contaminants area a constituent of the historic fill material that was used to fill the land for development purposes and is present to a depth of approximately 4 feet bgs. The analyzed native sand material did not detect any exceedances above the Track 1 SCOs. Concentrations of Metals

exceeding the NYSDEC TOGS 1.1.1 GA standards were detected in the groundwater samples obtained at the Site during the RI. These exceedances are most likely the result of brackish groundwater conditions at the site. Based on the findings of the RI and current Site conditions, these contaminants are not mobile or migrating within or from the site.

Potential Routes of Exposure

An exposure pathway is the means by which receptors come into contact with a Site-derived contaminant. Three potential primary routes exist by which contaminants can enter the body:

1. Ingestion of water or soil
2. Inhalation of vapors and particulates
3. Dermal contact with water, soil or building materials.

The work performed at the Site will include excavation of soil/fill material, dewatering, and general construction activities. The construction and remediation work at the Site will expose the contaminants to the on-site workers in variety of ways listed above. These exposures will be limited to short durations through the intrusive work. A Construction Health and Safety Plan (CHASP) will be implemented during remediation work for the safety of on-site workers and off-site local population. Upon completion of the remedial activities, the site will achieve Track 1 Unrestricted Use SCOs and the Site will be covered by the engineered composite cover (i.e., building slab and vapor/moisture barrier). This will prevent direct exposure to humans from any residual on-site or off-site contamination.

Existence of Human Health Exposure

An exposure pathway begins with a source and mechanism of contaminant release resulting in the contamination of a receiving matrix (environmental medium). A complete exposure pathway also requires a point of potential contact with the contaminated matrix (i.e., exposure point), an exposure route (i.e., inhalation, ingestion, or dermal contact), and a receptor population. If an exposure pathway is not complete because it does not include a contaminated matrix, a point of potential contact, an exposure route, or a receptor, then no risk exists.

On-site sources of metals and PAHs will be removed during the soil excavation, therefore minimizing any pathways of exposure to exist. Any residual metal or PAHs contaminated soil

that is not excavated will be covered with an engineered composite cover (i.e., the building slab and a moisture/vapor barrier), thereby eliminating any exposure pathways.

Receptor Populations

The receptor populations identified under the proposed remedy include:

- On-site workers: adult (construction and remediation workers), and
- Temporary workers: adult (utility workers, inspectors, subcontractors and remediation inspector/sampler).

The receptor populations identified under the proposed remedy and future site uses as mixed-used commercial/retail development include:

- Adult and children patrons of commercial and retail properties,
- On-site workers: adult
- Temporary workers: adult

Potential Points of Exposure

- *Current Conditions:* There is a potential for exposure to historic fill since portions of the Site are currently uncapped. Groundwater is marginally contaminated but is not exposed at the Site, and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site.
- *Construction/Remediation Activities:* Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with any exposed impacted soil, fill, and groundwater. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

- *Proposed Future Conditions:* Once the remedial actions and redevelopment of the Site have been completed, there will be no potential on-Site or off-Site exposure pathways. The Site will also be fully capped with the concrete building slab which will prevent contact with residual soil/ fill. Exposures to vapors will be prevented by the installation of a vapor barrier.

Overall Human Health Exposure Assessment

Complete on-site exposure pathways appear to be present only during the present unremediated phase and the construction/ remediation phase. During the remedial action, exposure pathways will be limited by preventing access to the site and through implementation of Soil/Materials Management Plan, Community Air Monitoring Plan, and Health and Safety Plan. In order to eliminate or greatly reduce the possible exposure levels, a CHASP will be implemented in order to monitor dust and vapor emissions, set personal protective equipment as needed and apply dust and vapor suppression measures where applicable and needed, for on-site workers and the off-site local population.

After the remedial action is complete, there will be no remaining exposure pathways to identified contaminants. The Site will be fully covered with an engineered composite cover (i.e., the building slab and a moisture/vapor barrier), eliminating any threat to human health. The groundwater at the Site is not a source of drinking water. The vapor barrier will prevent the potential for vapor intrusion. The composite cover system and use restrictions will prevent contact with residual soil or groundwater. If Track 1 SCOs are not achieved, continued protection after the remedial action will be achieved by the implementation of site management including periodic inspection and certification of the performance of remedial controls.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and oversight

Principal personnel who will participate in the remedial action include CA 5-15 West 125th Street LLC as owners of the property and Harco Consultants Corp. as the construction managers of the proposed redevelopment. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Holzmacher, McLendon & Murrell, P.C. (H2M), as environmental consultant to the ownership.

5.2 Site Security

Site access will be controlled by construction fences and gated entrances.

5.3 Work Hours

The hours for operation of remedial construction will be from 7:00 AM to 5:00 PM. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 4. The Site Safety Coordinator will be Joseph Loesch. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the HASP. That document will define the specific project contacts for use in case of emergency.

5.5 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed 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, for instance, will 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. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed 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. Exceedences of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will 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 will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will 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 will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will 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 will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate

monitoring will 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 will 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 will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

5.6 Agency Approvals

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.7 Site Preparation

Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

Dewatering

Based on the proposed depth of the cellar slab and the associated foundation elements, dewatering of the foundation excavation will be required during construction. Harco Consultants Corp. will file a dewatering permit application with the NYC Department of Environmental Protection (NYCDEP) Bureau of Wastewater Treatment for the Site. H2M will submit this

permit to the NYCOER once it has been issued, which will outline the details of the dewatering and pre-treatment requirements, if any.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. The location of proposed equipment and material staging areas, will be within the foundation excavation. Soils to be disposed of off site will be stockpiled adjacent to the on-site construction ramp, trucks used for the transport of the soils will be loaded at the top of the ramp. Trucks will not be using the construction ramp for loading purposes, as such the trucks will not be driving over contaminated materials and no truck inspection station will be necessary.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit prior to the start of the remedial action. Before exiting the NYC VCP Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

5.8 Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create

unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay-bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency

notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report

should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.9 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is to proceed west on 126th Street to Malcolm X Boulevard, proceed north to 139th Street, follow 139th St east and merge onto Harlem River Drive.

5.10 Demobilization

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

5.11 Reporting and Record Keeping

Daily Reports

Daily reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

5.12 Complaint Management

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the

nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.13 Deviations from the Remedial Action Work Plan

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 REMEDIAL ACTION REPORT

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

I, _____, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Site name Site Site number.

I, _____, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Site name Site Site number.
(Optional)

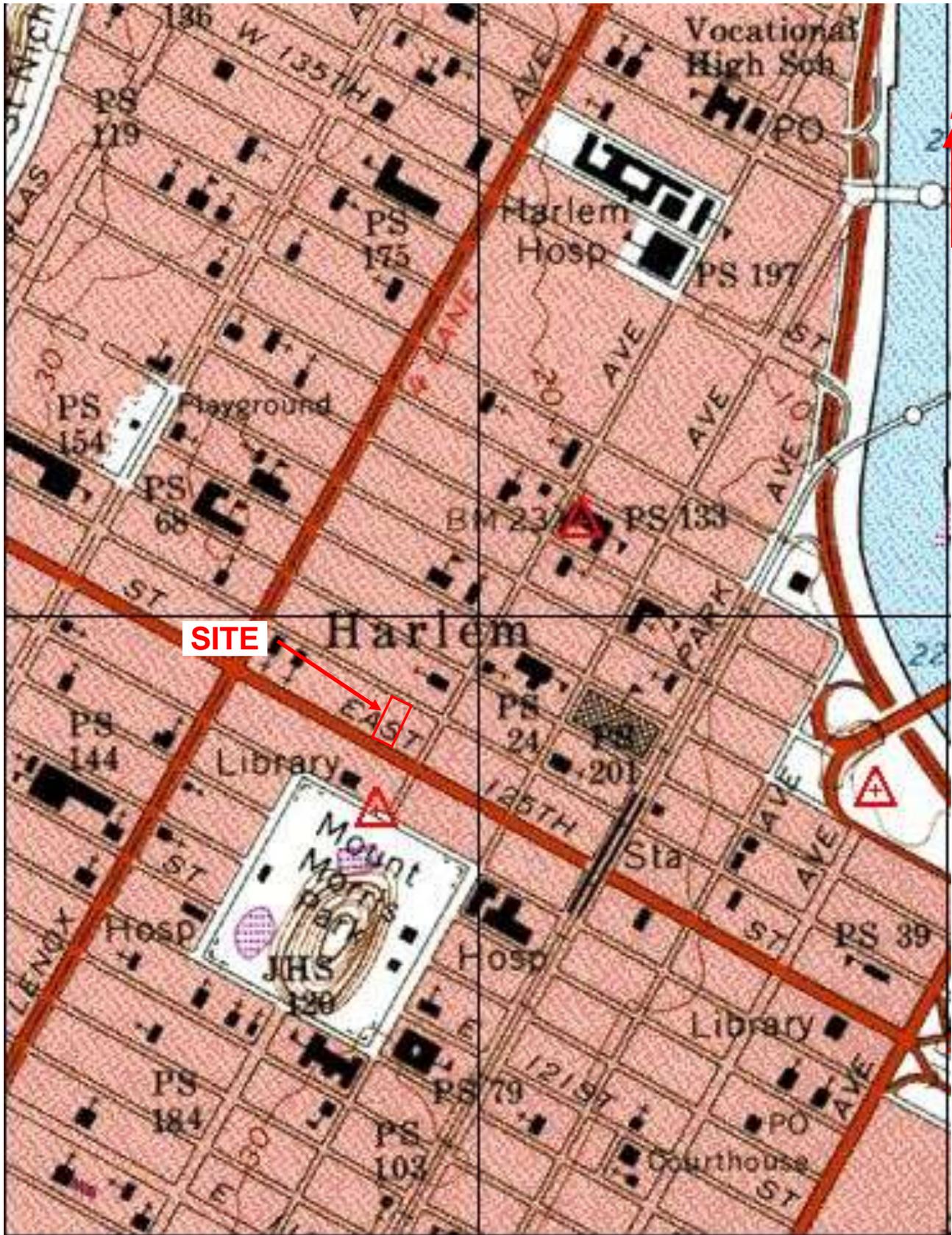
I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a four month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	2 Weeks	1 Week
Remedial Excavation	3 Weeks	4 Months
Demobilization	1 Year	4 Weeks
Submit Remedial Action Report	13 Months	4 Weeks

FIGURES



MAP REFERENCE: USGS Central Park, New York Quadrangle Maps Revised July 1984 (7.5 Minute Series)



Project

**5 WEST 125TH STREET
SITE LOCATION MAP**

NEW YORK

NEW YORK

ELMWOOD Pk, NJ (201) 794-6900 NEW YORK, NY (212) 964-7888 PHILADELPHIA, PA (215) 864-0640 DOYLESTOWN, PA (215) 348-7101 NEW HAVEN, CT (203) 562-5771 MIAMI, FL (305) 362-1166

JOB NO.

DATE

SCALE

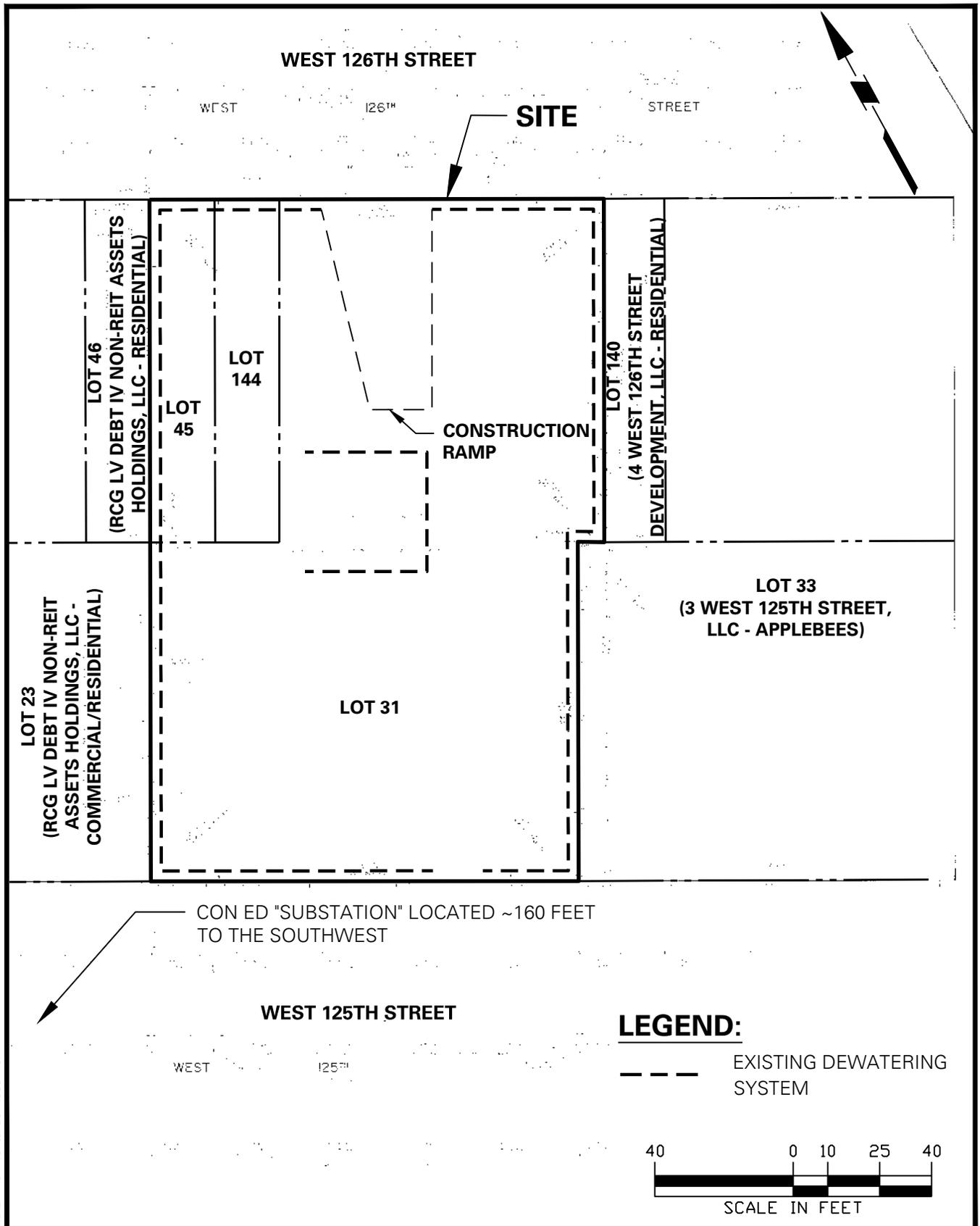
FIGURE NO.

9200803

4/6/2011

NTS

1



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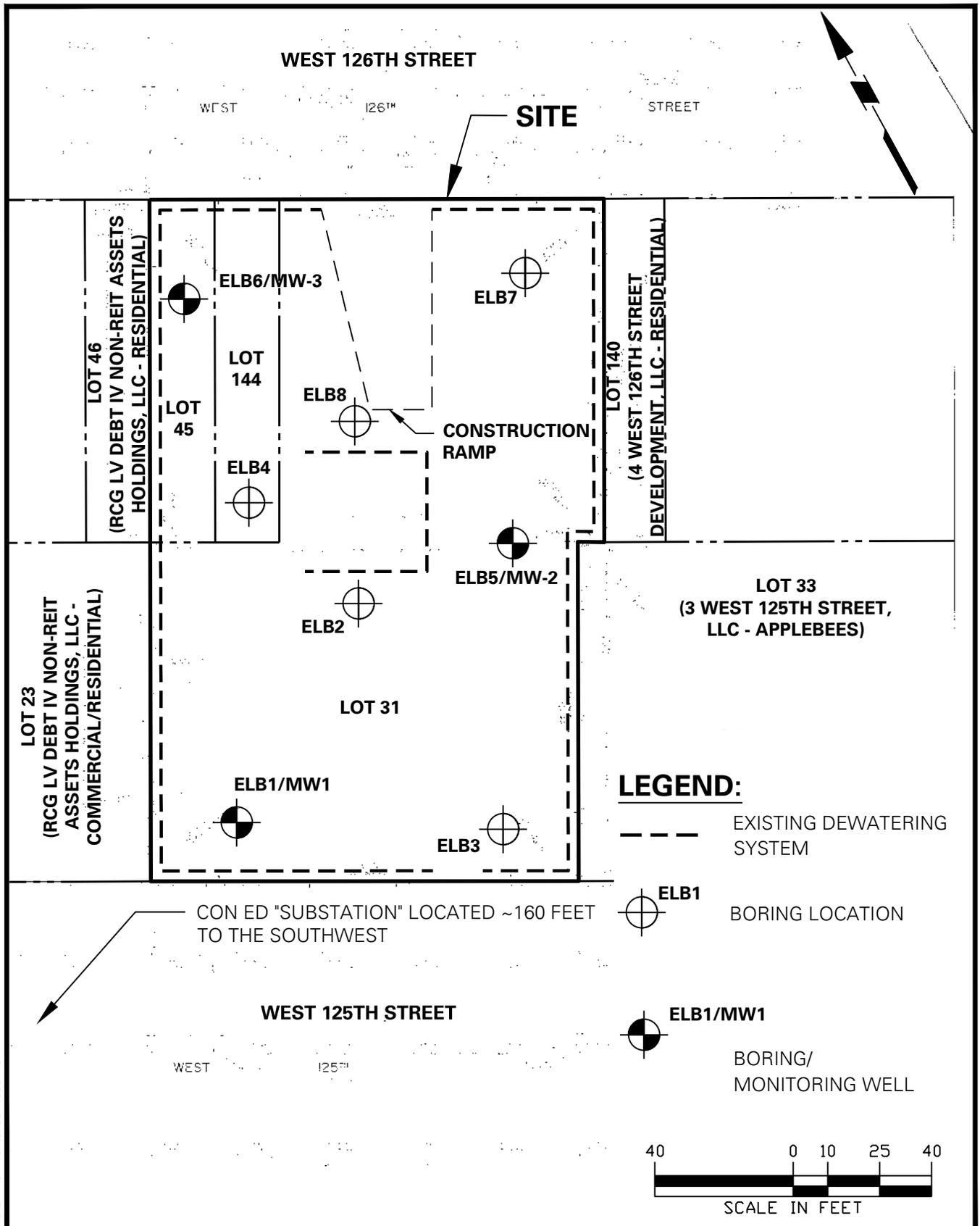
NJ Certificate of Authorization No: 24GA27996400

PROPOSED W. 125TH STREET DEVELOPMENT
SITE PLAN

MANHATTAN

NEW YORK

Project No. 9200803	Date 7/14/11	Scale 1"=40'	Dwg. No. 2
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NJ Certificate of Authorization No: 24GA27996400

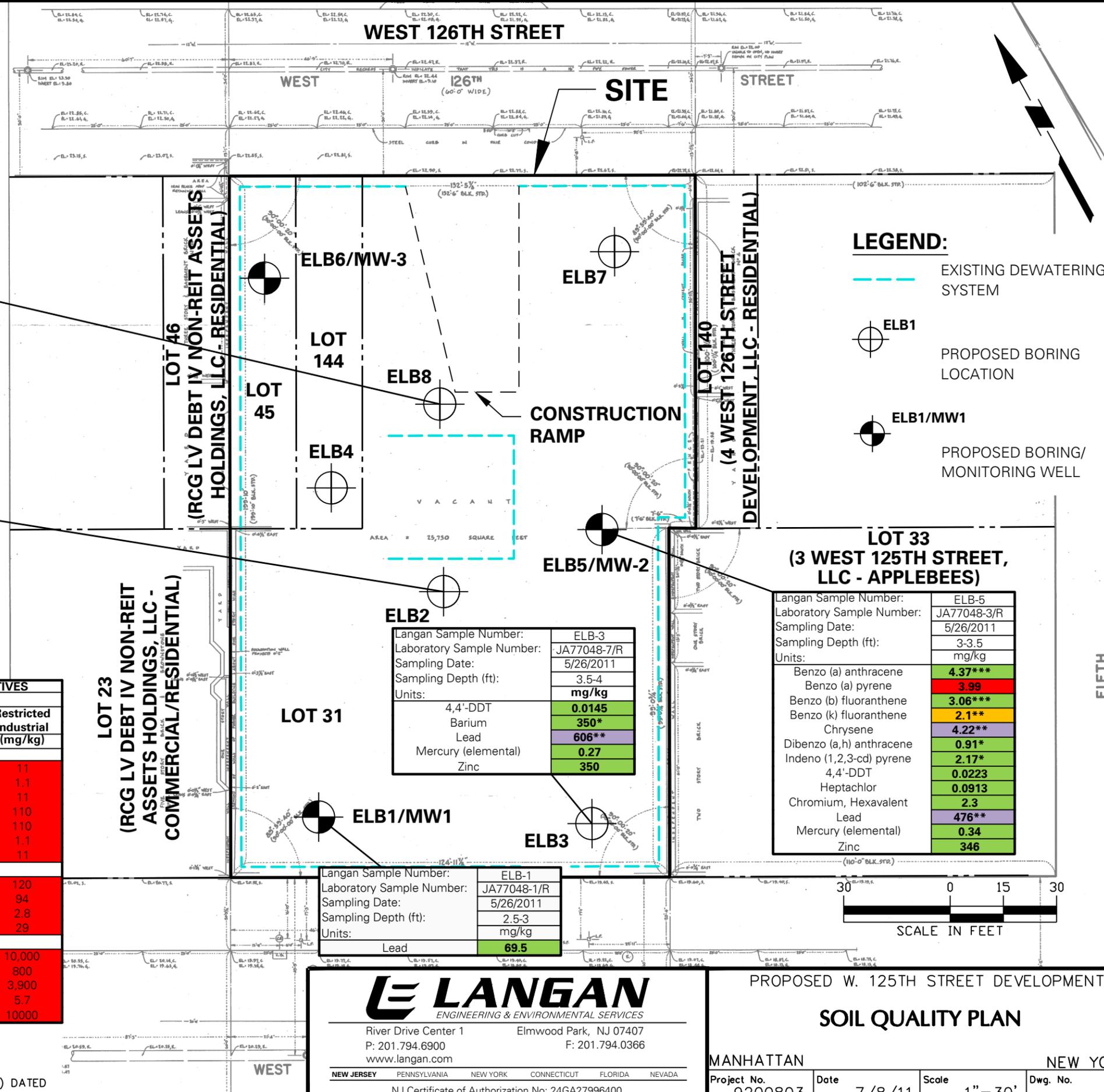
PROPOSED W. 125TH STREET DEVELOPMENT
SAMPLE LOCATION PLAN

MANHATTAN

NEW YORK

Project No. 9200803	Date 7/14/11	Scale 1"=40'	Dwg. No. 3
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Langan Sample Number:	ELB-8
Laboratory Sample Number:	JA77048-14/R
Sampling Date:	5/26/2011
Sampling Depth (ft):	3.5-4
Units:	mg/kg
4,4'-DDE	0.0214
4,4'-DDT	0.0814
Dieldrin	0.0064
Lead	526**
Mercury (elemental)	0.26
Zinc	284

Langan Sample Number:	ELB-2
Laboratory Sample Number:	JA77048-9/R
Sampling Date:	5/26/2011
Sampling Depth (ft):	3.5-4
Units:	mg/kg
Benzo (a) anthracene	3.04*
Benzo (a) pyrene	2.71
Benzo (b) fluoranthene	2.42*
Benzo (k) fluoranthene	1.77**
Chrysene	2.95***
Dibenzo (a,h) anthracene	0.687
Indeno (1,2,3-cd) pyrene	1.64*
4,4'-DDT	0.0043
Lead	153
Mercury (elemental)	0.84**

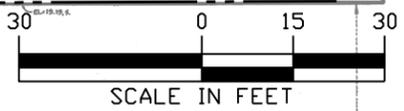
Langan Sample Number:	ELB-3
Laboratory Sample Number:	JA77048-7/R
Sampling Date:	5/26/2011
Sampling Depth (ft):	3.5-4
Units:	mg/kg
4,4'-DDT	0.0145
Barium	350*
Lead	606**
Mercury (elemental)	0.27
Zinc	350

Langan Sample Number:	ELB-5
Laboratory Sample Number:	JA77048-3/R
Sampling Date:	5/26/2011
Sampling Depth (ft):	3-3.5
Units:	mg/kg
Benzo (a) anthracene	4.37***
Benzo (a) pyrene	3.99
Benzo (b) fluoranthene	3.06***
Benzo (k) fluoranthene	2.1**
Chrysene	4.22**
Dibenzo (a,h) anthracene	0.91*
Indeno (1,2,3-cd) pyrene	2.17*
4,4'-DDT	0.0223
Heptachlor	0.0913
Chromium, Hexavalent	2.3
Lead	476**
Mercury (elemental)	0.34
Zinc	346

Langan Sample Number:	ELB-1
Laboratory Sample Number:	JA77048-1/R
Sampling Date:	5/26/2011
Sampling Depth (ft):	2.5-3
Units:	mg/kg
Lead	69.5

LEGEND:

- EXISTING DEWATERING SYSTEM
- ELB1 PROPOSED BORING LOCATION
- ELB1/MW1 PROPOSED BORING/MONITORING WELL



SUBPART 375-6 (Revised Brownfields)	UNRESTRICTED USE OBJECTIVES (mg/kg)	RESTRICTED USE SOIL CLEANUP OBJECTIVES			
		Protection of Public Health			
		Residential (mg/kg)	Restricted Residential (mg/kg)	Restricted Commercial (mg/kg)	Restricted Industrial (mg/kg)
Semi-Volatile Organic Compounds					
Benzo (a) anthracene	1	1	1	5.6	11
Benzo (a) pyrene	1	1	1	1	1.1
Benzo (b) fluoranthene	1	1	1	5.60	11
Benzo (k) fluoranthene	0.8	1	3.9	56	110
Chrysene	1	1	3.9	56	110
Dibenzo (a,h) anthracene	0.33	0.33	0.33	0.56	1.1
Indeno (1,2,3-cd) pyrene	0.5	0.5	0.5	5.6	11
PCBs/Pesticides					
4,4'-DDE	0.0033	1.8	8.9	62	120
4,4'-DDT	0.0033	1.7	7.9	47	94
Dieldrin	0.005	0.039	0.2	1.4	2.8
Heptachlor	0.042	0.42	2.1	15	29
Metals					
Barium	350	350	400	400	10,000
Chromium, Hexavalent	1	22	110	400	800
Lead	63	400	400	1,000	3,900
Mercury (elemental)	0.18	0.81	0.81	2.8	5.7
Zinc	109	2200	10000	10000	10000

* : RESULT ALSO EXCEEDS SOME PROTECTION OF PUBLIC HEALTH CRITERIA.
 ** : RESULT ALSO EXCEEDS PROTECTION OF GROUNDWATER CRITERIA.
 *** : RESULT ALSO EXCEEDS SOME PROTECTION OF PUBLIC HEALTH CRITERIA AND PROTECTION OF GROUNDWATER CRITERIA.
 NYSDEC SOIL CLEANUP OBJECTIVE TABLES CAN BE FOUND IN TABLES 375-6.8(A) AND 375-6.8(B) DATED 14 DECEMBER 2006.

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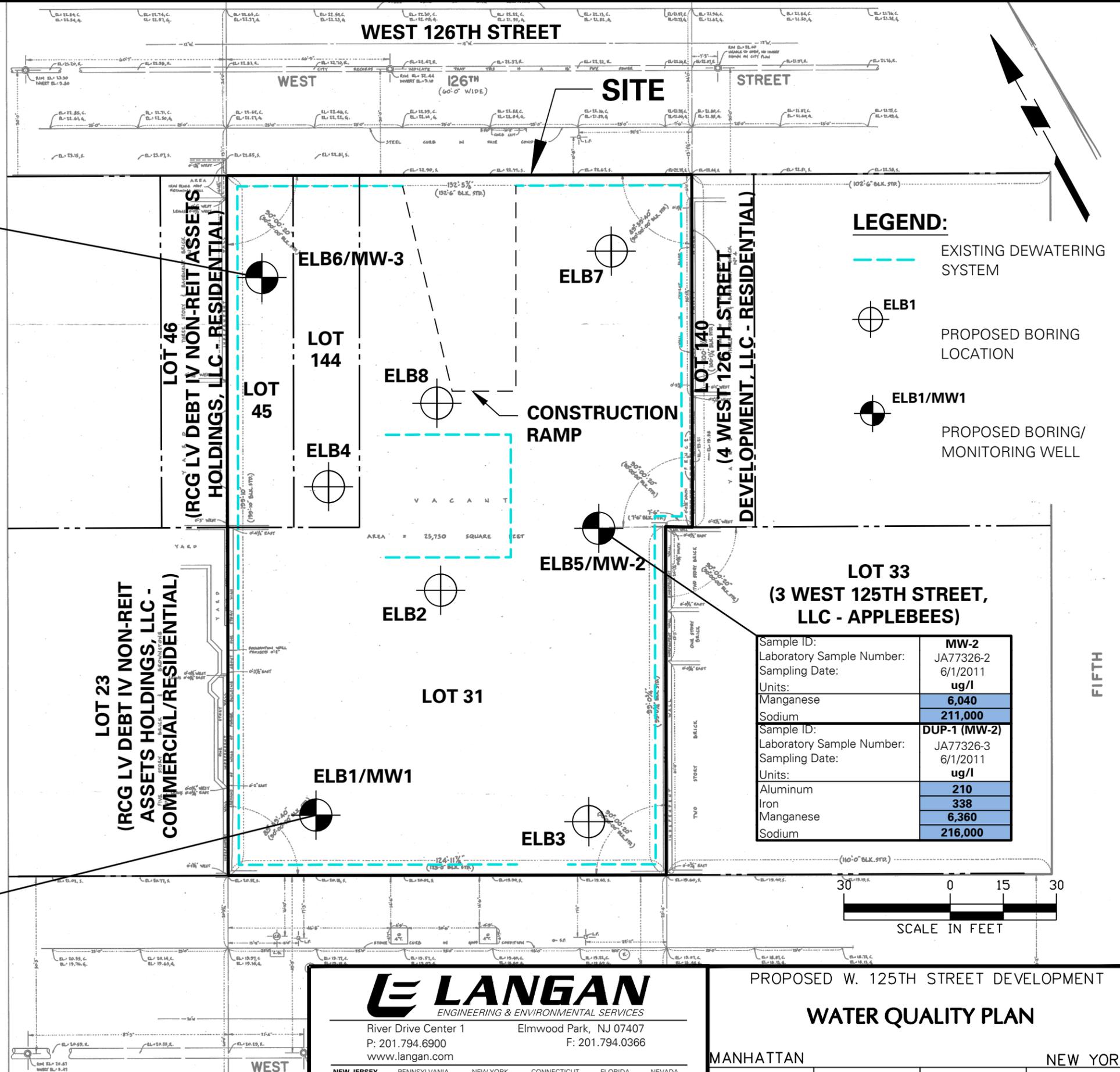
PROPOSED W. 125TH STREET DEVELOPMENT
SOIL QUALITY PLAN
 MANHATTAN NEW YORK
 Project No. 9200803 Date 7/8/11 Scale 1"=30' Dwg. No. 4

Sample ID:	MW-3
Laboratory Sample Number:	JA77326-4
Sampling Date:	6/1/2011
Units:	ug/l
Manganese	2,390
Sodium	48,200

Sample ID:	MW-1
Laboratory Sample Number:	JA77326-1
Sampling Date:	6/1/2011
Units:	ug/l
Manganese	17,300
Sodium	349,000

	Ground Water Quality Standards Part 703*** (ug/l)
Aluminum	—
Iron	300
Manganese	300
Sodium	20,000

***STANDARDS EXIST FOR ADDITIONAL CRITERIA NOT LISTED IN THIS TABLE



Sample ID:	MW-2
Laboratory Sample Number:	JA77326-2
Sampling Date:	6/1/2011
Units:	ug/l
Manganese	6,040
Sodium	211,000
Sample ID:	DUP-1 (MW-2)
Laboratory Sample Number:	JA77326-3
Sampling Date:	6/1/2011
Units:	ug/l
Aluminum	210
Iron	338
Manganese	6,360
Sodium	216,000

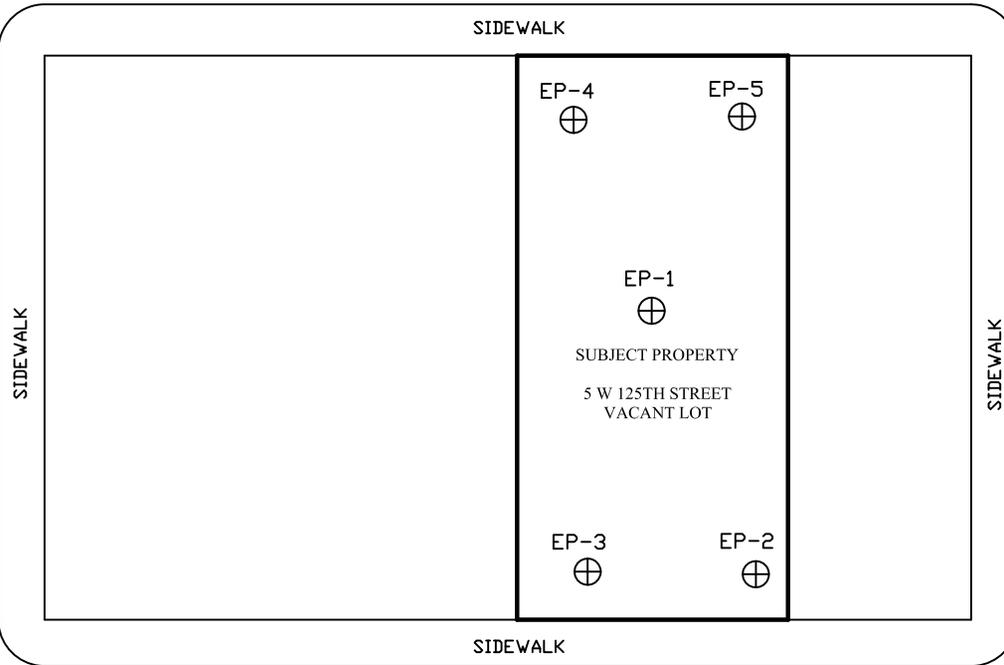
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PROPOSED W. 125TH STREET DEVELOPMENT
WATER QUALITY PLAN
MANHATTAN NEW YORK
Project No. 9200803 Date 7/7/11 Scale 1"=30' Dwg. No. 5



126TH STREET

LENOX AVENUE



5TH AVENUE

125TH STREET

⊕ PROPOSED ENDPOINT SOIL SAMPLING LOCATIONS

CLIENT

HARCO CONSULTANTS CORP.
PROPOSED ENDPOINT SOIL SAMPLING LOCATIONS
5 WEST 125TH STREET, NEW YORK, NY

SHEET #

FIG-6

DATE:

FEB 2013

REF. Drawing
HANH 1301



architects + engineers

Melville, NY Albany, NY
New City, NY Parsippany, NJ

TABLES

Table 1

Soil Samples Analytical Results

West 125th Street, New York, New York

Sample ID: Laboratory Sample Number: Sampling Date: Sampling Depth (ft): Units:	CAS No.	SUBPART 375-6 (Revised Brownfields) #						ELB-1	ELB-1	ELB-2	ELB-2	DUP-1	ELB-3	ELB-3	ELB-4	ELB-4	ELB-5	ELB-5	ELB-6	ELB-6	ELB-7	ELB-7	ELB-8	ELB-8	FB-1
		UNRESTRICTED USE OBJECTIVES (mg/kg)	Residential (mg/kg)	Protection of Public Health			Protection of Groundwater (mg/kg)	JA77048-1/R	JA77048-2/R	JA77048-9/R	JA77048-11/R	JA77048-10/R	JA77048-7/R	JA77048-8/R	JA77048-12/R	JA77048-13/R	JA77048-3/R	JA77048-4/R	JA77048-5/R	JA77048-6/R	JA77048-16/R	JA77048-17/R	JA77048-14/R	JA77048-15/R	JA77048-18/R
				Restricted - Residential (mg/kg)	Restricted - Commercial (mg/kg)	Restricted - Industrial (mg/kg)		5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011
VOCs																									
Tetrachloroethene	127-18-4	1.3	5.5	19	150	300	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Total VOC								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
SVOCs																									
2-Methylnaphthalene	91-57-6	—	—	—	—	—	—	ND	ND	0.446	ND	ND	0.0477 J	ND	ND	ND	0.0679	ND	ND	ND	ND	ND	0.0227 J	ND	
Acenaphthene	83-32-9	20	100	100	500	1,000	98	ND	ND	0.755	ND	ND	0.143	ND	ND	ND	0.675	ND	ND	ND	ND	ND	0.0566	ND	
Acenaphthylene	208-96-8	100	100	100	500	1,000	107	ND	ND	0.452	ND	ND	0.101	ND	ND	ND	0.527	ND	ND	ND	ND	ND	0.106	ND	
Anthracene	120-12-7	100	100	100	500	1,000	1,000	ND	ND	2.13	ND	ND	0.348	ND	ND	ND	1.89	ND	ND	ND	ND	ND	0.177	ND	
Benzo (a) anthracene	56-55-3	1	1	1	5.6	11	1	0.0198 J	ND	3.04*	ND	ND	0.844	ND	ND	ND	4.37***	ND	ND	ND	ND	ND	0.675	ND	
Benzo (a) pyrene	50-32-8	1	1	1	1	1.1	22	0.0198 J	ND	2.71	ND	ND	0.762	ND	ND	ND	3.99	ND	ND	ND	ND	ND	0.686	ND	
Benzo (b) fluoranthene	205-99-2	1	1	1	5.60	11	1.7	0.0223 J	ND	2.42*	ND	ND	0.881	ND	ND	ND	3.06***	ND	ND	ND	ND	ND	0.603	ND	
Benzo (g,h,i) perylene	191-24-2	100	100	100	500	1,000	1,000	0.0182 J	ND	1.84	ND	ND	0.422	ND	ND	ND	2.52	ND	ND	ND	ND	ND	0.538	ND	
Benzo (k) fluoranthene	207-08-9	0.8	1	3.9	56	110	1.7	0.0185 J	ND	1.77**	ND	ND	0.434	ND	ND	ND	2.1**	ND	ND	ND	ND	ND	0.41	ND	
bis(2-ethylhexyl)phthalate	117-81-7	—	—	—	—	—	—	0.0342 J	ND	0.032 J	ND	ND	ND	ND	ND	ND	0.0884	ND	0.0387 J	ND	ND	ND	0.3	ND	
1,1'-Biphenyl	92-52-4	—	—	—	—	—	—	ND	ND	0.14	ND	ND	0.0147 J	ND	ND	ND	0.0432 J	ND	ND	ND	ND	ND	0.0140 J	ND	
Butylbenzylphthalate	85-68-7	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	77.6	ND	
Carbazole	86-74-8	—	—	—	—	—	—	ND	0.337	0.727	ND	ND	0.176	ND	ND	ND	0.337	ND	ND	ND	ND	ND	0.0587 J	ND	
Chrysene	218-01-9	1	1	3.9	56	110	1	0.0277 J	ND	2.95***	ND	ND	0.924	ND	ND	ND	4.22**	ND	ND	ND	ND	ND	0.828	ND	
Dibenzo (a,h) anthracene	53-70-3	0.33	0.33	0.33	0.56	1.1	1,000	ND	ND	0.687	ND	ND	0.146	ND	ND	ND	0.91*	ND	ND	ND	ND	ND	0.197	ND	
Dibenzofuran	132-64-9	—	—	—	—	—	—	ND	ND	0.89	ND	ND	0.094	ND	ND	ND	0.354	ND	ND	ND	ND	ND	0.0266 J	ND	
Diethylphthalate	84-66-2	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Dimethylphthalate	131-11-3	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Di-n-butyl phthalate	84-74-2	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.484	ND	
Di-n-octyl phthalate	117-84-0	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.296	ND	
Fluoranthene	206-44-0	100	100	100	500	1,000	1,000	0.0365	ND	7.98	ND	ND	2.07	ND	ND	ND	9.11	ND	0.0137 J	ND	ND	ND	1.04	ND	
Fluorene	86-73-7	30	100	100	500	1,000	386	ND	ND	1.41	ND	ND	0.16	ND	ND	ND	0.622	ND	ND	ND	ND	ND	0.0635	ND	
Indeno (1,2,3-cd) pyrene	193-39-5	0.5	0.5	0.5	5.6	11	8.2	0.0171 J	ND	1.64*	ND	ND	0.374	ND	ND	ND	2.17*	ND	ND	ND	ND	ND	0.405	ND	
Naphthalene	91-20-3	12	100	100	500	1,000	12	ND	ND	1.03	ND	ND	0.0728	ND	ND	ND	0.115	ND	ND	ND	ND	ND	0.0405	ND	
Phenanthrene	85-01-8	100	100	100	500	1,000	1,000	0.0154 J	ND	9.43	ND	ND	1.64	ND	ND	ND	6.79	ND	ND	ND	ND	ND	0.77	ND	
Pyrene	129-00-0	100	100	100	500	1,000	1,000	0.0389	ND	7.02	ND	ND	1.86	ND	ND	ND	9.45	ND	0.0192 J	ND	ND	ND	1.49	ND	
Total SVOCs								0.2684	0.337		ND	ND		ND	ND	ND									
PCBs/Pesticides																									
Polychlorinated biphenols (PCBS)		0.1	1	1	1	25	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
4,4'-DDE	72-55-9	0.0033	1.8	8.9	62	120	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0214	ND	
4,4'-DDT	50-29-3	0.0033	1.7	7.9	47	94	136	ND	ND	0.0043	ND	ND	0.0145	ND	ND	ND	0.0223	ND	0.0015	ND	ND	ND	0.0814	ND	
4,4'-DDD	72-54-8	0.0033	2.6	13	92	180	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0022	ND	
Chlordane (alpha)	5103-71-9	0.094	0.91	4.2	24	47	2.9	0.0013	ND	ND	ND	ND	0.0037	ND	ND	ND	0.0552	ND	ND	ND	ND	ND	0.0182	ND	
Chlordane (gamma)	5103-74-2	—	—	—	—	—	—	0.0013	ND	0.0034	ND	ND	0.0054	ND	ND	ND	0.0759	ND	ND	ND	ND	ND	ND	0.0142	ND
Dieldrin	60-57-1	0.005	0.039	0.2	1.4	2.8	0.1	ND	ND	ND	ND	ND	0.0029	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0064	ND
Endosulfan II	33213-65-9	2.4	4.8	24	200	920	102	ND	ND	ND	ND	ND	0.0081	ND	ND	ND	0.0044	ND	ND	ND	ND	ND	ND	0.0032	ND
Endosulfan Sulfate	1031-07-8	2.4	4.8	24	200	920	1,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0047	ND	ND	ND	ND	ND	ND	ND	
Endrin	72-20-8	0.014	2.20	11	89	410	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0019	ND
Endrin ketone	53494-70-5	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0019
Heptachlor	76-44-8	0.042	0.42	2.1	15	29	0.38	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0913	ND	ND	ND	ND	ND	ND	0.002	ND
Heptachlor epoxide	1024-57-3	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0017	ND
Total Pesticides																									
Metals																									
Aluminum	7429-90-5	—	—	—	—	—	—	4,140	6,640	7,680	7,380	4,320	7,040	3,200	3,860	8,130	6,290	2,400	5,560	4,140	4,370	7,480	9,560	6,320	ND
Antimony	7440-36-0	—	—	—	—	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	7440-38-2	13	16	16	16	16	16	ND	ND	ND	ND	ND	4.3	ND	2.2	ND	2.4	ND	ND	ND	ND	ND	6.7	ND	ND
Barium	7440-39-3	350	350	400	400	10,000	820	49	54.8	116	76.3	31.4	350*	52.3	48.5	83	257	ND	44.5	39	42.8	71.6	282	67.9	ND
Beryllium	7440-41-7	7.2	14	72	590	2,700	47	0.24	0.4	0.32	0.49	0.31	0.35	ND	0.34	0.5	0.31	ND	0.38	0.23	0.32	0.52	0.35	0.44	ND
Cadmium	7440-43-9	2.5	2.5	4.3	9.3	60	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	7440-70-2	—	—	—	—	—	—	12,200	1,750	10,600	1,920	1,980	22,400	1,040	1,330										

Table 2
Groundwater Analytical Results
 West 125th Street, New York, New York

Sample ID: Langan Sample Number: Laboratory Sample Number: Sampling Date: Sampling Depth (ft): Units:	CAS No.	Ground Water Quality Standards Part 703*** (ug/L)	MW-1 JA77326-1 6/1/2011 ug/l	MW-2 JA77326-2 6/1/2011 ug/l	DUP-1 (MW-2) JA77326-3 6/1/2011 ug/l	MW-3 JA77326-4 6/1/2011 ug/l	FB-1 JA77326-5 6/1/2011 ug/l	TB-1 JA77326-6 6/1/2011 ug/l
VOCs								
Tetrachloroethene	127-18-4	5*	ND	0.67 J	0.62 J	1	ND	ND
SVOCs			ND	ND	ND	ND	ND	ND
PCBs/Pesticides								
4,4'-DDD	72-54-8	0.3	ND	0.023	0.031	ND	ND	NA
Metals								
Aluminum	7429-90-5	—	ND	ND	210	ND	ND	NA
Calcium	7440-70-2	—	132,000	146,000	151,000	69,500	ND	NA
Iron	7439-89-6	300	ND	274	338	288	ND	NA
Lead	7439-92-1	25	4.4	3.2	3.9	ND	ND	NA
Magnesium	7439-95-4	—	26,300	28,400	29,300	13,800	ND	NA
Manganese	7439-96-5	300	17,300	6,040	6,360	2,390	ND	NA
Nickel	7440-02-0	100	31.3	19.8	21.2	13.1	ND	NA
Potassium	7440-09-7	—	16,300	10,800	11,100	ND	ND	NA
Sodium	7440-23-5	20,000	349,000	211,000	216,000	48,200	ND	NA

NOTES:

* : No criteria established, value is generic criteria

***Standards exist for additional criteria not listed in this table

See table below for Generic Cap Approach Values from the New York State Brownfield Cleanup Program Development of Soil Cleanup Objectives Technical Support Document Section 9.3, Cap Approach and Values, dated September 2006.

NYSDEC Groundwater Criteria are a combination of values from Part 703 if the NYS Code and TAGM 4046. Most values are generic screening values, however where contaminant specific criteria have been established they are used in this table.

TABLE 3 - SOIL CLEANUP OBJECTIVES

375-6.8 **Soil cleanup objective tables.**
 (a) Unrestricted use soil cleanup objectives.

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 ^c
Barium	7440-39-3	350 ^c
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 ^c
Chromium, hexavalent ^c	18540-29-9	1 ^b
Chromium, trivalent ^c	16065-83-1	30 ^c
Copper	7440-50-8	50
Total Cyanide ^{e, f}		27
Lead	7439-92-1	63 ^c
Manganese	7439-96-5	1600 ^c
Total Mercury		0.18 ^c
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9 ^c
Silver	7440-22-4	2
Zinc	7440-66-6	109 ^c
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) ^f	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 ^b
4,4'-DDT	50-29-3	0.0033 ^b
4,4'-DDD	72-54-8	0.0033 ^b
Aldrin	309-00-2	0.005 ^c
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC ^g	319-86-8	0.04
Dibenzofuran ^f	132-64-9	7
Dieldrin	60-57-1	0.005 ^c
Endosulfan I ^{d, f}	959-98-8	2.4
Endosulfan II ^{d, f}	33213-65-9	2.4
Endosulfan sulfate ^{d, f}	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenaphthylene ^f	208-96-8	100 ^a
Anthracene ^f	120-12-7	100 ^a
Benz(a)anthracene ^f	56-55-3	1 ^c
Benzo(a)pyrene	50-32-8	1 ^c
Benzo(b)fluoranthene ^f	205-99-2	1 ^c
Benzo(g,h,i)perylene ^f	191-24-2	100
Benzo(k)fluoranthene ^f	207-08-9	0.8 ^c
Chrysene ^f	218-01-9	1 ^c
Dibenz(a,h)anthracene ^f	53-70-3	0.33 ^b
Fluoranthene ^f	206-44-0	100 ^a
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene ^f	193-39-5	0.5 ^c
m-Cresol ^f	108-39-4	0.33 ^b
Naphthalene ^f	91-20-3	12
o-Cresol ^f	95-48-7	0.33 ^b

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol ^f	106-44-5	0.33 ^b
Pentachlorophenol	87-86-5	0.8 ^b
Phenanthrene ^f	85-01-8	100
Phenol	108-95-2	0.33 ^b
Pyrene ^f	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane ^f	71-55-6	0.68
1,1-Dichloroethane ^f	75-34-3	0.27
1,1-Dichloroethene ^f	75-35-4	0.33
1,2-Dichlorobenzene ^f	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 ^c
cis -1,2-Dichloroethene ^f	156-59-2	0.25
trans-1,2-Dichloroethene ^f	156-60-5	0.19
1,3-Dichlorobenzene ^f	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 ^b
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene ^f	104-51-8	12
Carbon tetrachloride ^f	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene ^f	100-41-4	1
Hexachlorobenzene ^f	118-74-1	0.33 ^b
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether ^f	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene ^f	103-65-1	3.9
sec-Butylbenzene ^f	135-98-8	11
tert-Butylbenzene ^f	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene ^f	95-63-6	3.6
1,3,5-Trimethylbenzene ^f	108-67-8	8.4
Vinyl chloride ^f	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

^a The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See [Technical Support Document \(TSD\)](#), section 9.3.

^b For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

^c For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

^d SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

^e The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

^f Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

(b) Restricted use soil cleanup objectives.

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Metals							
Arsenic	7440-38-2	16 ^f	16 ^f	16 ^f	16 ^f	13 ^f	16 ^f
Barium	7440-39-3	350 ^f	400	400	10,000 ^d	433	820
Beryllium	7440-41-7	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5 ^f	4.3	9.3	60	4	7.5
Chromium, hexavalent ^h	18540-29-9	22	110	400	800	1 ^e	19
Chromium, trivalent ^h	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50-8	270	270	270	10,000 ^d	50	1,720
Total Cyanide ^h		27	27	27	10,000 ^d	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63 ^f	450
Manganese	7439-96-5	2,000 ^f	2,000 ^f	10,000 ^d	10,000 ^d	1600 ^f	2,000 ^f
Total Mercury		0.81 ^j	0.81 ^j	2.8 ^j	5.7 ^j	0.18 ^f	0.73
Nickel	7440-02-0	140	310	310	10,000 ^d	30	130
Selenium	7782-49-2	36	180	1,500	6,800	3.9 ^f	4 ^f
Silver	7440-22-4	36	180	1,500	6,800	2	8.3
Zinc	7440-66-6	2200	10,000 ^d	10,000 ^d	10,000 ^d	109 ^f	2,480
PCBs/Pesticides							
2,4,5-TP Acid (Silvex)	93-72-1	58	100 ^a	500 ^b	1,000 ^c	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 ^e	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 ^e	136
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033 ^e	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04 ^g	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.91	4.2	24	47	1.3	2.9

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
delta-BHC	319-86-8	100 ^a	100 ^a	500 ^b	1,000 ^c	0.04 ^g	0.25
Dibenzofuran	132-64-9	14	59	350	1,000 ^c	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8 ⁱ	24 ⁱ	200 ⁱ	920 ⁱ	NS	102
Endosulfan II	33213-65-9	4.8 ⁱ	24 ⁱ	200 ⁱ	920 ⁱ	NS	102
Endosulfan sulfate	1031-07-8	4.8 ⁱ	24 ⁱ	200 ⁱ	920 ⁱ	NS	1,000 ^c
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
Acenaphthene	83-32-9	100 ^a	100 ^a	500 ^b	1,000 ^c	20	98
Acenaphthylene	208-96-8	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	107
Anthracene	120-12-7	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1,000 ^c
Benz(a)anthracene	56-55-3	1 ^f	1 ^f	5.6	11	NS	1 ^f
Benzo(a)pyrene	50-32-8	1 ^f	1 ^f	1 ^f	1.1	2.6	22
Benzo(b)fluoranthene	205-99-2	1 ^f	1 ^f	5.6	11	NS	1.7
Benzo(g,h,i)perylene	191-24-2	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1,000 ^c
Benzo(k)fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1 ^f	3.9	56	110	NS	1 ^f
Dibenz(a,h)anthracene	53-70-3	0.33 ^e	0.33 ^e	0.56	1.1	NS	1,000 ^c
Fluoranthene	206-44-0	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1,000 ^c
Fluorene	86-73-7	100 ^a	100 ^a	500 ^b	1,000 ^c	30	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5 ^f	0.5 ^f	5.6	11	NS	8.2
m-Cresol	108-39-4	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	0.33 ^e
Naphthalene	91-20-3	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
o-Cresol	95-48-7	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	0.33 ^e
p-Cresol	106-44-5	34	100 ^a	500 ^b	1,000 ^c	NS	0.33 ^e
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8 ^e	0.8 ^e
Phenanthrene	85-01-8	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1,000 ^c
Phenol	108-95-2	100 ^a	100 ^a	500 ^b	1,000 ^c	30	0.33 ^e
Pyrene	129-00-0	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1,000 ^c
Volatiles							
1,1,1-Trichloroethane	71-55-6	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	0.33
1,2-Dichlorobenzene	95-50-1	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02 ^f
cis-1,2-Dichloroethene	156-59-2	59	100 ^a	500 ^b	1,000 ^c	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1 ^e	0.1 ^e
Acetone	67-64-1	100 ^a	100 ^b	500 ^b	1,000 ^c	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100 ^a	100 ^a	500 ^b	1,000 ^c	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33 ^e	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100 ^a	100 ^a	500 ^b	1,000 ^c	100 ^a	0.12

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
Methyl tert-butyl ether	1634-04-4	62	100 ^a	500 ^b	1,000 ^c	NS	0.93
Methylene chloride	75-09-2	51	100 ^a	500 ^b	1,000 ^c	12	0.05
n-Propylbenzene	103-65-1	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	3.9
sec-Butylbenzene	135-98-8	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	11
tert-Butylbenzene	98-06-6	100 ^a	100 ^a	500 ^b	1,000 ^c	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100 ^a	100 ^a	500 ^b	1,000 ^c	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5- Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	100 ^a	100 ^a	500 ^b	1,000 ^c	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).

NS=Not specified. See [Technical Support Document \(TSD\)](#).

Footnotes

^a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

^b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

^c The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

^d The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

^e For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

^f For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

^g This SCO is derived from data on mixed isomers of BHC.

^h The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

ⁱ This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

^j This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

375-6.9 Development or modification of soil cleanup objectives.

(a) Applicability. This section identifies when and the procedures under which a contaminant-specific soil cleanup objective may be developed or modified.

(1) Soil cleanup objectives for contaminants not included in Tables 375-6.8(a) and (b) may be developed by the remedial party or required by the Department.

(2) Soil cleanup objectives for contaminants included in Tables 375-6.8(a) and (b), may be modified based on site-specific data if desired by the remedial party; as set forth in:

(i) subpart 375-3 for Tracks 3 or 4, as set forth in paragraphs 375-3.8(e)(3) or (4), respectively; or

(ii) subparts 375-2 and 375-4, as set forth in subparagraph 375-2.8(b)(1)(iii) and subparagraph 375-4.8(c)(1)(iii).

(3) Protection of ecological resources soil cleanup objectives were not developed for certain contaminants, which are identified in Table 375-6.8(b) as “NS”. Where such contaminants:

(i) appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources soil cleanup objective for the contaminant for use in Track 1 and apply such soil cleanup objective where it is lower than the soil cleanup objective set forth in Table 375-6.8(a); or

(ii) are identified as impacting or threatening an ecological resource for a restricted use remedial program the Department may require a protection of ecological resources soil cleanup objective be developed.

(b) New soil cleanup objectives must:

(1) Be developed utilizing the same methodologies that were used by the Department to develop the respective soil cleanup objective, as provided in the Technical Support Document.

(2) Apply the following caps, as set forth in section 9.3 of the Technical Support Document, on any soil cleanup objective included in Tables 375-6.8(a) and (b), with the exception of metals, as set forth in paragraph (3) below, developed for:

(i) unrestricted use, residential use, restricted-residential use and the protection of ecological resources, a maximum value of 100 ppm;

(ii) commercial use, a maximum value of 500 ppm; and

(iii) industrial use and the protection of groundwater a maximum value of 1000 ppm,

and

(3) Apply a cap for metals at a maximum value of 10,000 ppm.

(c) Development of unrestricted use soil cleanup objectives. The unrestricted use soil cleanup objective for a compound will be the lowest of the soil cleanup values, calculated as set forth in appendix E of the Technical Support Document, for the protection of groundwater, protection of ecological resources and protection of public health.

(d) Development of restricted use soil cleanup objectives. The protection of:

(1) Groundwater soil cleanup objective will be the values calculated for the protection of groundwater as set forth in appendix E of the Technical Support Document;

(2) Ecological resources soil cleanup objectives will be the values calculated for the protection of ecological resources as set forth in appendix E of the Technical Support Document; and

(3) Public health cleanup objective will be the values calculated for the protection of public health for the identified use of the site, as set forth in appendix E of the Technical Support Document.

(e) Modification of soil cleanup objectives. The contaminant-specific soil cleanup objectives set forth at Tables 675-6.8(a) and (b)¹ may be modified by site specific data as set forth in this subdivision.

¹ Original should read “Tables 375-6.8(a) and (b)”

(1) Contaminant-specific soil cleanup objectives modified in accordance with this subdivision may be utilized by the remedial party for a site remedial program undertaken pursuant to:

(i) subpart 375-3 in Tracks 3 or 4, as set forth in paragraphs 375-3.8(e)(3) or (4), respectively; or

(ii) subparts 375-2 and 375-4, as set forth in subparagraph 375-2.8(b)(1)(ii) and subparagraph 375-4.8(c)(1)(ii).

(2) For the calculation of a protection of groundwater or ecological resources contaminant-specific soil cleanup objective, the site-specific percentage of total organic carbon in the soil at the site may be substituted in the algorithms provided in appendix E of the Technical Support Document.

(3) For the calculation of a protection of public health contaminant-specific soil cleanup objective, site-specific data may be used to modify two of the five exposure pathways, as follows:

- (i) for the particulate inhalation pathway six parameters rely on site-specific data; and
- (ii) for the volatile inhalation pathway, four parameters rely on site-specific data.

(4) The algorithms to be used for each protection of public health pathway and details on the parameters which can be substituted are included in appendix E of the Technical Support Document.

(f) Use of soil cleanup objectives developed or modified. Once approved by the Department, contaminant-specific soil cleanup objectives developed or modified as set forth in this section may be utilized by the Department at other sites consistent with paragraphs (1) and (2) below.

(1) Contaminant-specific soil cleanup objectives developed for contaminants not included in Tables 375-6.8(a) and (b), as set forth in subdivision 375-6.9(b) above, will be used as guidance and shall be considered by the Department for inclusion in the Tables in this subpart during any subsequent reevaluation of the soil cleanup objectives, as set forth by ECL 27-1415.

(2) Contaminant-specific soil cleanup objectives modified for site specific parameters, as set forth in subdivision 375-6.9(e) above, may be utilized at sites manifesting similar parameters, if approved by the Department.

APPENDICES

Appendix 1

Citizen Participation Plan

The NYC Office of Environmental Remediation and CA 5-15 125th Street LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, CA 5-15 125th Street LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Mr. William Wong, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List

on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. CA 5-15 125th Street LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

New York Public Library
9 West 124th Street
New York, NY 10027
(212) 348-5620

Sunday: Closed
Monday and Wednesday: 11:00 AM to 6:00 PM
Tuesday and Thursday: 12:00 AM to 7:00 PM
Friday and Saturday: 10:00 AM to 7:00 PM

And at:
NYC Office of Environmental Remediation
www.nyc.gov/oer

Digital Documentation. NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and

at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by CA 5-15 125th Street LLC , reviewed and approved by OER prior to distribution and mailed by CA 5-15 125th Street LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the following page, which identifies when during the NYC VCP public notices are issued: These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

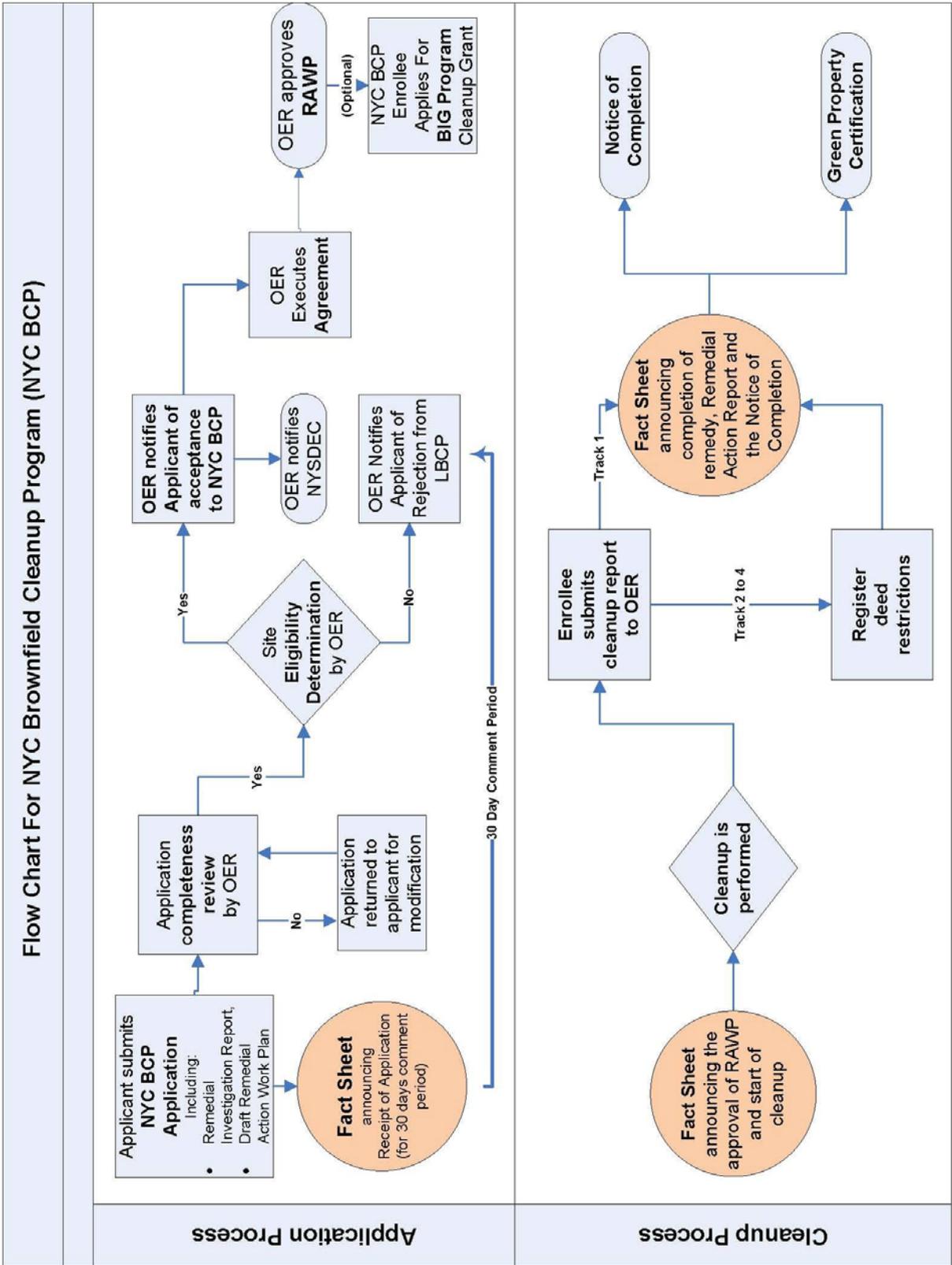
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

Public notice in the form of a fact sheet is sent to all parties listed on the site contact list announcing the completion of remediation, providing a list of all institutional and engineering controls implemented for to the site and announcing the issuance of the notice of completion.



Appendix 2

Sustainability statement

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action. CA 5-15 125th Street LLC intends to employ sustainable means to implement the selected remedy defined in this RAWP and subsequent redevelopment including taking into consideration the sustainability goals defined in PlaNYC. Such goals include: maximizing the recycling and reuse of clean, non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and enhancing biodiversity during landscaping associated with Site development.

Reuse of Clean, Recyclable Materials. Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site. To minimize and prevent any recontamination, a vapor

barrier will be installed beneath the slab that will eliminate the risk of future migration of soil vapor contamination from off-site sources.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Paperless Voluntary Cleanup Program. CA 5-15 125th Street LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. CA 5-15 125th Street LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

Appendix 3

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

1.5 Off-Site Materials Transport

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are in Section 3.8 of the RAP. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 Materials Disposal Off-Site

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Applicant to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Applicant. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RCR.

The RCR will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will

include records and approvals for receipt of the material. This information will be presented in the RCR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in the RAP. “Reuse on-Site” means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to Engineering Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures

defined for material reuse in this RAP are followed. The expected location for placement of reused material is shown in the RAP.

1.8 Demarcation

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the RCR; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR. This demarcation will constitute the top of the site management horizon.

1.9 Import of Backfill Soil from Off-Site Sources

Imported soils are not anticipated for site redevelopment activities. The proposed building will occupy the entire site footprint and there will be no landscaped areas; as such a clean fill cap will not be used as an engineering control for the site.

1.10 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the

groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

1.11 Storm-water Pollution Prevention

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be

performed on contaminated source material and surrounding soils and reported to OER.

Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 Odor, Dust and Nuisance Control

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the Remedial Action Report.

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

Appendix 4

Health and Safety Plan

**5 WEST 125TH STREET
NEW YORK, NEW YORK**

HEALTH AND SAFETY PLAN

**NYC VCP NUMBER: 13CVCP115M
E-DESIGNATION SITE NUMBER: 11EHAN269M**

PREPARED FOR:
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FEBRUARY 2013

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HEALTH AND SAFETY PLAN

1.0 PURPOSE

The purpose of this Health and Safety Plan (HASP) is to establish protocols for protecting Holzmacher, McLendon & Murrell, P.C. (H2M) from incidents that may arise while performing site activities during the implementation of the New York City Office of Environmental Remediation (NYCOER) approved Remedial Action Work Plan (RAWP) at 5 West 125th Street in New York, NY. The plan establishes personnel protection standards, mandatory operations procedures, and provides contingencies for situations that may arise while field work is being conducted at the site. All H2M field personnel will be required to abide by the procedures set forth in this HASP.

Personnel performing the field work may encounter conditions that are unsafe or potentially unsafe. In addition to the potential risks associated with the physical, chemical, biological and toxicological properties of the material(s) which may be encountered, other types of hazards (i.e., electricity, water, temperature, heavy equipment, falling objects, loss of balance, tripping, etc.) can have an adverse effect on the health and safety of personnel. It is important that personnel protective equipment (PPE) and safety requirements be appropriate to protect against potential and/or known hazards. PPE will be selected based on the type(s), concentration(s), and routes of personnel exposure from hazardous substances at a site. In situations where the type of materials and possibilities of contact are unknown or the potential hazards are not clearly identifiable, a more subjective (but conservative) determination will be made of the PPE required for initial safety.

Adherence to this HASP will minimize the possibility that personnel at the site or the surrounding community will be injured or exposed to site-related contaminants during field activities.

2.0 SITE LOCATION AND CURRENT USAGE

The property is located on 125th Street between 5th Avenue and Lenox Avenue. The site is bounded to the north and south by 126th Street and 125th Street respectively and by abutting buildings to the east and west in the Harlem neighborhood of Manhattan, New York (Figure 1). The site has an area of approximately ± 0.59 -acre and is currently a vacant inactive construction site that had been excavated to approximately eleven-feet below sidewalk grade in 2008. This site is currently owned by the CA 5-125th Street LLC. Historically, the site was operated as a YMCA and associated dormitories, a commercial parking lot and residential dwellings. According to the New York City Department of City Planning, the subject property is designated as E-201 (CEQR number 07DCP030M), Block 1723, Lots 31, 45 and 144.

The properties adjoining the site consist of residential to the north and northwest and commercial development to the east, south and southwest.

2.1 Proposed Redevelopment Plan

The proposed site use consists of a 4-story commercial building with one cellar level that will occupy the entire site footprint. Based on preliminary architectural schematics prepared by Rosenbaum Design Group, the proposed cellar slab will be at el 3.5 (approximately 16.5-feet below sidewalk grade) and the usable cellar area is required to be at least 19,000 ft² excluding any mechanical rooms.

Groundwater was observed to be approximately 3.5 to 4-feet below the current site grade during the May 2011 Phase II Environmental Investigation completed by Langan. Based on the current development plans the site will be excavated below the groundwater table to allow for the construction of the building cellar. Dewatering will be completed as part of the site redevelopment activities.

2.2 Summary of Field Activities for Site Remediation

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. Entire property will be excavated additional 3.5 feet from the existing grade. Final excavation depths will be around 14 feet from street grades.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
7. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.

8. Removal of underground storage tanks and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations.
9. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
11. As part of new development, installation of a vapor barrier in form of a waterproofing layer beneath the building slab.
12. As part of new development, construction and maintenance of an engineered composite cover over the entire Site consisting of a 4" concrete building slab across the building footprint to prevent human exposure to residual soil/fill remaining under the Site.
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
15. If Track 1 cleanup is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

16. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries and lists any changes from this RAWP.

Site related contaminants of concern may include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and heavy metals. The routes of potential exposure for field personnel undergoing these activities include inhalation, ingestion and adsorption through dermal contact. At the work site, the most probable route of exposure, if any, is via the inhalation or dermal contact of these contaminants of concern. All proposed work will be completed using Level D PPE at a minimum.

3.0 PERSONAL SAFETY

Personnel involved in field operations must often make complex decisions regarding safety. To make these decisions correctly requires more than elementary knowledge. For example, selecting the most effective PPE requires not only expertise in the technical areas of respirators, protective clothing, air monitoring, physical stress, etc., but also experience and professional judgment. Only competent, qualified personnel having the technical judgment to evaluate a particular situation and determine the appropriate safety requirements will perform field investigations at the site. These individuals, through a combination of professional education, on-the-job experience, specialized training, and continual study, have the expertise to make sound decisions. In addition, each individual must sign an appendix to the Health and Safety Plan, indicating they have read and understood its contents (included in HASP Appendix A).

3.1 Training and Medical Surveillance

All personnel involved in field work will be trained to carry out their designated field operations. Training will be provided in the use of all equipment, including respiratory protection apparatus and protective clothing; safety practices and procedures; general safety requirements; and hazard

recognition and evaluation. Each individual involved with the field work must provide documentation of training and medical surveillance, as per 29 CFR 1910.120. A copy of the documentation must be maintained at the job site for the duration of the project.

4.0 LEVELS OF PROTECTION

Anyone entering the investigation site must be protected against potential hazards. The purpose of the personal protective clothing and equipment is to minimize exposure to hazards while working on site. Careful selection and use of adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body and hearing of all personnel.

The appropriate level of protection is determined prior to the initial entry on site based on available information and preliminary monitoring of the site. Subsequent information may warrant changes in the original level selected. Appropriate equipment to protect personnel against exposure to known or anticipated chemical hazards has been divided into four categories according to the degree of protection afforded.

4.1 Level A Protection

The highest degree of protection is used in a Level A situation. It should be worn when the highest available level of respiratory, skin and eye protection is needed. This level of protection is placed in effect when there is no historic information about the site and it is assumed that the worst possible conditions exist.

4.1.1 Personal Protective Equipment

- a. Pressure demand, self-contained breathing apparatus approved by the National Institute of Occupational Safety and Health (NIOSH).
- b. Fully encapsulating chemical-resistant suit.
- c. Coveralls*.

- d. Long cotton underwear*.
- e. Gloves (inner and outer), chemical-resistant.
- f. Boots, chemical-resistant, steel toe and shank. (Depending on suit construction, worn over or under suit boot.)
- g. Hard hat* (under suit).
- h. Disposable protective suit, gloves and boots* (worn over fully-encapsulating suit).
- i. Two-way radio communications (intrinsically safe).

*Optional

4.1.2 Criteria for Selection

Meeting any of the criteria listed below warrants use of Level A protection:

- a. The chemical substance(s) has been identified and requires the highest level of protection for skin, eyes and the respiratory system based on:
 - (1) Measured (or potential for) high concentrations of atmospheric vapors, gases, or particulates; or
 - (2) Site operations and work functions involving high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates.
- b. Extremely hazardous substances are known or suspected to be present and skin contact is possible.
- c. The potential exists for contact with substances that destroy skin.
- d. Operations must be conducted in confined, poorly ventilated areas until the absence of hazards requiring Level A protection is demonstrated.

- e. An oxygen deficient atmosphere where the oxygen level is less than 19.5 percent (%) by volume as measured with an oxygen meter. This condition, existing alone, could result in a downgrade to EPA Level B PPE.
- f. Total atmospheric readings on photoionization detector indicate readings above 500 parts per million (ppm) of calibration gas equivalents (cge) of unidentified substances.

4.1.3 Limiting Criteria

- a. Fully encapsulating suit material must be compatible with the substances involved.

4.1.4 Minimum Decontamination Procedure

- Station 1: Segregated equipment drop.
- Station 2: Outer garment, boots and gloves wash and rinse.
- Station 3: Outer boot and glove removal.
- Station 4: Tank change.
- Station 5: Boots, gloves and outer garment removal.
- Station 6: SCBA removal.
- Station 7: Field wash.

4.2 Level B Protection

Level B protection will be used by all personnel entering confined spaces and/or if the conditions outlined in Section 4.2.2 are encountered.

4.2.1 Personal Protective Equipment

- a. Pressure-demand, self-contained breathing apparatus or cascade supplied air system (NIOSH approved).

- b. Chemical-resistant clothing (coveralls and long-sleeved jacket; coveralls, hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls).
- c. Coveralls.*
- d. Gloves (outer), chemical-resistant.
- e. Gloves (inner), chemical-resistant.
- f. Boots, chemical-resistant, steel toe and shank.
- g. Boots (outer), chemical resistant (disposable*).
- h. Hard hat (face shield*).
- i. Two-way radio communications (intrinsically safe).

*Optional

4.2.2 Criteria for Selection

Meeting any one of these criteria warrants use of Level B protection:

- a. The type(s) and atmospheric concentration(s) of toxic substances have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection than is required with Level A. These would be atmospheres:
 - (1) With concentrations immediately dangerous to life and health (IDLH); or
 - (2) Exceeding limits of protection afforded by a full-face, air-purifying mask;

or

- (3) Containing substances for which air-purifying canisters do not exist or have low removal efficiency; and/or
 - (4) Containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.
- b. The atmosphere contains less than 19.5 percent oxygen.
 - c. Site operations make it highly unlikely that the small, unprotected area of the head or neck will be contacted by splashes of extremely hazardous substances.
 - d. Total atmospheric concentrations in the breathing zone of unidentified vapors or gases range from 50 ppm to 500 ppm (calibration gas equivalence units) on monitoring instruments, and vapors are not suspected of containing high levels of chemicals toxic to skin.

4.2.3 Limiting Criteria

- a. Use only when the vapor or gases present are not suspected of containing high concentrations of chemicals that are harmful to skin or capable of being absorbed through skin contact.
- b. Use only when it is highly unlikely that the work being done will generate high concentrations of vapors, gases, or particulates or splashes of material that will affect exposed skin.

4.2.4 Minimum Decontamination Procedures

Station 1: Equipment drop.

Station 2: Outer garment, boots and gloves wash and rinse.

Station 3: Outer boot and glove removal.

Station 4: Tank change.

Station 5: Boot, gloves and outer glove removal.

Station 6: SCBA removal.

Station 7: Field wash.

4.3 Level C Protection

Level C protection will be used by all personnel if the conditions outline in Section 4.3.2 are encountered.

4.3.1 Personal Protective Equipment

- a. Full-face, air purifying, canister-equipped respirator (NIOSH approved).
- b. Chemical-resistant clothing (coveralls; hooded, two-piece chemical splash suits; chemical-resistant hood and apron; disposable chemical-resistant coveralls).
- c. Coveralls.*
- d. Gloves (outer), chemical-resistant.
- e. Gloves (inner), chemical resistant
- f. Boots, steel toe and shank.
- g. Boots cover (outer), chemical-resistant (disposable*).
- h. Hard hat (face shield*).
- i. Escape mask*.
- j. Two-way radio communications (intrinsically safe).

*Optional

4.3.2 Criteria for Selection

Meeting all of these criteria permits use of Level C Protection:

- a. Measured air concentrations of identified substances will be reduced by the respirator to, at or below the substance's exposure limit, and the concentration is within the service limit of the canister.
- b. Atmospheric contaminant concentrations do not exceed IDLH levels.
- c. Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.
- d. Job functions have been determined not to require self-contained breathing apparatus.
- e. Total vapor readings register between 5 ppm cge and 50 ppm cge above background on instruments.
- f. Air will be monitored periodically.
- g. Cartridges are available and are approved by NIOSH and MSHA for the specific chemical(s) encountered.

4.3.3 Limiting Criteria

- a. Atmospheric concentration of chemicals must not exceed IDLH levels.
- b. The atmosphere must contain at least 19.5 percent oxygen.
- c. Must have sufficient information available regarding specific compounds, and their concentrations, likely to be encountered.

4.3.4 Minimum Decontamination Procedures

Station 1: Equipment drop.

Station 2: Outer boot and glove removal.

Station 3: Canister or mask change.

Station 4: Boots, gloves and outer garment removal.

Station 5: Face piece removal.

Station 6: Field wash.

4.4 Level D Protection

Level D protection has been selected for personnel for this project except during confined space entries. Should conditions change, re-evaluation of personnel protection will be conducted.

4.4.1 Personal Protective Equipment

- a. General work clothes or coveralls.
- b. Gloves*.
- c. Boots/shoes, leather or chemical-resistant, steel toe and shank.
- d. Boots (outer), chemical/resistant (disposable)*.
- e. Safety glasses or chemical splash goggles*.
- f. Hard hat (face shield*).
- g. Escape mask*.

*Optional

4.4.2 Criteria for Selection

Meeting any of these criteria allows use of Level D protection:

- a. No hazardous air pollutants have been measured.
- b. Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.
- c. Extensive information on suspected hazards/risks are known.

4.4.3 Limiting Criteria

- a. The atmosphere must contain at least 20.9 percent oxygen.

4.4.4 Minimum Decontamination Procedure

Station 1: Equipment drop.

Station 2: Hand and face wash.

4.5 Duration of Work Period

The anticipated duration of the work period will be established prior to daily activities. Other factors that affect the length of time personnel may work include:

- a. Air supply consumption (SCBA assisted work);
- b. Suit/ensemble, air purifying chemical cartridge, permeation and penetration by chemical contaminants; and
- c. Ambient temperature and weather conditions.

5.0 DETERMINATION OF THE SITE-SPECIAL LEVEL OF HAZARD

Categories of personnel protection required depend on the degree of hazard and probability of exposure by a route of entry into the body. For this site, the most probable potential route of entry is via inhalation of vapors and/or dust, and potentially by dermal adsorption of contaminants released from field activities.

It has been determined that the appropriate level of protection for the site is Level D, the minimal level of protection. Synthetic gloves with low permeability to liquids and Tyvek suits will be used by all personnel in contact with on-site soil or water to prevent dermal contact.

The determination of Level D protection is based on the fact that field work will be performed in open, well-ventilated areas and that the potential for accidents and injuries due to obstructions caused by and/or magnified by the use of level A, B, or C protection (i.e., slip/trip hazards) is greater than the potential for problems associated with potential exposure from contaminants using level D protection. Level C protection will be used if ambient air monitoring results or field conditions warrant a protective equipment upgrade (above Level D conditions).

If necessary (based upon field equipment readings), the work zone will be evacuated and consideration will be given to upgrading the level of protection. An upgrade to the appropriate level of protection for field personnel will be required before re-entering the work zone if hazardous conditions persist.

In addition to potential chemical hazards, there also exists potentially greater physical hazards associated with the fields investigation activities. Due to the nature of the field investigation, heavy equipment will be utilized on the job site. Therefore, all personnel should always be aware of vehicular traffic while working at the facility. Further, hard hats and steel-toed safety boots must be worn at all times around heavy equipment. All work must be performed in strict accordance with OSHA regulations.

6.0 DESIGNATED WORK ZONES

Work zones will be determined prior to commencement of a specific field activity. An area large enough to encompass the activity will be delineated as the work zone. Only qualified field personnel involved in the field activity, with the proper PPE, will be allowed into the designated work zone.

7.0 PERSONAL HYGIENE

The following personal hygiene rules must be followed while performing work at the site:

1. Eating, drinking, chewing gum or tobacco, smoking, or any other practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the work area.
2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activities.
3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
4. No excessive facial hair (i.e., beards), which interferes with a satisfactory fit of the mask-to-face seal, is allowed on personnel required to wear respiratory protective equipment.
5. Contact with contaminated or suspected contaminated surfaces will be avoided. Whenever possible, walking through puddles, mud and discolored surfaces; kneeling on ground; leaning, sitting, or placing equipment on drums, containers, vehicles, or the ground will be avoided.
6. Medicine and alcohol can increase the effects from exposure to toxic chemicals. Prescribed drugs will not be taken by personnel on site where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a

qualified physician. Alcoholic beverage intake will be prohibited during all on-site field operations.

8.0 CONTINGENCY PLAN

Section 8.0 shall serve as the investigation Contingency Plan. It has been developed to identify precautionary measures, possible emergency conditions, and emergency procedures.

8.1 Emergency Medical Care and Treatment

This section addresses emergency medical care and treatment of field personnel, resulting from possible exposures to toxic substances and injuries due to accidents. The following items will be included in emergency care provisions:

- a. Name, address and telephone number of the nearest medical treatment facility will be conspicuously posted. Directions for locating the facility, plus the travel time, will be readily available (see Appendix B).
- b. Names and telephone numbers of ambulance service, police and fire departments, and procedures for obtaining these services will be conspicuously posted (see Appendix B).
- c. Specific procedures for handling personnel with excessive exposure to chemicals or contaminated soil or water.
- e. Readily available dry-chemical fire extinguisher.

8.2 Off-Site Emergency Medical Care

Appendix B includes contact information for off-site emergency medical care.

8.3 Personnel Accidents

Bodily injuries which occur as a result of an accident during the operation at the site will be handled in the following manner:

- a. First aid equipment will be available on site for minor injuries. If the injuries are not considered minor, proceed to the next step.
- b. The local first aid squad rescue unit, a paramedic unit, the local hospital and the Site Health and Safety Officer shall be notified of the nature of the emergency.
- c. The injured employee shall be transported by the local emergency vehicle to the local hospital.
- d. A written report shall be prepared by the Site Health and Safety Officer detailing the events and actions taken during the emergency within 24 hours of the accident.

8.4 Personnel Exposure

In the event that any person is splashed or otherwise excessively contaminated by chemicals, the following procedure will be undertaken:

- a. Disposable clothing contaminated with observable amounts of chemical residue is to be removed and replaced immediately.
- b. In the event of direct skin contact in Level D, the affected area is to be washed immediately with soap and water, or other solutions as directed by medical personnel.
- c. The Site Health and Safety Officer or other individuals who hold a current first aid certificate will determine the immediate course of action to be undertaken. This may involve using the first aid kit and/or eyewash stations.

8.4.1 Weather

Adverse weather conditions are an important consideration in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. Of particular importance is heat stress resulting when protective clothing decreases natural body ventilation. One or more of the following will help reduce heat stress:

- a. Provide plenty of liquids. To replace body fluids (water and electrolytes) lost because of sweating, use a 0.1 percent salt water solution, more heavily salted foods, or commercial mixes. The commercial mixes may be preferable for those employees on a low sodium diet.
- b. Provide cooling devices to aid natural body ventilation. These devices, however, add weight, and their use should be balanced against worker efficiency. Long cotton underwear help absorb moisture and protect the skin from direct contact with heat absorbing protective clothing.
- c. Install mobile showers and/or hose down facilities to reduce body temperature and cool protective clothing.
- d. In extremely hot weather, conduct operations in the early morning or evening.
- e. Ensure that adequate shelter is available to protect personnel against heat, cold, rain, snow, etc.
- f. In hot weather, rotate shifts of workers wearing impervious clothing.

8.4.2 Heat Stress

If field operations are conducted in the warm summer months, heat related fatigue will be closely monitored. Monitoring of personnel wearing impervious clothing should commence when the

ambient temperature is 70 degrees Fahrenheit or above. Frequency of monitoring should increase as the ambient temperature increases or as slow recovery rates are indicated. When temperatures exceeds 85 degrees Fahrenheit, workers should be monitored for heat stress after every work period. The following screening mechanism will be used to monitor for heat stress:

Heart rate (HR) will be periodically measured by the radial pulse for 30 seconds during a resting period. The HR should not exceed 110 beats per minute. If the HR is higher, the next work period should be shortened by 33 percent. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be shortened by 33 percent.

Heat-related illnesses range from heat fatigue to heat stroke, the most serious. Heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing may have to be cut off. Less serious forms of heat stress require prompt attention or they may lead to a heat stroke. Unless the victim is obviously contaminated, decontamination should be omitted or minimized and treatment begun immediately. Heat-related problems can be categorized into:

Heat Rash: Caused by continuous exposure to hot and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat as well as being a nuisance.

Heat Cramps: Caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs: muscle spasm and pain in the extremities and abdomen.

Heat Exhaustion: Caused by increased stress on various organs to meet increased demands to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.

Heat Stroke: The most severe form of heat stress. The body must be cooled immediately to prevent severe injury and/or death. Signs and

symptoms are: red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

Some of the symptoms of heat stress are: hot dry skin, fever, nausea, cramps, red or spotted skin, confusion, lightheadedness, delirium, rapid pulse, convulsions and unconsciousness.

For workers suffering from heat stress, the following actions should be taken:

1. Remove the victim to a cool area
2. Loosen clothing
3. Thoroughly soak the victim in cool water or apply cold compresses
4. Call for medical assistance.

8.4.3 Cold Stress

If field operations are conducted in the cold winter months, cold stress will be monitored. Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10 degrees Fahrenheit air with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at -18 degrees Fahrenheit.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration soaked.

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:

Frost Nip or

Incipient Frostbite: Characterized by suddenly blanching or whitening of skin.

Superficial Frostbite: Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.

Deep Frostbite: Tissues are cold, pale and solid; extremely serious injury.

Hypothermia: Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperatures. Its symptoms are usually exhibited in five stages: (1) shivering; (2) apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body temperature to less than 95 degrees Fahrenheit; (3) unconsciousness, glassy stare, slow pulse and slow respiratory rate; (4) freezing of the extremities; and finally, (5) death.

8.5 Fire

The telephone number to the local fire department will be posted along with other emergency numbers conspicuously on-site at all times. (see Appendix B). In the event of a fire occurring at the site, the following actions will be undertaken by the Site Health and Safety Officer and the designated fire control personnel:

- a. Evacuate all unnecessary personnel from the area of the fire and site, if necessary.
- b. Contact the local fire and police departments informing them of the fire and any injuries if they have occurred.
- c. Contact the local hospital of the possibility of fire victims.
- d. Contact the Site Health and Safety Officer, Health and Safety Manager, and the H2M Project Manager.

9.0 SUMMARY

The Health and Safety Plan establishes practices and procedures to be followed so that the welfare and safety of workers and the public are protected. It is important that personal equipment and safety requirements be appropriate to protect against the potential or known hazards at a site. Protective equipment will be based upon the type(s), concentration(s), and routes of personal exposure from substances at the site, as well as the potential for hazards due to heavy equipment use, vision impairment, weather, etc. All site operation planning incorporates an analysis of the hazards involved and procedures for preventing or minimizing the risk to personnel. The following summarizes the rules which must be obeyed:

- a. The Health and Safety Plan will be made available to all personnel doing field work on site. All personnel must sign this plan, indicating they have read and understood its terms.
- b. All personnel will be familiar with standard operating safety procedures and additional instructions contained in the Health and Safety Plan.
- c. All personnel going on site will be adequately trained and thoroughly briefed on anticipated hazards, equipment to be worn, safety practices to be followed, emergency procedures and communications.
- d. Any required respiratory protective devices and protective clothing will be worn by all personnel going into work areas.
- e. Prior to commencement of work activities, notification to local police, fire and potential rescue personnel will be made.



HASP APPENDIX A
HEALTH AND SAFETY ACKNOWLEDGEMENT FORM

**HASP APPENDIX B
EMERGENCY RESPONSE INFORMATION**

EMERGENCY TELEPHONE NUMBERS

HOSPITAL

Harlem Hospital Center 506 Lenox Avenue New York, New York 10037	(212) 939-1000
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POLICE DEPARTMENT

911

FIRE DEPARTMENT

911

AMBULANCE

911

H2M GROUP

(631) 756-8000

Health & Safety Officer

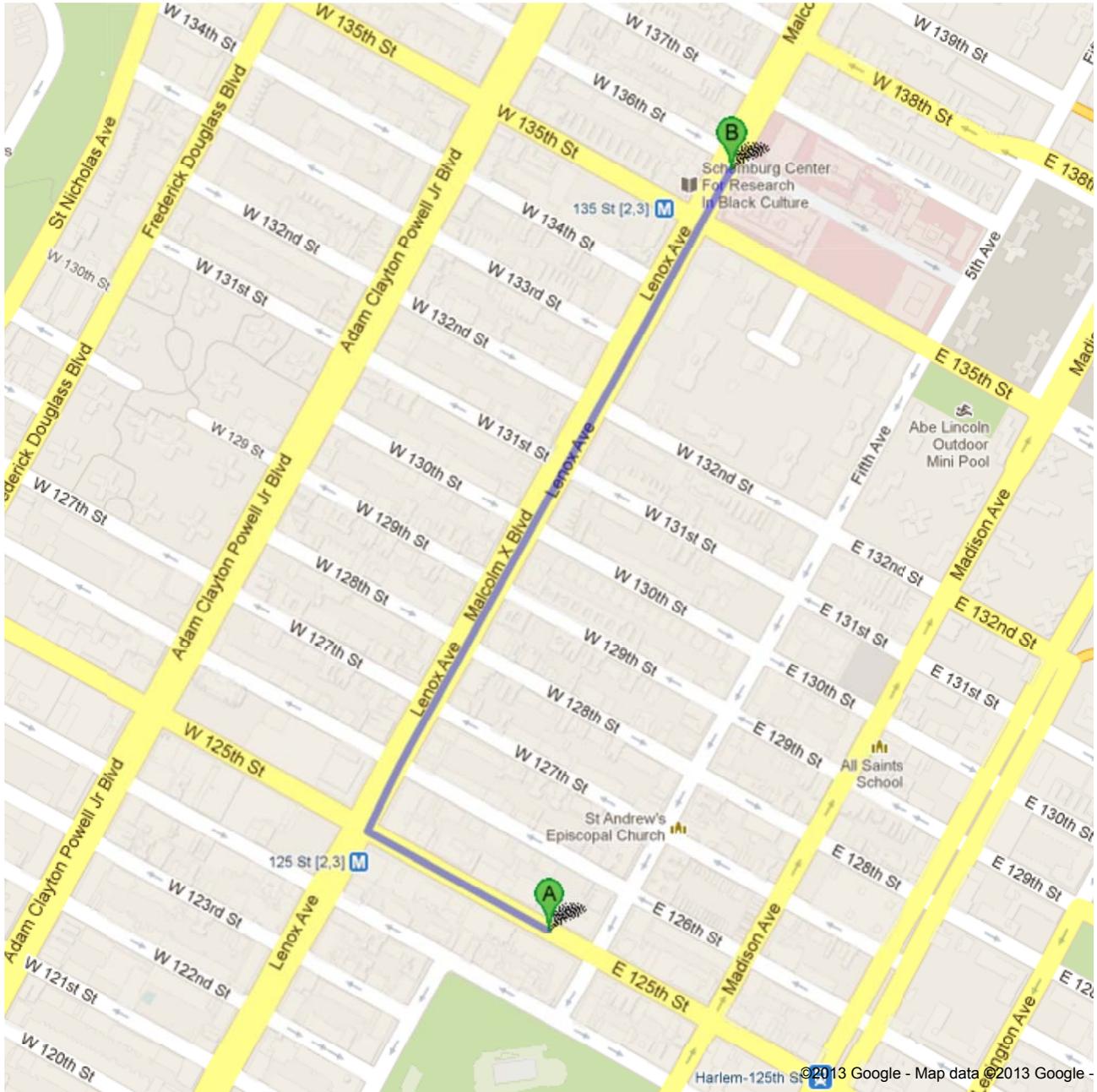
Hardik P. Parekh, P.E. (H2M)
Office: ext. 1637
Mobile: (631) 241-0938

Site Safety Officer

Joseph Loesch (H2M)
Office: ext. 1628
Mobile: (631) 252-0230



Directions to Harlem Hospital Center
506 Lenox Ave, New York, NY 10037
0.7 mi – about 2 mins
HOSPITAL LOCATION MAP



 5 W 125th St, New York, NY 10027

1. Head **northwest** on **W 125th St/Dr Martin Luther King Jr Blvd** toward **Lenox Ave** go 0.1 mi
total 0.1 mi

 2. Take the 1st right onto **Lenox Ave** go 0.5 mi
Destination will be on the right total 0.7 mi
About 2 mins

 **Harlem Hospital Center**
506 Lenox Ave, New York, NY 10037

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2013 Google

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

**Material Safety Data Sheets
(MSDS)**



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types)

MSDS No. 9909

EMERGENCY OVERVIEW

CAUTION!

**OSHA/NFPA COMBUSTIBLE LIQUID - SLIGHT TO MODERATE IRRITANT
EFFECTS CENTRAL NERVOUS SYSTEM
HARMFUL OR FATAL IF SWALLOWED**

Moderate fire hazard. Avoid breathing vapors or mists. May cause dizziness and drowsiness. May cause moderate eye irritation and skin irritation (rash).

Long-term, repeated exposure may cause skin cancer.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).



NFPA 704 (Section 16)

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961**

EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300

COMPANY CONTACT (business hours): Corporate Safety (732) 750-6000

MSDS INTERNET WEBSITE: www.hess.com (See Environment, Health, Safety & Social Responsibility)

SYNONYMS: Ultra Low Sulfur Diesel (ULSD); Low Sulfur Diesel; Motor Vehicle Diesel Fuel; Diesel Fuel #2; Dyed Diesel Fuel; Non-Road, Locomotive and Marine Diesel Fuel; Tax-exempt Diesel Fuel

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and CHEMICAL INFORMATION ON INGREDIENTS

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Diesel Fuel (68476-34-6)	100
Naphthalene (91-20-3)	Typically < 0.01

A complex mixture of hydrocarbons with carbon numbers in the range C9 and higher. Diesel fuel may be dyed (red) for tax purposes. May contain a multifunctional additive.

3. HAZARDS IDENTIFICATION

EYES

Contact with liquid or vapor may cause mild irritation.

SKIN

May cause skin irritation with prolonged or repeated contact. Practically non-toxic if absorbed following acute (single) exposure. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

INGESTION

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types)

MSDS No. 9909

INHALATION

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS and CARCINOGENICITY

Similar products produced skin cancer and systemic toxicity in laboratory animals following repeated applications. The significance of these results to human exposures has not been determined - see Section 11 Toxicological Information.

IARC classifies whole diesel fuel exhaust particulates as probably carcinogenic to humans (Group 2A). NIOSH regards whole diesel fuel exhaust particulates as a potential cause of occupational lung cancer based on animal studies and limited evidence in humans.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash).

4. FIRST AID MEASURES

EYES

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION

Remove person to fresh air. If person is not breathing provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT:	> 125 °F (> 52 °C) minimum PMCC
AUTOIGNITION POINT:	494 °F (257 °C)
OSHA/NFPA FLAMMABILITY CLASS:	2 (COMBUSTIBLE)
LOWER EXPLOSIVE LIMIT (%):	0.6
UPPER EXPLOSIVE LIMIT (%):	7.5

FIRE AND EXPLOSION HAZARDS

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, or Halon.



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types)

MSDS No. 9909

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

FIRE FIGHTING INSTRUCTIONS

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY'S SPILL CONTINGENCY OR EMERGENCY RESPONSE PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE

HANDLING PRECAUTIONS

Handle as a combustible liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Diesel fuel, and in particular low and ultra low sulfur diesel fuel, has the capability of accumulating a static electrical charge of sufficient energy to cause a fire/explosion in the presence of lower flashpoint products such as gasoline. The accumulation of such a static charge occurs as the diesel flows through pipelines, filters, nozzles and various work tasks such as tank/container filling, splash loading, tank cleaning; product sampling; tank gauging; cleaning, mixing, vacuum truck operations, switch loading, and product agitation. There is a greater potential for static charge accumulation in cold temperature, low humidity conditions.

Documents such as 29 CFR OSHA 1910.106 "Flammable and Combustible Liquids, NFPA 77 Recommended Practice on Static Electricity, API 2003 "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents and ASTM D4865 "Standard Guide for Generation and Dissipation of Static



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types)

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Electricity in Petroleum Fuel Systems" address special precautions and design requirements involving loading rates, grounding, bonding, filter installation, conductivity additives and especially the hazards associated with "switch loading." ["Switch Loading" is when a higher flash point product (such as diesel) is loaded into tanks previously containing a low flash point product (such as gasoline) and the electrical charge generated during loading of the diesel results in a static ignition of the vapor from the previous cargo (gasoline).]

Note: When conductivity additives are used or are necessary the product should achieve 25 picosiemens/meter or greater at the handling temperature.

STORAGE PRECAUTIONS

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

8. EXPOSURE CONTROLS and PERSONAL PROTECTION

EXPOSURE LIMITS

Components (CAS No.)	Source	Exposure Limits		Note
		TWA/STEL		
Diesel Fuel: (68476-34-6)	OSHA	5 mg/m, as mineral oil mist		A3, skin
	ACGIH	100 mg/m ³ (as totally hydrocarbon vapor) TWA		
Naphthalene (91-20-3)	OSHA	10 ppm TWA		A4, Skin
	ACGIH	10 ppm TWA / 15 ppm STEL		

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Gloves constructed of nitrile, neoprene, or PVC are recommended. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types)

MSDS No. 9909

RESPIRATORY PROTECTION

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE

Clear, straw-yellow liquid. Dyed fuel oil will be red or reddish-colored.

ODOR

Mild, petroleum distillate odor

BASIC PHYSICAL PROPERTIES

BOILING RANGE: 320 to 690 oF (160 to 366 °C)
VAPOR PRESSURE: 0.009 psia @ 70 °F (21 °C)
VAPOR DENSITY (air = 1): > 1.0
SPECIFIC GRAVITY (H₂O = 1): 0.83 to 0.88 @ 60 °F (16 °C)
PERCENT VOLATILES: 100 %
EVAPORATION RATE: Slow; varies with conditions
SOLUBILITY (H₂O): Negligible

10. STABILITY and REACTIVITY

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID and INCOMPATIBLE MATERIALS

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Keep away from strong oxidizers; Viton ®; Fluorel ®

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY

Acute dermal LD50 (rabbits): > 5 ml/kg Acute oral LD50 (rats): 9 ml/kg
Primary dermal irritation: extremely irritating (rabbits) Draize eye irritation: non-irritating (rabbits)
Guinea pig sensitization: negative

CHRONIC EFFECTS AND CARCINOGENICITY

Carcinogenic: OSHA: NO IARC: NO NTP: NO ACGIH: A3

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

MUTAGENICITY (genetic effects)

This material has been positive in a mutagenicity study.



MATERIAL SAFETY DATA SHEET

Diesel Fuel (All Types) **MSDS No. 9909**

12. ECOLOGICAL INFORMATION

Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options.

14. TRANSPORTATION INFORMATION

PROPER SHIPPING NAME:	Diesel Fuel	Placard (International Only):
HAZARD CLASS and PACKING GROUP:	3, PG III	
DOT IDENTIFICATION NUMBER:	NA 1993 (Domestic) UN 1202 (International)	
DOT SHIPPING LABEL:	None	

Use Combustible Placard if shipping in bulk domestically

15. REGULATORY INFORMATION

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
X	X	X	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product may contain listed chemicals below the *de minimis* levels which therefore are not subject to the supplier notification requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372. If you may be required to report releases of chemicals listed in 40 CFR 372.28, you may contact Hess Corporate Safety if you require additional information regarding this product.

CALIFORNIA PROPOSITON 65 LIST OF CHEMICALS

This product contains the following chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>Date Listed</u>
Diesel Engine Exhaust (no CAS Number listed)	10/01/1990

CANADIAN REGULATORY INFORMATION (WHMIS)

Class B, Division 3 (Combustible Liquid) and Class D, Division 2, Subdivision B (Toxic by other means)



MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

EMERGENCY OVERVIEW

DANGER!

**EXTREMELY FLAMMABLE - EYE AND MUCOUS MEMBRANE IRRITANT
- EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF
SWALLOWED - ASPIRATION HAZARD**



NFPA 704 (Section 16)

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs). Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

1. CHEMICAL PRODUCT and COMPANY INFORMATION

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

EMERGENCY TELEPHONE NUMBER (24 hrs):

COMPANY CONTACT (business hours):

MSDS (Environment, Health, Safety) Internet Website

CHEMTREC (800)424-9300

Corporate Safety (732)750-6000

www.hess.com

SYNONYMS: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS *

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Gasoline (86290-81-5)	100
Benzene (71-43-2)	0.1 - 4.9 (0.1 - 1.3 reformulated gasoline)
n-Butane (106-97-8)	< 10
Ethyl Alcohol (Ethanol) (64-17-5)	0 - 10
Ethyl benzene (100-41-4)	< 3
n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Tertiary-amyl methyl ether (TAME) (994-05-8)	0 to 17.2
Toluene (108-88-3)	1 - 25
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 - 15

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol or MTBE and/or TAME).



MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

3. HAZARDS IDENTIFICATION

EYES

Moderate irritant. Contact with liquid or vapor may cause irritation.

SKIN

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

INGESTION

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

INHALATION

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS and CARCINOGENICITY

Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity. See also Section 11 - Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

4. FIRST AID MEASURES

EYES

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION



MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION

Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT:	-45 °F (-43°C)
AUTOIGNITION TEMPERATURE:	highly variable; > 530 °F (>280 °C)
OSHA/NFPA FLAMMABILITY CLASS:	1A (flammable liquid)
LOWER EXPLOSIVE LIMIT (%):	1.4%
UPPER EXPLOSIVE LIMIT (%):	7.6%

FIRE AND EXPLOSION HAZARDS

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain MTBE and/or TAME. Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 "Low Expansion Foam - 1994 Edition."

FIRE FIGHTING INSTRUCTIONS

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.



MATERIAL SAFETY DATA SHEET

Gasoline, All Grades

MSDS No. 9950

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE

HANDLING PRECAUTIONS

*****USE ONLY AS A MOTOR FUEL*****

*****DO NOT SIPHON BY MOUTH*****

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

STORAGE PRECAUTIONS

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.



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Gasoline, All Grades

MSDS No. 9950

8. EXPOSURE CONTROLS and PERSONAL PROTECTION

EXPOSURE LIMITS

Component (CAS No.)	Source	TWA (ppm)	STEL (ppm)	Exposure Limits	Note
Gasoline (86290-81-5)	ACGIH	300	500	A3	
Benzene (71-43-2)	OSHA	1	5	Carcinogen	
	ACGIH	0.5	2.5	A1, skin	
	USCG	1	5		
n-Butane (106-97-8)	ACGIH	1000	--	Aliphatic Hydrocarbon Gases Alkane (C1-C4)	
Ethyl Alcohol (ethanol) (64-17-5)	OSHA	1000	--		
	ACGIH	1000	--	A4	
Ethyl benzene (100-41-4)	OSHA	100	--		
	ACGIH	100	125	A3	
n-Hexane (110-54-3)	OSHA	500	--		
	ACGIH	50	--	Skin	
Methyl-tertiary butyl ether [MTBE] (1634-04-4)	ACGIH	50	--	A3	
Tertiary-amyl methyl ether [TAME] (994-05-8)				None established	
Toluene (108-88-3)	OSHA	200	--	Ceiling: 300 ppm; Peak: 500 ppm (10 min.)	
	ACGIH	20	--	A4	
1,2,4- Trimethylbenzene (95-63-6)	ACGIH	25	--		
Xylene, mixed isomers (1330-20-7)	OSHA	100	--		
	ACGIH	100	150	A4	

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Gloves constructed of nitrile or neoprene are recommended. Chemical protective clothing such as that made of of E.I. DuPont Tychem®, products or equivalent is recommended based on degree of exposure.

Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION

A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE

A translucent, straw-colored or light yellow liquid



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ODOR

A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with MTBE and/or TAME may have a sweet, ether-like odor and is detectable at a lower concentration than non-oxygenated gasoline.

ODOR THRESHOLD

	<u>Odor Detection</u>	<u>Odor Recognition</u>
Non-oxygenated gasoline:	0.5 - 0.6 ppm	0.8 - 1.1 ppm
Gasoline with 15% MTBE:	0.2 - 0.3 ppm	0.4 - 0.7 ppm
Gasoline with 15% TAME:	0.1 ppm	0.2 ppm

BASIC PHYSICAL PROPERTIES

BOILING RANGE:	85 to 437 °F (39 to 200 °C)
VAPOR PRESSURE:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)
VAPOR DENSITY (air = 1):	AP 3 to 4
SPECIFIC GRAVITY (H ₂ O = 1):	0.70 - 0.78
EVAPORATION RATE:	10-11 (n-butyl acetate = 1)
PERCENT VOLATILES:	100 %
SOLUBILITY (H ₂ O):	Non-oxygenated gasoline - negligible (< 0.1% @ 77 °F). Gasoline with 15% MTBE - slight (0.1 - 3% @ 77 °F); ethanol is readily soluble in water

10. STABILITY and REACTIVITY)

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

INCOMPATIBLE MATERIALS

Keep away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitroresols that can decompose violently.

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY

Acute Dermal LD50 (rabbits): > 5 ml/kg	Acute Oral LD50 (rat): 18.75 ml/kg
Primary dermal irritation (rabbits): slightly irritating	Draize eye irritation (rabbits): non-irritating
Guinea pig sensitization: negative	

CHRONIC EFFECTS AND CARCINOGENICITY

Carcinogenicity: OSHA: NO IARC: YES - 2B NTP: NO ACGIH: YES (A3)

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.



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This product may contain methyl tertiary butyl ether (MTBE): animal and human health effects studies indicate that MTBE may cause eye, skin, and respiratory tract irritation, central nervous system depression and neurotoxicity. MTBE is classified as an animal carcinogen (A3) by the ACGIH.

12. ECOLOGICAL INFORMATION

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations. If released, oxygenates such as ethers and alcohols will be expected to exhibit fairly high mobility in soil, and therefore may leach into groundwater. The API (www.api.org) provides a number of useful references addressing petroleum and oxygenate contamination of groundwater.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options.

14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Gasoline
DOT HAZARD CLASS and PACKING GROUP: 3, PG II
DOT IDENTIFICATION NUMBER: UN 1203
DOT SHIPPING LABEL: FLAMMABLE LIQUID

PLACARD:



15. REGULATORY INFORMATION

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

Table with 5 columns: ACUTE HEALTH, CHRONIC HEALTH, FIRE, SUDDEN RELEASE OF PRESSURE, REACTIVE. Values: X, X, X, --, --

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

Table with 2 columns: INGREDIENT NAME (CAS NUMBER), CONCENTRATION WT. PERCENT. Rows: Benzene (71-43-2) 0.1 to 4.9 (0.1 to 1.3 for reformulated gasoline), Ethyl benzene (100-41-4) < 3



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n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Toluene (108-88-3)	1 to 15
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 to 15

US EPA guidance documents (www.epa.gov/tri) for reporting Persistent Bioaccumulating Toxics (PBTs) indicate this product may contain the following deminimis levels of toxic chemicals subject to Section 313 reporting:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>CONCENTRATION - Parts per million (ppm) by weight</u>
Polycyclic aromatic compounds (PACs)	17
Benzo (g,h,i) perylene (191-24-2)	2.55
Lead (7439-92-1)	0.079

CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS

This product contains the following chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

<u>INGREDIENT NAME (CAS NUMBER)</u>	<u>Date Listed</u>
Benzene	2/27/1987
Ethyl benzene	6/11/2004
Toluene	1/1/1991

CANADIAN REGULATORY INFORMATION (WHMIS)

Class B, Division 2 (Flammable Liquid)
Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. OTHER INFORMATION

<u>NFPA® HAZARD RATING</u>	HEALTH:	1	Slight
	FIRE:	3	Serious
	REACTIVITY:	0	Minimal
<u>HMIS® HAZARD RATING</u>	HEALTH:	1 *	Slight
	FIRE:	3	Serious
	PHYSICAL:	0	Minimal
			* CHRONIC

SUPERSEDES MSDS DATED: 07/01/06

ABBREVIATIONS:

AP = Approximately < = Less than > = Greater than
N/A = Not Applicable N/D = Not Determined ppm = parts per million

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
AIHA	American Industrial Hygiene Association	DOT	U.S. Department of Transportation
ANSI	American National Standards Institute (212)642-4900		[General Info: (800)467-4922]
API	American Petroleum Institute (202)682-8000	EPA	U.S. Environmental Protection Agency
		HMIS	Hazardous Materials Information System



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IARC	International Agency For Research On Cancer	REL	Recommended Exposure Limit (NIOSH)
MSHA	Mine Safety and Health Administration	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
NFPA	National Fire Protection Association (617)770-3000	SCBA	Self-Contained Breathing Apparatus
NIOSH	National Institute of Occupational Safety and Health	SPCC	Spill Prevention, Control, and Countermeasures
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)	STEL	Short-Term Exposure Limit (generally 15 minutes)
NTP	National Toxicology Program	TLV	Threshold Limit Value (ACGIH)
OPA	Oil Pollution Act of 1990	TSCA	Toxic Substances Control Act
OSHA	U.S. Occupational Safety & Health Administration	TWA	Time Weighted Average (8 hr.)
PEL	Permissible Exposure Limit (OSHA)	WEEL	Workplace Environmental Exposure Level (AIHA)
RCRA	Resource Conservation and Recovery Act	WHMIS	Workplace Hazardous Materials Information System (Canada)

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.



Material Safety Data Sheet

- SECTION I - Material Identity
 - SECTION II - Manufacturer's Information
 - SECTION III - Physical/Chemical Characteristics
 - SECTION IV - Fire and Explosion Hazard Data
 - SECTION V - Reactivity Data
 - SECTION VI - Health Hazard Data
 - SECTION VII - Precautions for Safe Handling and Use
 - SECTION VIII - Control Measures
 - SECTION IX - Label Data
 - SECTION X - Transportation Data
 - SECTION XI - Site Specific/Reporting Information
 - SECTION XII - Ingredients/Identity Information
-

SECTION I - Material Identity

Item Name	
Part Number/Trade Name	LUBRIPLATE HYDRAULIC OIL, SPECIAL LOW (SUPP
National Stock Number	9150L400652F
CAGE Code	<u>73219</u>
Part Number Indicator	A
MSDS Number	184027
HAZ Code	B

SECTION II - Manufacturer's Information

Manufacturer Name	FISKE BROTHERS REFINING CO
Street	129 LOCKWOOD ST
City	NEWARK
State	NJ
Country	US
Zip Code	07105

Emergency Phone	201-589-9150
Information Phone	201-589-9150

MSDS Preparer's Information

MSDS Preparer Name	ROBERT J. SIBILIA
Date MSDS Prepared/Revised	01JUL90
Date of Technical Review	10SEP92
Active Indicator	N

Alternate Vendors

Vendor #5 CAGE	BPXSL
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SECTION III - Physical/Chemical Characteristics

Hazard Storage Compatibility Code	N1
Appearance/Odor	TRANSPARENT AMBER OIL WITH MINERAL OIL ODOR
Boiling Point	>550F, >288C
Melting Point	LIQUID
Vapor Pressure	<0.01
Vapor Density	>5
Specific Gravity	0.87
Decomposition Temperature	N/K
Evaporation Rate	<0.01 (BUTYL ACETATE=1)
Solubility in Water	NEGLIGIBLE
Percent Volatiles by Volume	N/K
Chemical pH	N/K
Corrosion Rate	N/K
Container Pressure Code	4
Temperature Code	8
Product State Code	U

SECTION IV - Fire and Explosion Hazard Data

Flash Point	315
Flash Point Method	COC
Lower Explosion Limit	0.9%
Upper Explosion Limit	7%
Extinguishing Media	FOAM, DRY CHEMICAL, CARBON DIOXIDE OR WATER SPRAY (FOG)
Special Fire Fighting Procedures	WEAR NIOSH/MSHA APPROVED SCBA AND

Unusual Fire/Explosion Hazards

FULL PROTECTIVEEQUIPMENT (FP N). COOL EXPOSED CONTAINERS WITH WATER
DO NOT STORE OR MIX WITH STRONG OXIDANTS. EMPTY CONTAINERS RETAIN RESIDUE. DO NOT CUT, DRILL, GRIND OR WELD AS THEY MAYEXPLODE

SECTION V - Reactivity Data

Stability	YES
Stability Conditions to Avoid	NOT APPLICABLE
Materials to Avoid	AVOID CONTACT WITH STRONG OXIDANTS LIKE LIQUID CHLORINE, CONCENTRATED OXYGEN
Hazardous Decomposition Products	MAY FORM SO*2. IF INCOMPLETE COMBUSTION, CARBON MONOXIDE
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	NOT RELEVANT
LD50 - LD50 Mixture	NONE SPECIFIED BY MANUFACTURER

SECTION VI - Health Hazard Data

Route of Entry: Skin	NO
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute and Chronic	PRLNKD/RPTD SKIN CONT MAY CAUSE IRRIT.PRDCT CONTACTING EYES MAY CAUSE IRRIT. HUMAN HLTH RISKS VARY FROM PERS TO PERS. AS A PREC, EXPOS TO LIQS, VAPS, MISTS & FUMES SHLD BE MINIMIZED. PROD HAS LOW ORDER OF ACUTE ORAL TOX, BUT MINUTE AMTS ASPIRATED INTO LUNGS DURING INGEST MAY CAUSE MILD TO SEVERE PULMONARY INJURY
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Explanation of Carcinogenity	NOT RELEVANT
Symptoms of Overexposure	SEE HEALTH HAZARDS
Medical Cond. Aggrevated by Exposure	NONE SPECIFIED BY MANUFACTURER
Emergency/First Aid Procedures	EYE:FLUSH W/CLEAR WATER FOR @ LST 15 MIN/UNTIL IRRIT SUBSIDES.IF IRRIT PERSISTS, CONSULT MD. SKIN:REMOVE ANY CONTAMD CLTHG &WASH THORO W/SOAP & WARM WATER. INHAL:VAP PRESS IS VERY LOW & INHAL @ ROOMTEMP IS NOT A

PROBLEM. IF OVERCOME BY VAP FROM HOT PROD, IMMEDIATELY MOVE FROM EXPOS & CALL MD. IF OVEREXPOS TO OIL MIST, REMOVE FROM FURTHER EXPOS UNTIL EXCESSIVE OIL MIST CONDITION SUBSIDES. (SUPP DATA)

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	RECOVER LIQUID, WASH REMAINDER WITH SUITABLE PETROLEUM SOLVENT OR ADD ABSORBENT. KEEP PETROLEUM PRODUCTS OUT OF SEWERS AND WATER COURSES. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS AND WATERCOURSES
Neutralizing Agent	NONE SPECIFIED BY MANUFACTURER
Waste Disposal Method	ASSURE CONFORMITY WITH APPLICABLE DISPOSAL REGULATIONS. DISPOSE OF ABSORBED MATERIAL AT AN APPROVED WASTE DISPOSAL FACILITY OR SITE. DISPOSE I/A/W FEDERAL, STATE AND LOCAL REGULATIONS (FP N)
Handling and Storage Precautions	KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT HANDLE OR STORE NEAR HEAT, SPARKS, FLAME OR STRONG OXIDANTS
Other Precautions	AVOID BREATHING OIL MIST. REMOVE OIL-SOAKED CLOTHING AND LAUNDRER BEFORE RESUE

SECTION VIII - Control Measures

Respiratory Protection	NORMALLY NOT NEEDED. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N)
Ventilation	LOCAL EXHAUST: USED TO CAPTURE FUMES AND VAPORS
Protective Gloves	USE OIL-RESISTANT GLOVES, IF NEEDED
Eye Protection	CHEMICAL WORKERS GOGGLES (FP N)
Other Protective Equipment	USE OIL-RESISTANT APRON, IF NEEDED
Work Hygienic Practices	CLEANSE SKIN THOROUGHLY AFTER CONTACT
Supplemental Health/Safety Data	MFR'S TRADE NAME/PART NO: POUR, MINUS 70, MV-HO. FIRST AID PROC: INGEST: IF INGESTED, CALL MD IMMEDIATELY. DO NOT INDUCE VOMITING

SECTION IX - Label Data

Protect Eye	NO
Protect Skin	NO
Protect Respiratory	NO
Chronic Indicator	UNKNOWN
Contact Code	UNKNOWN
Fire Code	UNKNOWN
Health Code	UNKNOWN
React Code	UNKNOWN

SECTION X - Transportation Data

Container Quantity	1
Unit of Measure	GL

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G)	0
Volatile Organic Compounds (G/L)	0

SECTION XII - Ingredients/Identity Information

Ingredient #	01
Ingredient Name	OIL, HYDRAULIC (MIST); (OIL MIST)
CAS Number	1003
NIOSH Number	10050340H
Proprietary	NO
Percent	0
OSHA PEL	5 MG/M3
ACGIH TLV	5 MG/M3;10 STEL
Recommended Limit	N/K
