

ON THE SOUND
CITY ISLAND, BRONX, NEW YORK

Remedial Action Work Plan
With Stipulation Letter

NYC VCP Number: 14CVCP169X
OER Project Number: 13RH-A145X

Prepared for:

CityIsland Reserve LLC
152 West 57th Street – 60th Floor
New York, NY10019
(212) 649-9700

Prepared by:

Carlin-Simpson & Associates
61 Main Street
Sayreville, NJ08872
732-432-5757

DECEMBER 2013



CARLIN • SIMPSON & ASSOCIATES

Consulting Geotechnical and Environmental Engineers

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Eric J. Shaw

2 December 2013

New York City Office of Environmental Remediation
City Voluntary Cleanup Program
100 Gold Street, 2nd Floor
New York, NY 10038

Att: Mr. Shaminder Chawla

Re: OER No. 14CVCP169X
226 Fordham Place
Remedial Action Work Plan (RAWP) Stipulation List

Dear Mr. Chawla:

Carlin-Simpson & Associates hereby submits a Remedial Action Work Plan (RAWP) Stipulation List for the subject site to the New York City Office of Environmental Remediation (NYCOER) on behalf of City Island Reserve, LLC. This letter serves as an addendum to the RAWP to stipulate additional content, requirements and procedures that will be followed during the site remediation. The contents of this list are added to the RAWP and will supersede the content in the RAWP where there is a conflict in purpose or intent. The additional requirements/procedures include the following:

Stipulation List

1. The criterion attached in Addendum 1 will be utilized if petroleum containing tank or vessel is identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the NYSDEC hotline as required by applicable laws and regulations. This contingency plan is designed for heating oil tanks and other small or moderately sized storage vessels. If larger tanks, such as gasoline storage tanks are identified, OER will be notified before this criterion is utilized.
2. The vapor barrier will be installed beneath the new horizontal concrete building slabs, as well as any pits. The vapor barrier specifications, design (cross-section and plan showing horizontal extent) and Site-specific compatibility letter for the proposed vapor barrier product are attached as Addendum 2.
3. Architectural plans for the project are included as Addendum 3.
4. The Construction Health and Safety Plan (CHASP) is included as Addendum 4.
5. The Site location figure, redevelopment plan, excavation diagram, and composite cover diagram are included as Addendum 5.

6. The pre-delineation sampling results are included as Addendum 6.
7. The Track 4 Site-specific SCOs for this project are 1200 ppm for lead, 2.5 ppm for mercury, and 500 ppm for total SVOCs.
8. In the event that hazardous waste is identified during the remedial action or subsequent redevelopment excavation activities at this NYC VCP project, and removal and transportation of hazardous waste becomes necessary, the project may be subject to the New York State Department of Environmental Conservation's Special Assessment Tax (ECL 27-0923) and Hazardous Waste Regulatory Fees (ECL 72-00402). See DEC's website for more information: <http://www.dec.ny.gov/chemical/9099.html>.
9. Signage for the project will include a sturdy placard mounted in a publically accessible right of way to building and other permits signage will consist of the NYC VCP Information Sheet (attached Addendum 7) announcing the remedial action. The Information sheet will be laminated and permanently affixed to the placard.
10. Signed and stamped RAWP certification page is attached in Addendum 8.
11. OER requires parties seeking City Brownfield Incentive Grants to carry insurance. For a cleanup grant, both the excavator and the trucking firm(s) that handle removal of soil must carry or be covered under a commercial general liability (CGL) policy that provides \$1 million per claim in coverage. OER recommends that excavators and truckers also carry contractor's pollution liability (CPL) coverage, also providing \$1 million per claim in coverage. The CGL policy, and the CPL policy if obtained, must name the City of New York, the NYC Economic Development Corporation, and Brownfield Redevelopment Solutions as additional insured. For an investigation grant, an environmental consultant must be a qualified vendor in the BIG program and carry \$1 million of professional liability (PL) coverage. A fact sheet regarding insurance is attached as Addendum 9.
12. Daily report will be provided during active excavation work. If no work is performed for extended time period, daily report frequency will be reduced to weekly basis. Daily report template is attached in Addendum 10.

Sincerely,

CARLIN-SIMPSON & ASSOCIATES

M. Anke

MEREDITH R. ANKE, P.E.
Environmental Manager

Robert Simpson

ROBERT B. SIMPSON, P.E.



cc: H. Moore

Addendum 1
Generic Procedures for Management of Underground Storage Tanks
Identified under the NYC BCP

Prior to Tank removal, the following procedures should be followed:

- Remove all fluid to its lowest draw-off point.
- Drain and flush piping into the tank.
- Vacuum out the “tank bottom” consisting of water product and sludge.
- Dig down to the top of the tank and expose the upper half.
- Remove the fill tube and disconnect the fill, gauge, product, vent lines and pumps. Cap and plug open ends of lines.
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location.
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank.
- Clean tank or remove to storage yard for cleaning.
- If the tank is to be moved, it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport.
- After cleaning, the tank must be made acceptable for disposal at a scrap yard, cleaning the tanks interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal, the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.).
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with a calibrated photoionization detector (PID).

Impacted Soil Excavation Methods

The excavation of the impacted soil will be performed following the removal of the existing tanks. Soil excavation will be performed in accordance with the procedures described under Section 5.5 of Draft DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with calibrated photoionization detector (PID).

Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.). Collection of verification samples will be performed to evaluate the success of the removal action as specified in this document.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan.
- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated.
- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile, or dispose of, separate from the impacted soil.
- If additional UST's are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued trenching around the perimeter to minimize its disturbance.
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc.) an attempt will be made to remove it, to the extent not limited by the site boundaries or the bedrock surface. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separated dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present.
- Excavated soils which are temporarily stockpiled on-site will be covered with tarp material while disposal options are determined. Tarp will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property.

Once the site representative and regulatory personnel are satisfied with the removal effort, verification of confirmatory samples will be collected from the excavation in accordance with DER-10.

Addendum 2

Vapor Barrier Design, Specs and Compatibility Letter



November 27, 2013

Meredith R. Anke, P.E.
Carlin-Simpson & Associates
61 Main Street
Sayreville, NJ 08872

Re: On The Sound
Block 5643, Lot 235
226 Fordham Place
City Island, NY
OER# 14CVCP169X

Dear Ms. Anke:

I have reviewed the following documents for the above referenced project:

- Remedial Investigation Report dated September 2013 and prepared by Carlin-Simpson & Associates, which includes the following:
 - Table #5 – Soil Analytical Results
 - Table #6- Groundwater Analytical Results
 - Appendix A, Table #2 - Soil Vapor Analytical Results

The identified contaminants at the levels reported will not have an adverse effect on the vapor barrier properties of Raven Industries, Inc. VaporBlock Plus 20 (VBP20) systems, provided standard design and installation procedures are followed.

Upon receipt of “proof of installation” by the qualified vendor/installer, Raven Industries, Inc. would issue a warranty of 20 years for the product.

A handwritten signature in cursive script that reads "Erika Arens".

Erika Arens
Product Development Specialist I
Engineered Films Division
Raven Industries, Inc.
(605) 357-0453
Erika.Arens@ravenind.com

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier



Product Description

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

Product Use

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

Size & Packaging

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.



Under-Slab Vapor/Gas Retarder

Product

Part

VaporBlock Plus 20 VBP 20

APPLICATIONS

- Radon Barrier Under-Slab Vapor Retarder
- Methane Barrier Foundation Wall Vapor Retarder
- VOC Barrier



		VAPORBLOCK PLUS 20	
PROPERTIES	TEST METHOD	IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) AVERAGE MD & TD (NEW MATERIAL)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0051 Perms grains/(ft ² ·hr·in·Hg)	0.0034 Perms g/(24hr·m ² ·mm Hg)
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock[®] Plus[™] Placement

All instructions on architectural or structural drawings should be reviewed and followed.
Detailed installation instructions accompany each roll of VaporBlock[®] Plus[™] and can also be located on our website.
ASTM E-1643 also provides general installation information for vapor retarders.



VaporBlock[®] Plus[™] is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.

ACCESSORIES

Seaming Tapes & Attachment Items for Plastic Sheeting

R A V E N
INDUSTRIES

From tie-down fasteners to field seaming tape, Raven Industries has the accessories you need to maximize your film's versatility and minimize installation time on the job.

Accessory Tapes

VaporBond Tape (TVB4)



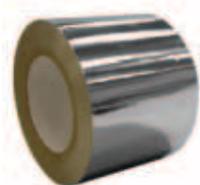
This white single-sided tape combines a heavy-duty, weather-resistant polyethylene backing with an aggressive rubber adhesive. VaporBond Tape offers excellent seaming capabilities for our materials with an "Easy Tear" feature to reduce installation time. TVB4 has a WVTR of 0.18 perms per ASTM D 833. Typical applications include vapor retarders, covers and liners. Available in a 4" x 210' roll.

R25B Tape (R25B)



R25B Tape is a single sided aggressive synthetic elastomeric adhesive that bonds instantly to properly prepared polyethylene and polypropylene. The black polymer backing and adhesive is specially formulated to provide years of performance even in direct sunlight. A poly release liner provides for ease of installation. Available in a 4" x 100' roll.

VaporBond Plus Tape (TVBP4)



VaporBond Plus is a single-sided aluminum foil tape with a release liner for ease of installation. The aluminum foil has very high impermeability to methane and other gases. Acrylic adhesive provides outstanding adhesion to polyethylene over a wide temperature range. Typical uses include joining and sealing gas/moisture barriers. Available in 4" x 150' rolls

Butyl Seal Tape (TP2BR)



Butyl seal is a double-sided reinforced aggressive black butyl rubber tape used to join panels of polyethylene and polypropylene together by overlapping the edges and applying Butyl Seal in between. It is also used to adhere to concrete walls and footings when properly prepared. Butyl Seal is non-hardening and flexible. Available in 2" x 50' roll.

Canvex® Seal Tape (TS4WT)



Canvex Seal Tape is a single-sided white woven tape that contains an acrylic adhesive with a release liner. It has excellent adhesion to polyethylene and the acrylic adhesive provides much longer life than many competitive tapes. It is recommended for taping the seams on in-wall vapor retarders and crawl spaces. Available in a 4" x 100' roll.

VaporBoot Tape (TBOOT)



VaporBoot Tape is a single-sided elastomeric butyl tape used to complete pipe boot installations (sealing the boot to the pipe). The 100% stretchable Butyl adhesive features excellent adhesion values and 3-D stretching that can be easily molded to multiple surfaces without any creases and folds. Available in 2" x 10' roll.

Additional Accessories

VaporBoot System (VBOOT)



The VaporBoot System is designed to assist in securing pipe and other penetrations that run vertically through the vapor retarder material. The VaporBoot System offers a quick solution and is delivered to the jobsite in a complete package. VaporBoots are produced from high performance VaporBlock® material. Package Contents: 25 - VaporBoots (18" x 18", w/precut center marker) 2 - rolls of VaporBoot Tape.

VaporBoot Plus Preformed Pipe Boots (VBPBT)



VaporBoot Plus Preformed Pipe Boots are produced from heavy 40 mil co-extruded polyethylene and barrier resins for excellent strength and durability. The preformed boots are stepped to fit 1" to 4" wide pipe penetrations. VaporBoot Plus Preformed Pipe Boots are available in quantities of 12 per box.

Additional Accessories (continued)

Dura♦Skrim® Reinforced Sandbags



Dura♦Skrim reinforced sandbags are used to secure large covers and liners to prevent wind damage. Made from Dura♦Skrim 8 & 12 mil reinforced polyethylene, they are designed for a minimum life of 2 years in exposed applications. These 15" wide x 24" long bags will hold 35 lbs. Sandbags are available in other Raven reinforced materials with minimum order requirements. 11.8" Cable Ties are also available.

Dura-Clip (CLIP11)



These full size clips are 11" long and fit most commercial scaffolding. Dura-Clips will securely fasten your poly sheeting to scaffolding, reducing wind whip and increasing the life of your enclosure. Clips are normally placed about every 3' onto the enclosure.

Tie-Down Buttons (BUTI) & Tarp Grabbers (BUTEZ)



Tie-Down Buttons & Tarp Grabbers help keep plastic sheeting securely in place. Tie-Down Buttons are designed to eliminate traditional grommets in plastic sheeting up to 10 mil thick and are reusable plastic fittings that are easy to install in any position. Tarp Grabbers are up to 4 times stronger than a brass grommet and are typically used in heavier plastic sheeting from 10 mil to 30 mil thick. Great for equipment covers, large storage covers and truck tarps.

Raven Welding Rod



Raven Welding Rod is used for field seaming, repairs and detail work, such as installing pipe boots. Packaged in 10 lb spools, it is available in 4mm and 5mm sizes to fit most brands of extrusion guns. Raven Welding Rod is made from a thermally UV stabilized LLDPE resin and is available in both black and white to correspond with the color of geomembranes being utilized.

Tape Accessory Properties

	Canvex [®] Seal Tape (TS4WT)	VaporBond Tape (TVB4)	VaporBond Plus Tape (TVBP4)	VaporBoot Tape (TB00T)	R25B Tape (R25B)	Butyl Seal Tape (TP2BR)
Backing	Woven Co-Polymer	7.5 mil Polyethylene	1.5 mil Aluminum	Coated Release Paper	8 mil Polyethylene	Coated Release Paper
Adhesive	1.75 mil Acrylic Adhesive Pressure-Sensitive	1.5 mil Rubber Based Pressure-Sensitive	2 mil Acrylic Adhesive Pressure-Sensitive	.5 mm Black Butyl Rubber	17 mil +/- 2 mil Synthetic Elastomeric	1 mm Black Butyl Rubber
Color	White	White	Silver	Black	Black	Black
Type	Single Sided	Single Sided	Single Sided	Single Sided	Single Sided	Double Sided
Size	4" x 100'	4" x 210'	4" x 150'	2" x 10'	4" x 100'	2" x 50'
Rolls Per Case	12	12	12	64	6	20
Weight Per Case	16 lbs	45 lbs	32 lbs	45 lbs	33 lbs	55 lbs
Adhesion Values	45 oz./ in. (to steel)	30 oz./ in. (to steel)	64 oz./ in. (to steel)	145 oz./ in. (to steel)	320 oz./ in. (to steel)	107.5 oz./ in. (to steel)
Service Temp.	-40° F to +200° F	-40° F to +180° F	-40° F to +250° F	14° F to +122° F	20° F to +180° F	30° F to +100° F
Minimum Application Temp.	10° F	50° F	10° F	14° F	35° F	35° F
Ideal Storage Temp./Humidity	70° F w/ 40-50%	70° F w/ 40-50%	70° F w/ 40-50%	70° F w/ 70%	70° F w/ 40-50%	70° F w/ 40-50%

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.

VaporBlock® Plus™

UNDERSLAB VAPOR RETARDER / GAS BARRIER

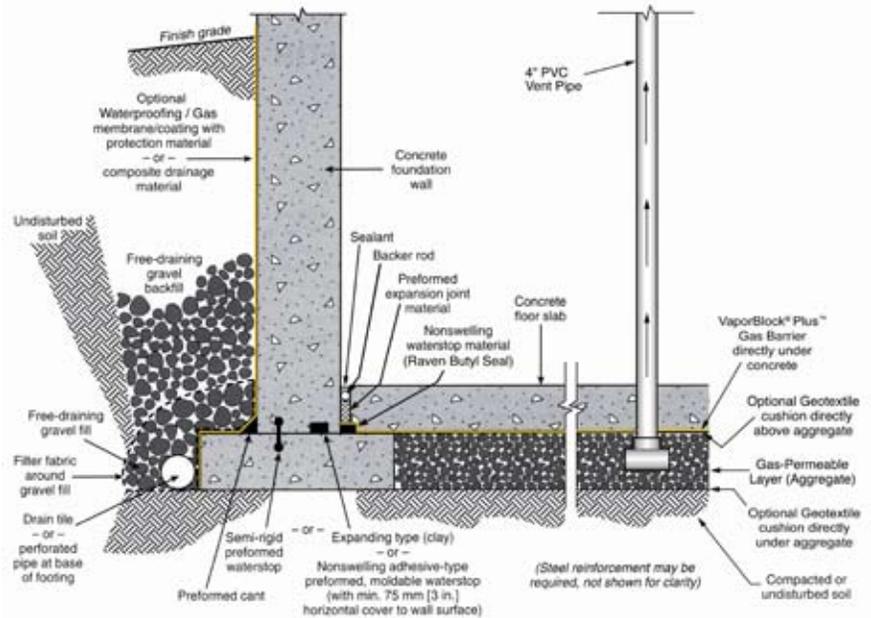
INSTALLATION GUIDELINES

Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock® Plus™. ASTM E 1465, ASTM E 2121 and, ASTM E 1643 also provide valuable information regarding the installation of vapor / gas barriers. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

- When VaporBlock Plus gas barrier is used as part of an active control system for radon or other gas, a ventilation system will be required.
- If designed as a passive system, it is recommended to install a ventilation system that could be converted to an active system if needed.

Materials List:

- VaporBlock® Plus™ Vapor / Gas Barrier
- VaporBond Plus 4" Foil Seaming Tape
- Butyl Seal 2-Sided Tape
- VaporBoot Plus Pipe Boots 12/Box (recommended)
- VaporBoot Tape (optional)



Elements of a moisture/gas-resistant floor system. General illustration only.
(Note: This example shows multiple options for waterstop placement.)

VAPORBLOCK® PLUS™ PLACEMENT

- 1.1. Level and tamp or roll granular base as specified. A base for a gas-reduction system may require a 4" to 6" gas permeable layer of clean coarse aggregate as specified by your architectural or structural drawings after installation of the recommended gas collection system. In this situation, a cushion layer consisting of a non-woven geotextile fabric placed directly under VaporBlock® Plus™ will help protect the barrier from damage due to possible sharp coarse aggregate.
- 1.2. Unroll VaporBlock Plus running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)
- 1.3. Lap VaporBlock Plus over the footings and seal with Raven Butyl Seal tape at the footing-wall connection. Prime concrete surfaces and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller. Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape. When used as a gas

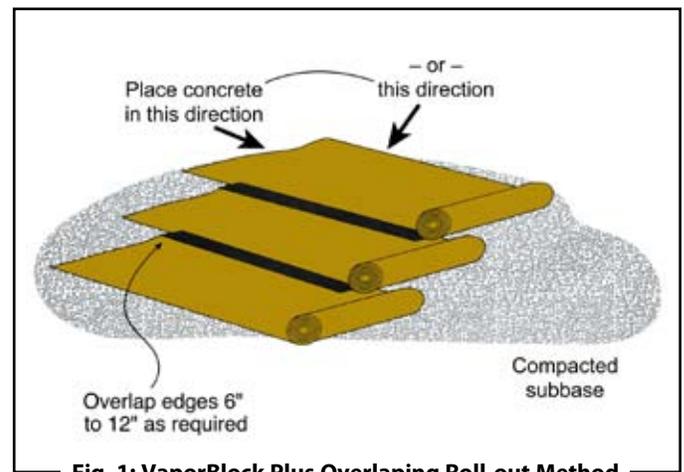


Fig. 1: VaporBlock Plus Overlapping Roll-out Method

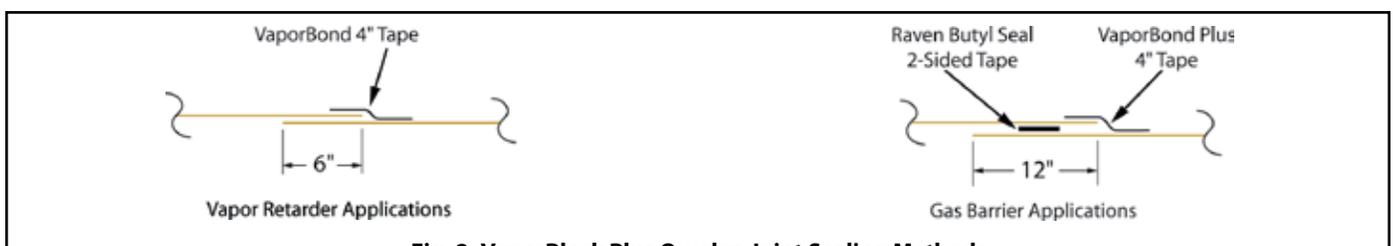


Fig. 2: VaporBlock Plus Overlap Joint Sealing Methods

SINGLE PENETRATION PIPE BOOT INSTALLATION

barrier, overlap joints a minimum of 12" and seal in-between overlap with 2-sided Raven Butyl Seal Tape. Then seal with VaporBond Plus Tape centered on the overlap seam. (Fig. 2)

- 1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the **VaporBlock Plus** membrane. Pipes four inches or smaller can be sealed with Raven VaporBoot Plus preformed pipe boots. VaporBoot Plus preformed pipe boots are formed in steps for 1", 2", 3" and 4" PVC pipe or IPS size and are sold in units of 12 per box (Fig. 3 & 5).

Pipe boots may also be fabricated from excess **VaporBlock Plus** membrane (Fig. 4 & 6) and sealed with VaporBoot Tape or VaporBond Plus Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 12" from the opening in all directions.

To fabricate pipe boots from **VaporBlock Plus** excess material (see Fig. 4 & 6 for A-F):

- A) Cut a square large enough to overlap 12" in all directions.
- B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.
- C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe. (*no more than a 1/2" of stretched boot material is recommended*)
- D) Once boot is positioned, seal the perimeter to the membrane by applying 2-sided Raven Butyl Seal Tape in between the two layers. Secure boot down firmly over the membrane taking care not to have any large folds or creases.
- E) Use VaporBoot Tape or VaporBond Plus Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Plus Tape (option) - Tape completely around pipe overlapping the to get a tight seal against the pipe.

- F) Complete the process by taping over the boot perimeter edge with VaporBond Plus Tape to create a monolithic membrane between the surface of the slab and gas/moisture sources below and at the slab perimeter. (Fig. 4 & 6)

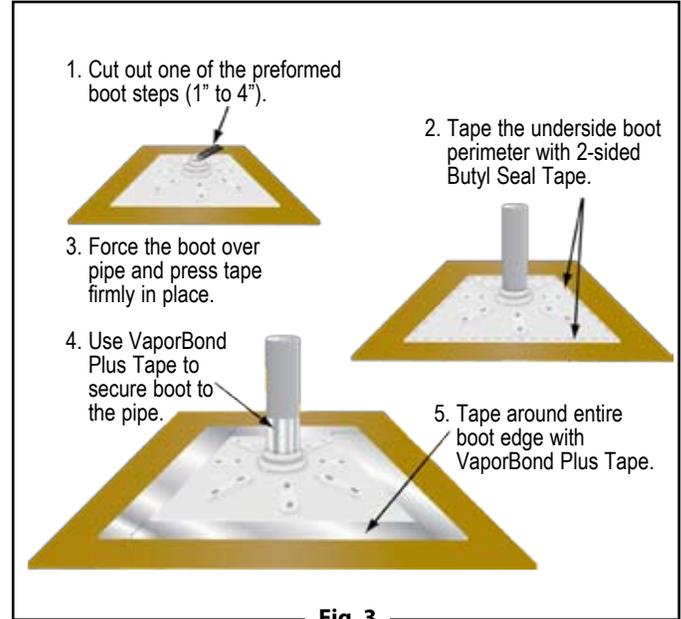


Fig. 3

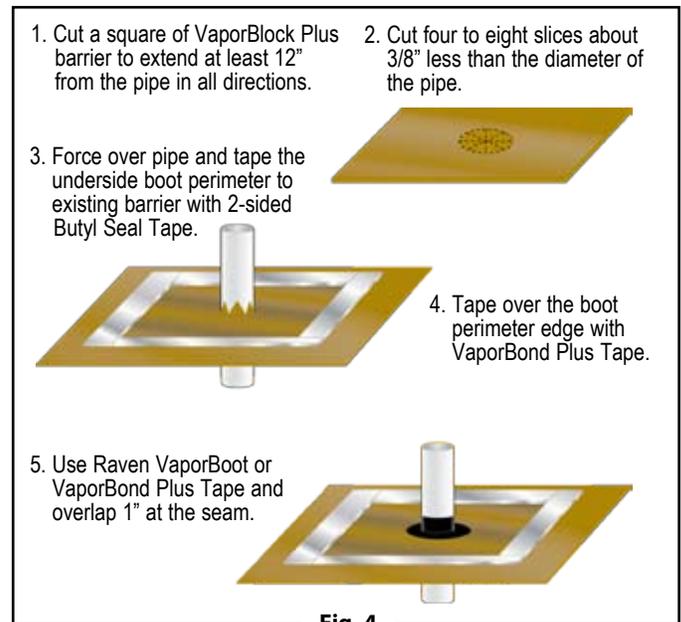


Fig. 4

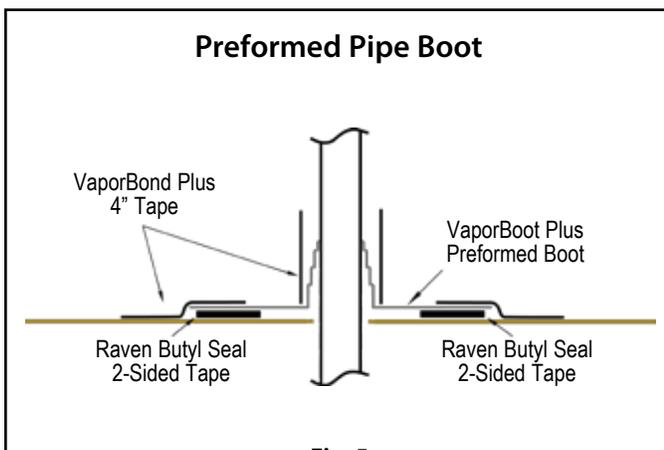


Fig. 5

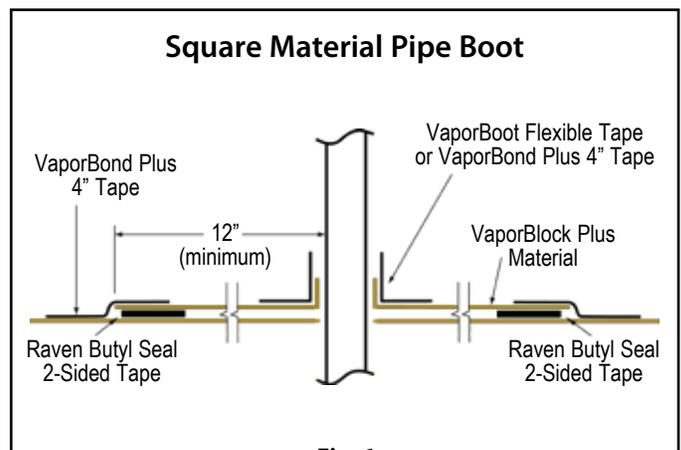


Fig. 6

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations;

- A) Cut a patch large enough to overlap 12" in all directions (Fig. 7) of penetrations.
- B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.
- C) Slide patch material over penetration to achieve a tight fit.
- D) Once patch is positioned, seal the perimeter to the membrane by applying 2-sided Raven Butyl Seal Tape in-between the two layers. (Fig. 8)
- E) After applying Raven Butyl Seal Tape between the patch and membrane, tape around each of the penetrations and the patch with VaporBond Plus 4" foil tape. (Fig. 9) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 10)

1.6. Holes or openings through **VaporBlock Plus** are to be repaired by cutting a piece of **VaporBlock Plus** 12" larger in all directions from the opening. Seal the patch to the barrier with 2-sided Raven Butyl Seal Tape and seal the edges of the patch with VaporBond Plus Tape.

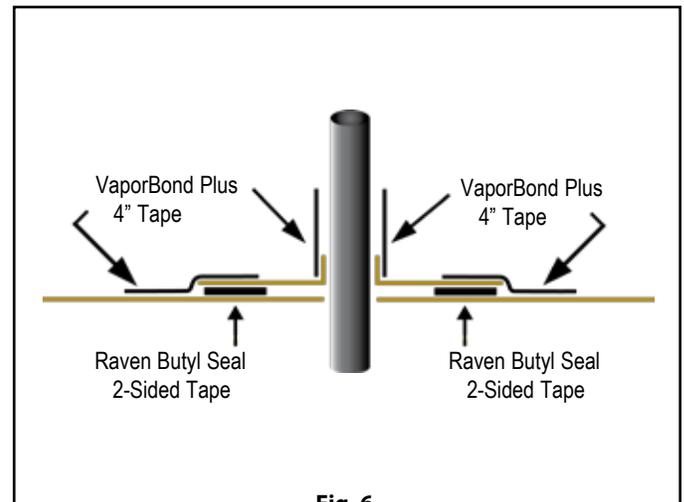


Fig. 6

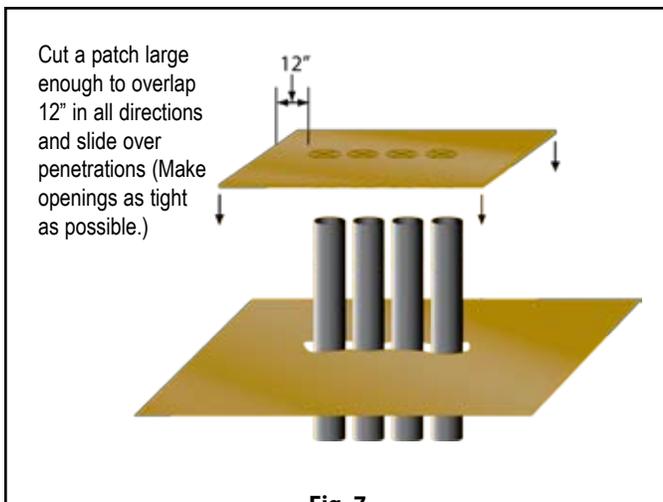


Fig. 7

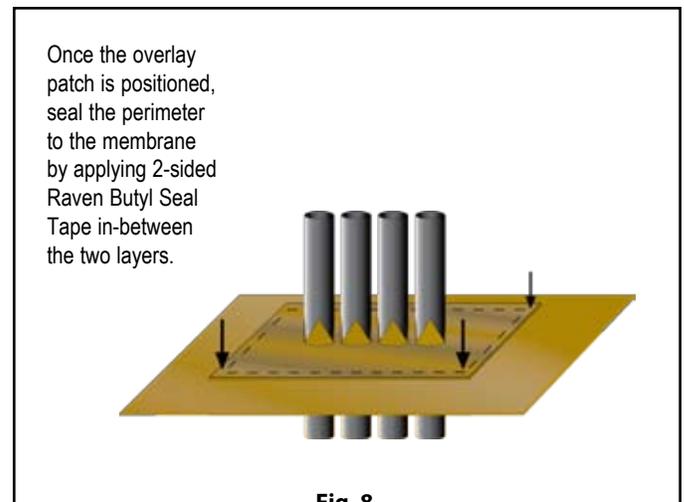


Fig. 8

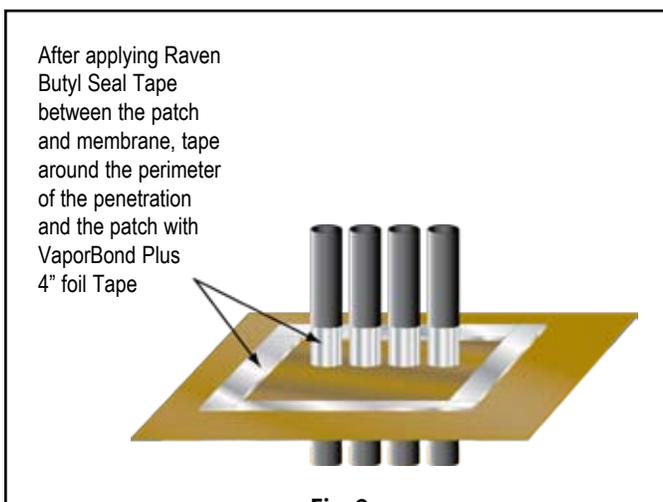


Fig. 9

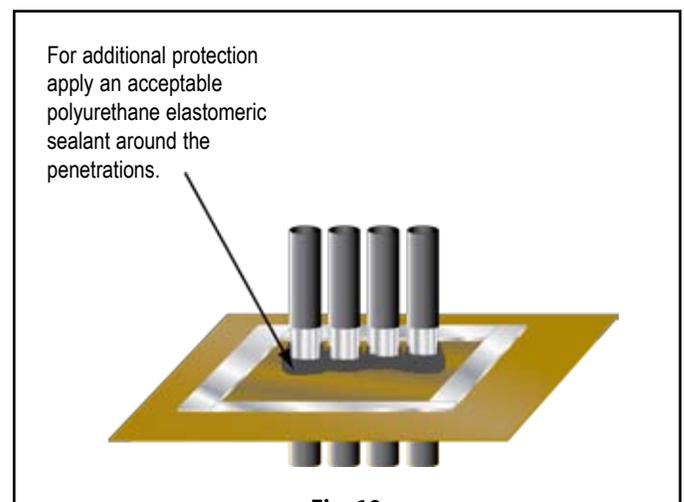


Fig. 10

VAPORBLOCK® PLUS™ PROTECTION

- 2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect **VaporBlock Plus**. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on **VaporBlock Plus** provide for additional protection in high traffic areas including concrete buggies.
- 2.2. Use only brick-type or chair-type reinforcing bar supports to protect **VaporBlock Plus** from puncture.
- 2.3. Avoid driving stakes through **VaporBlock Plus**. If this cannot be avoided, each individual hole must be repaired per section 1.6.
- 2.4. If a cushion or blotter layer is required in the design between **VaporBlock Plus** and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.



Note: To the best of our knowledge, these are typical installation procedures and are intended as guidelines only. Architectural or structural drawings must be reviewed and followed as well on a project basis. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS OR GUIDELINES REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.



RAVEN INDUSTRIES, INC. / Engineered Films Division
P.O. Box 5107 • Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333
Toll Free: 800-635-3456



ISO 9001:2000
CERTIFIED MANAGEMENT SYSTEM

www.vaporblockplus.com

6/09 EFD 1127

Addendum 3
Architectural Plans

DATE	CONSTRUCTION ISSUES
DATE	PERMIT ISSUES

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663



PROJECT
ISLAND POINT
 CITY ISLAND,
 BRONX, NY
 ADDRESS
ON THE SOUND
 AT CITY ISLAND
 BRONX, NY

TITLE
SITE PLAN

DWG BY: Author DATE: 04/18/12
 SCALE: 1" = 30'-0" JOB NO: XXXX

A001.00 OF 1
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 2008



1 Site
 1" = 30'-0"

REScheck Software Version 4.4.4
Compliance Certificate

Project Title: ON THE SOUND AT CITY ISLAND

Energy Code: **2009 IECC**
 Location: **Bronx County, New York**
 Construction Type: **Single-family**
 Project Type: **New Construction**
 Conditioned Floor Area: **3,787 ft²**
 Glazing Area Percentage: **18%**
 Heating Degree Days: **4999**
 Climate Zone: **4**
 Permit Date:

Construction Site: **57/59 ISLAND POINT
Bronx, NY 10454**
 Owner/Agent: **GREYSTONE
152 W 57TH STREET
80TH FLOOR
NEW YORK, NY 10019
212 649 9700**
 Designer/Contractor: **KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY
NEW YORK, NY 10019
212 431 5552**

Compliance: **Passes using UA trade-off**
 Compliance: **21.3% Better Than Code** Maximum UA: **792** Your UA: **623**
The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules. It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Glazing or Door U-Factor	UA
Wall 1: Wood Frame, 16" o.c.	4,283	19.0	0.0		201
Window 1: Wood Frame Double Pane with Low-E	486			0.270	131
Window 2: Wood Frame Double Pane with Low-E	35			0.300	11
Window 3: Wood Frame Double Pane with Low-E	240			0.310	74
Window 4: Wood Frame Double Pane with Low-E	27			0.280	8
Door 1: Solid	66			0.170	11
Door 2: Solid	64			0.220	14
Ceiling 1: Flat Ceiling or Scissor Truss	1,836	38.0	0.0		55
Floor 1: Slab-On-Grade/Unheated Insulation depth: 6 0'	186		25.0		118

Project Title: ON THE SOUND AT CITY ISLAND Report date: 06/12/13
 Data filename: G:\Drwng11\2011 - 002 On the Sound at City Island\ACAD\DWGS\Energy Calc\House A_050313\House A.rck Page 1 of 9

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC requirements in REScheck Version 4.4.4 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title Signature Date

2009 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Wall	19.00
Floor	25.00
Ceiling / Roof	38.00

Ductwork (unconditioned spaces):		
Glass & Door Rating	U-Factor	SHGC
Window	0.27	
Door	0.17	

Heating & Cooling Equipment		Efficiency
Heating System:	_____	_____
Cooling System:	_____	_____
Water Heater:	_____	_____

Name: _____ Date: _____
 Comments:

Project Title: ON THE SOUND AT CITY ISLAND Report date: 06/12/13
 Data filename: G:\Drwng11\2011 - 002 On the Sound at City Island\ACAD\DWGS\Energy Calc\House A_050313\House A.rck Page 2 of 9

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663
 C.L. OWNER
 E.L.E. ARCHITECTS
 E.L.E. ARCHITECTS
 KENNETH MOON ARCHITECT
 300 EAST TREMONT AVENUE
 BROOKLYN, NY 10001
 E.L.E. ARCHITECTS
 S.E.C. ENGINEERING P.C.
 69 E 62ND STREET, SUITE 606
 NEW YORK, NY 10019
 212 649 3260
 STRUCTURAL ENGINEER:
 BLUE SWY DESIGN INC
 121 W 27th STREET, SUITE 404
 NEW YORK, NY 10001
 646 230 0900
 O. MERCHANT
 GREYSTONE
 152 W 57th STREET 60th FL
 NEW YORK, NY 10019
 212 649 9700



PROJECT:
**57/59 ISLAND POINT,
 CITY ISLAND,
 BRONX, NY**

ADDRESS:
**ON THE SOUND
 AT CITY ISLAND
 BRONX, NY**

DOB# 220240736

TITLE:
ENERGY COMPLIANCE

DIWG BY: Author DATE: 05/22/12
 SCALE: _____ JOB NO: XXXX

EN _____ OF 9
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 2012

REScheck Software Version 4.4.4
Compliance Certificate

Project Title: ON THE SOUND AT CITY ISLAND

Energy Code: 2009 IECC
 Location: Bronx County, New York
 Construction Type: Single-family
 Project Type: New Construction
 Conditioned Floor Area: 3,787 ft²
 Glazing Area Percentage: 18%
 Heating Degree Days: 4999
 Climate Zone: 4
 Permit Date:

Construction Site: 49/51 ISLAND POINT
 Bronx, NY 10464
 Owner/Agent: GREYSTONE
 152 W 57TH STREET
 80TH FLOOR
 NEW YORK, NY 10019
 212 649 9700
 Designer/Contractor: KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY
 NEW YORK, NY 10019
 212 431 5552

Compliance: Passes using UA trade-off

Compliance: **21.3% Better Than Code** Maximum UA: **792** Your UA: **623**
 The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
 It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Glazing or Door U-Factor	UA
Wall 1: Wood Frame, 16" o.c.	4,263	19.0	0.0		201
Window 1: Wood Frame:Double Pane with Low-E	466			0.270	131
Window 2: Wood Frame:Double Pane with Low-E	35			0.300	11
Window 3: Wood Frame:Double Pane with Low-E	240			0.310	74
Window 4: Wood Frame:Double Pane with Low-E	27			0.280	8
Door 1: Solid	66			0.170	11
Door 2: Solid	64			0.220	14
Ceiling 1: Flat Ceiling or Scissor Truss	1,836	38.0	0.0		55
Floor 1: Slab-On-Grade:Unheated Insulation depth: 6.0"	186		25.0		118

Project Title: ON THE SOUND AT CITY ISLAND Report date: 06/13/13
 Data filename: G:\Drwg\112011 - 002 On the Sound at City Island\ARCH REPORT\RES CHECK\House A\House A 49_51.rck Page 1 of 9

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC requirements in REScheck Version 4.4.4 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title Signature Date

2009 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Wall	19.00
Floor	25.00
Ceiling / Roof	38.00

Glass & Door Rating	U-Factor	SHGC
Window	0.27	
Door	0.17	

Heating & Cooling Equipment	Efficiency
Heating System:	
Cooling System:	
Water Heater:	

Name: Date:

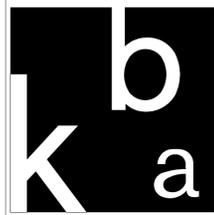
Comments:

Project Title: ON THE SOUND AT CITY ISLAND Report date: 06/13/13
 Data filename: G:\Drwg\112011 - 002 On the Sound at City Island\ARCH REPORT\RES CHECK\House A\House A 49_51.rck Page 2 of 9

DATE	ISSUE FOR BID
07.12.2013	CONSTRUCTION ISSUES

DATE	PERMIT ISSUES
------	---------------

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663
 C.L. ENGINEER
 E.L.E. ARCHITECT/CONSULTANT
 E.P.R. ARCHITECT
 KENNETH MOONS ARCHITECT
 300 EAST TREMONT AVENUE
 BROOKLYN, NY 10011
 M.E. ANGLA ENGINEER
 S.C. ENGINEERING PC
 69 E 62ND STREET, SUITE 606
 NEW YORK, NY 10119
 212 649 2820
 STRUCTURAL ENGINEER:
 BLUE SKY DESIGN INC
 121 W 27th STREET, SUITE 604
 NEW YORK, NY 10001
 646 230 2800
 O. MURPHY
 GREYSTONE
 152 W 57th STREET 60th FL
 NEW YORK, NY 10019
 212 649 9700



PROJECT:
 49/51 ISLAND POINT,
 CITY ISLAND,
 BRONX, NY

ADDRESS:
 ON THE SOUND
 AT CITY ISLAND
 BRONX, NY

DOB# 220240709

TITLE:
ENERGY COMPLIANCE

DWG BY: Author DATE: 06/12/13
 SCALE: JOB NO: XXXX

EN 00 OF 9
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 2012

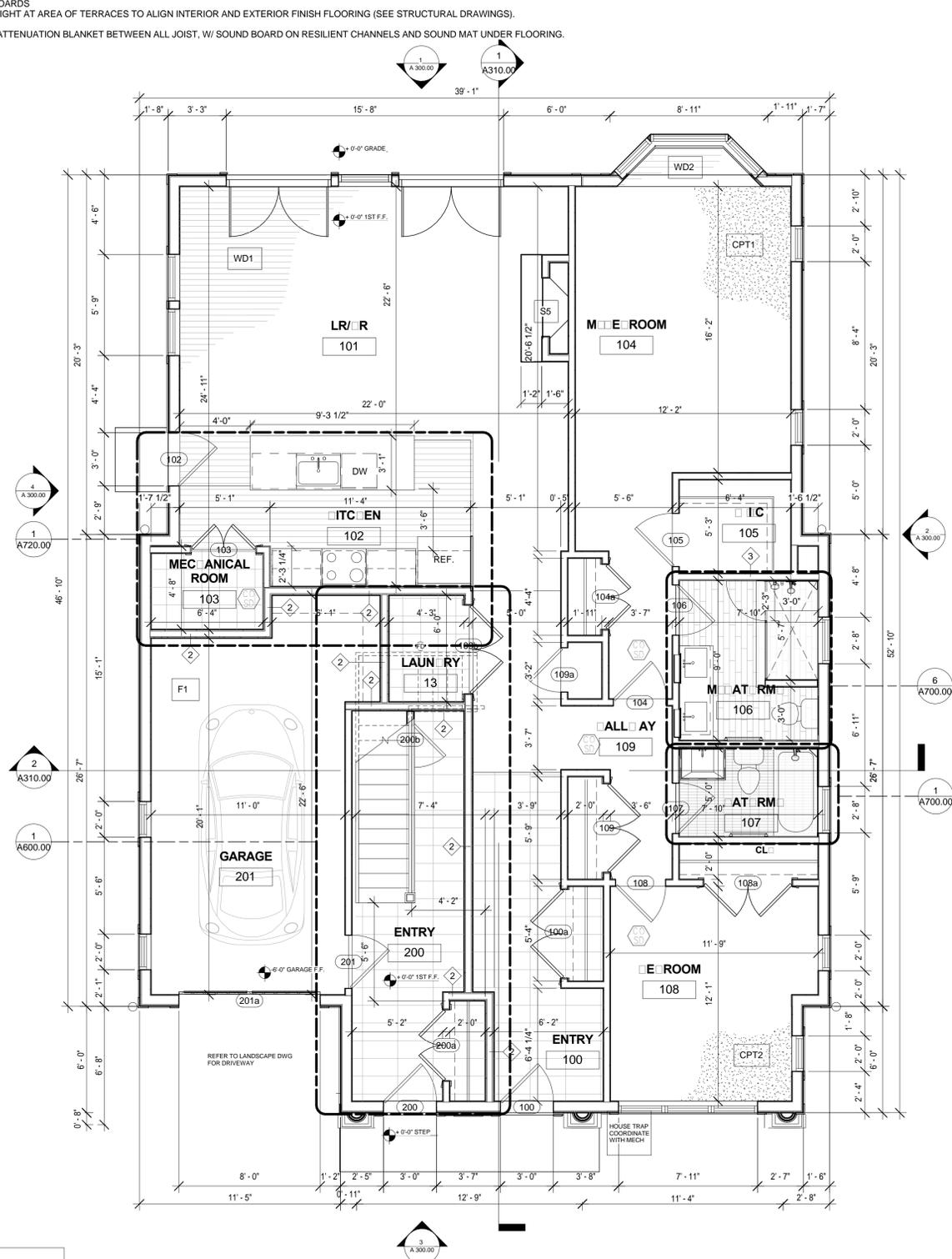
GENERAL NOTES:
 -ALL FIREPLACES TO BE HEAT & GLO. MODEL #: DV3732SBI, DEALER: HOME CRAFTS, CONTACT: WILLIAM O. HUDSON, P. (631) 669-0141, TYP. ALL UNITS.
 -ALL PARTITIONS TO BE P1 U.O.N.
 -ALL CLOSETS TO HAVE HANGING POLE AND SHELF.
 -ALL SURFACES (WALL, CEILINGS, DOORS, BASE BOARDS, TRIM, ETC.) TO BE PAINTED, (1) COAT PRIMER AND (2) FINISH COAT, PAINT COLOR AND FINISH T.B.D.
 -ALL WOOD FLOORS TO BE OAK FIRST GRADE OR SELECT, (1) COAT SEALER, (2) COAT'S POLYURETHANE.
 -PROVIDE CONCRETE PADDING UNDER EVERY COLUMN BASE TYP. (SEE STRUCTURAL DRAWINGS).
 -PROVIDE WALK IN SHOWERS (NO CURB) (SEE STRUCTURAL DRAWINGS).
 -ALL GLASS SHOWER DOORS TO BE 2'-3" TYP.
 HEADER SCHEDULE:
 -FOR HEADER DIMENSIONS SEE STRUCTURAL DRAWINGS.
 OPENINGS:
 -SEE WINDOW SCHEDULE FOR ROUGH OPENINGS AND WINDOW DIMENSIONS.
 -ALL WINDOWS SHOULD BE PLACED 5" MIN FROM WALL TO ALLOW FOR CASEMENT.
 -ALL DOORS SHOULD BE PLACED 4 1/4" MIN FROM WALL TO ALLOW FOR CASEMENT.
 PARTITIONS:
 -PROVIDE SOUND INSULATION AT ALL BATHROOMS AND BEDROOM WALLS AND CEILINGS
 TERRACES:
 -WOOD ON DUCKBOARDS
 -REDUCE BEAM HEIGHT AT AREA OF TERRACES TO ALIGN INTERIOR AND EXTERIOR FINISH FLOORING (SEE STRUCTURAL DRAWINGS).
 CEILINGS:
 -PROVIDE SOUND ATTENUATION BLANKET BETWEEN ALL JOIST, W/ SOUND BOARD ON RESILIENT CHANNELS AND SOUND MAT UNDER FLOORING.

SMO - E' CAR - ON MONO LINE DETECTOR/ALARM

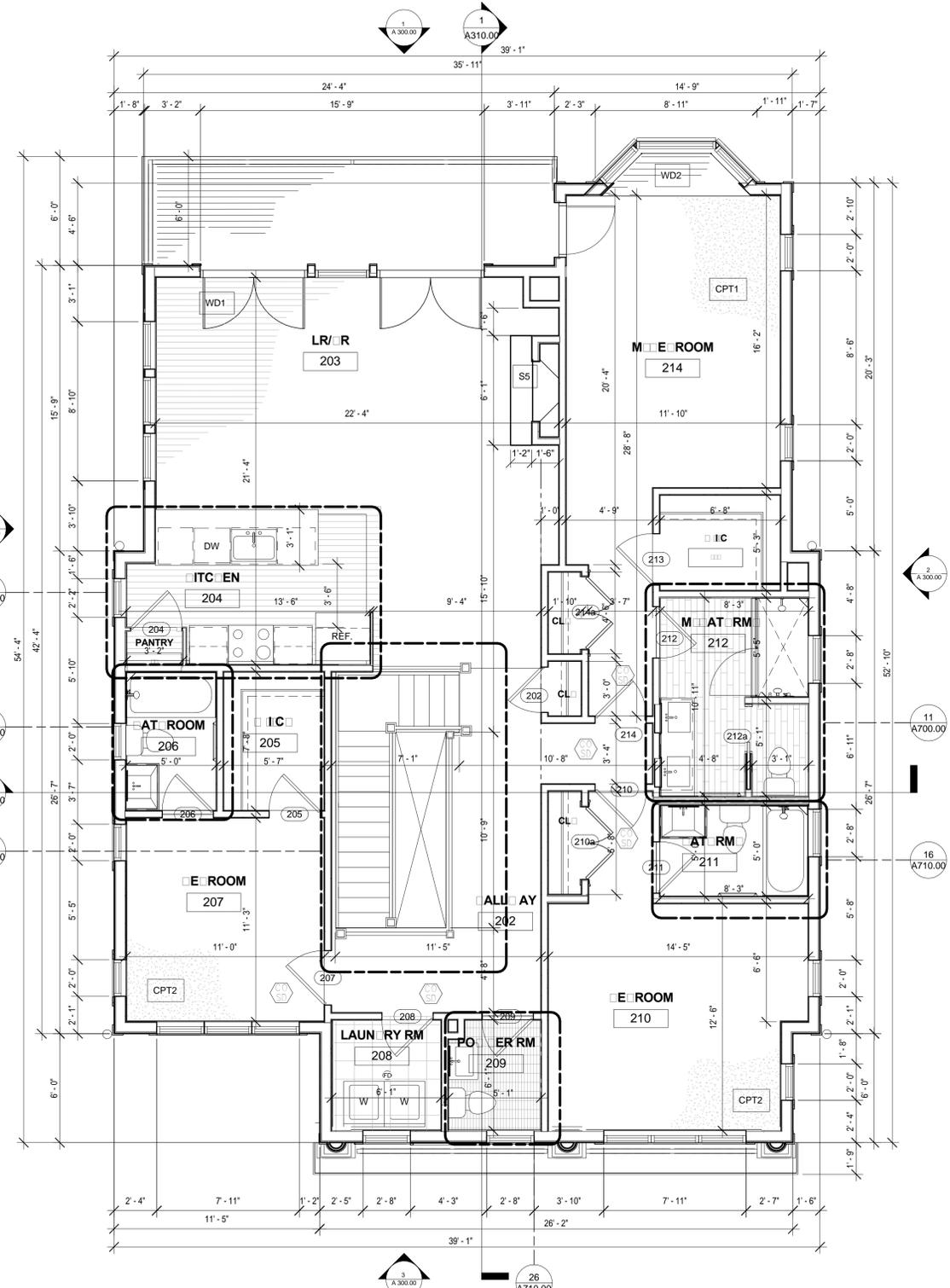
-ANY ROOM USED FOR SLEEPING PURPOSES
 -OUTSIDE OF ANY ROOM USED FOR SLEEPING PURPOSES, WITHIN 15 FEET OF EACH ROOM
 -ON EACH ADDITIONAL STORY INCLUDING BASEMENTS/CELLARS
 -IN UNITS CONTAINING A CARBON MONOXIDE PRODUCING FURNACE, BOILER, OR WATER HEATER
 -WALL MOUNTED 4'-6" A.F.F.

Light & Air Chart						
Level	Number	Name	Area	Light	Ventilation	Compliance
1ST FL	108	BEDROOM	133 SF	37.5 SF	25 SF	Yes
1ST FL	104	M. BEDROOM	251 SF	48 SF	26 SF	Yes
1ST FL	101	LR/DR	370 SF	66 SF	96 SF	Yes
2ND FL	203	LR/DR	370 SF	72 SF	33 SF	Yes
2ND FL	214	M. BEDROOM	255 SF	48 SF	26 SF	Yes
2ND FL	210	BEDROOM	193 SF	45 SF	26 SF	Yes
2ND FL	207	BEDROOM	123 SF	45 SF	26 SF	Yes

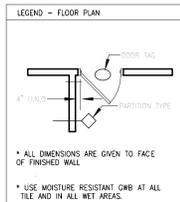
1ST FL



1 1st FLOOR PLAN
 SCALE: 1/4" = 1'-0"



2 2nd FLOOR PLAN
 SCALE: 1/4" = 1'-0"



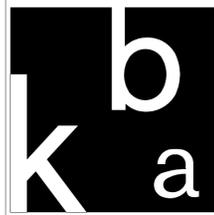
KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663

C.L. ENGINEER
 E.E.P. ARCHITECT
 KENNETH MOON ARCHITECT
 300 EAST TREMONT AVENUE
 BROOKLYN, NY 10001

MEC. ANCA PRIMER
 S&C ENGINEERING PC
 916 12TH STREET, SUITE 606
 BROOKLYN, NY 10015
 (718) 732-2620

STRUCTURAL ENGINEER
 BLUE SKY DESIGN INC.
 121 W 27th STREET, SUITE 804
 BROOKLYN, NY 10011
 (718) 233-8000

GENERAL CONTRACTOR
 GREYSTONE
 152 W 27th STREET 6TH FL
 BROOKLYN, NY 10019
 (718) 448-9970



PROJECT:
49/51 ISLAND POINT, CITY ISLAND, BRONX, NY

ADDRESS:
ON THE SOUND AT CITY ISLAND BRONX, NY

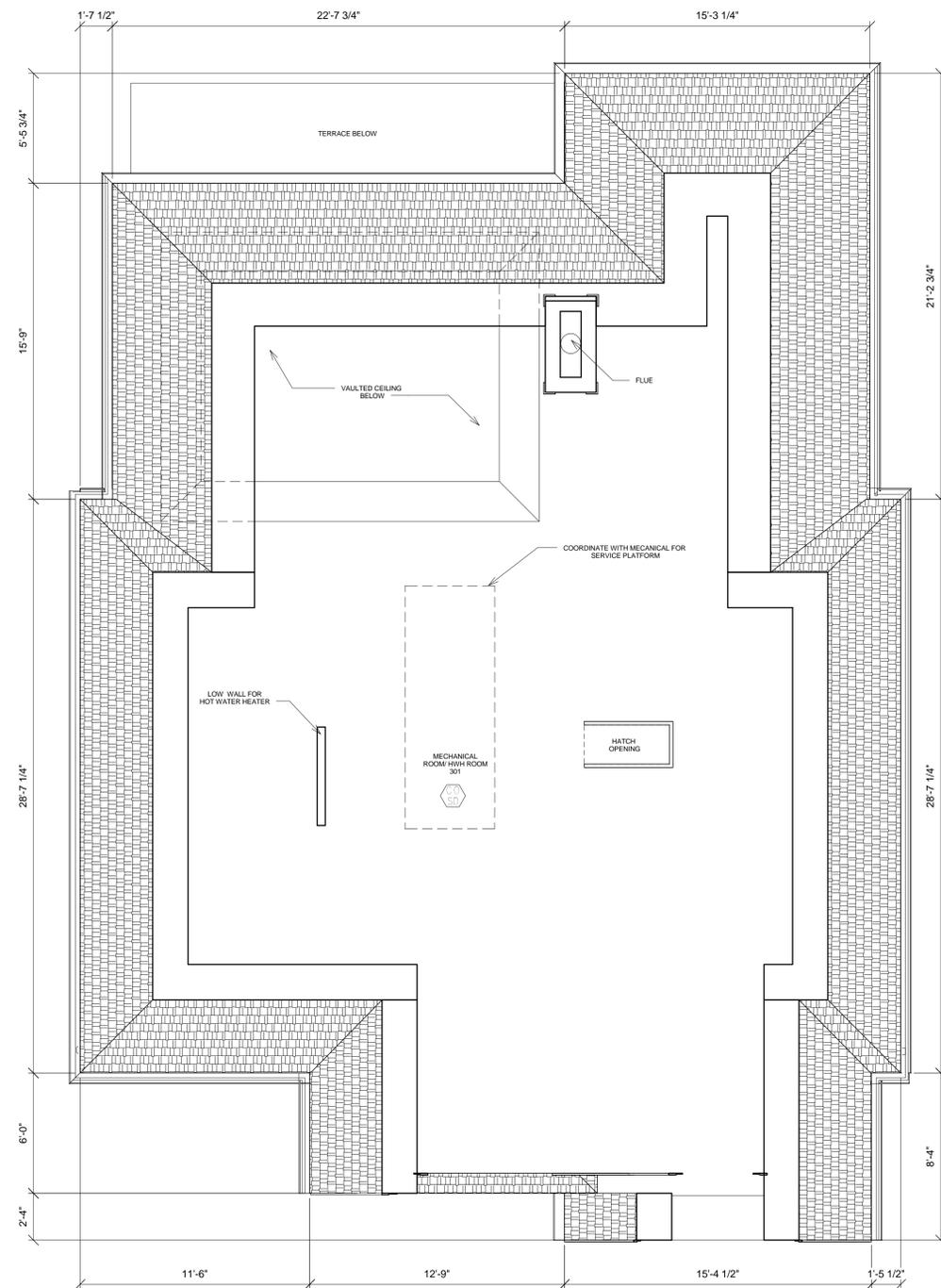
DOB# 220240709

TITLE:
1ST FLOOR PLAN 2ND FLOOR PLANS

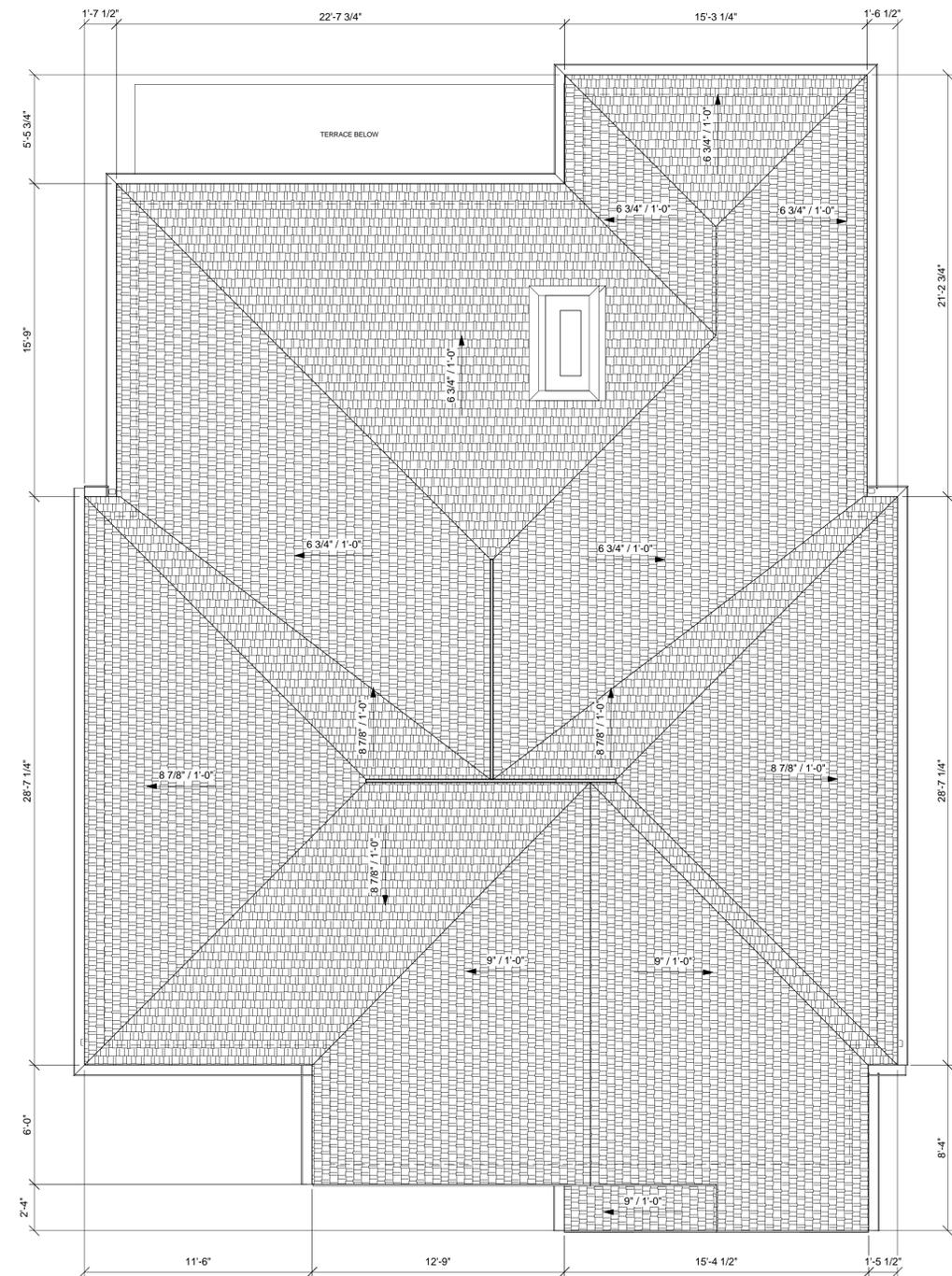
DWG BY: J.C.S DATE: 05/12/12
 SCALE: As Indicated JOB NO: XXXX

GENERAL NOTES:
 ALL ROOFING TO BE CERTAINTED, COLOR T.B.D. CONTACT:
 TOM TUFFY, P: 212-696-1405, TYF, ALL UNITS

07.12.2013 ISSUE FOR BID
 DATE CONSTRUCTION ISSUES
 0: FILING
 DATE PERMIT ISSUES

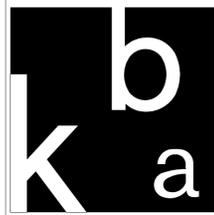


1 ATTIC PLAN R.C.P.
 SCALE: 1/4" = 1'-0"



2 ROOF APEX
 SCALE: 1/4" = 1'-0"

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663



PROJECT:
49/51 ISLAND POINT,
 CITY ISLAND,
 BRONX, NY
 ADDRESS:
ON THE SOUND
 AT CITY ISLAND
 BRONX, NY

DOB# 220240709

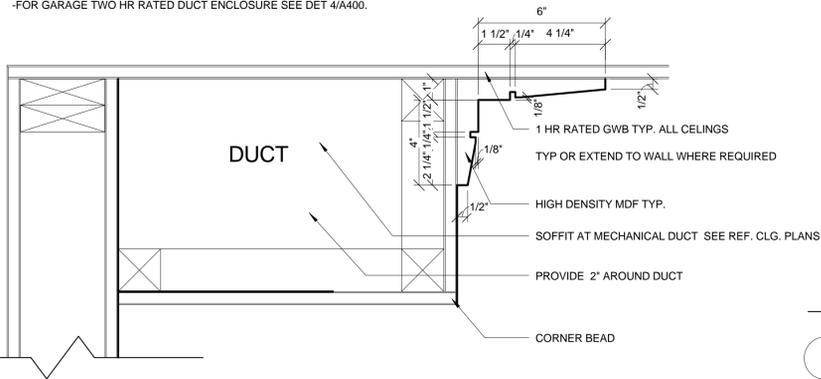
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ATTIC **ROOF PLANS**

DWG BY: Author DATE: 06/15/11
 SCALE: 1/4" = 1'-0" JOB NO: XXXX

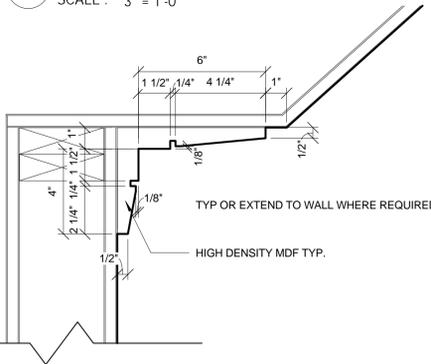
A OF 9
 © COPYRIGHT KUTNICKI BERNSTEIN ARCHITECTS
 2012

REGISTERED ARCHITECT
 KENNETH MOON ARCHITECT
 300 EAST TREMONT AVENUE
 BROOKLYN, NY 10001
 P: 718.778.3663
 REGISTERED ENGINEER
 MICHAEL P. PRINER
 S.C. ENGINEERING P.C.
 69 E 62ND STREET, SUITE 806
 BROOKLYN, NY 10019
 P: 718.449.9763

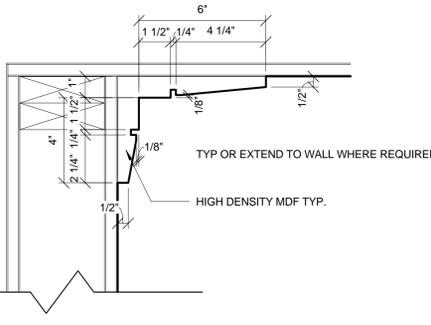
GENERAL NOTES:
 -ATTIC LADDER TO BE PRO-TECH ATTIC LADDERS BY RAINBOW ATTIC STAIRS.
 -FOR GARAGE TWO HR RATED DUCT ENCLOSURE SEE DET 4/A400.



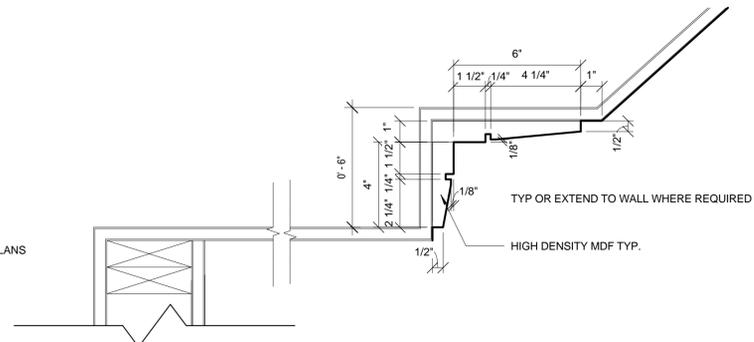
6 CEILING Moulding Detail at SOFFIT
 SCALE: 3" = 1'-0"



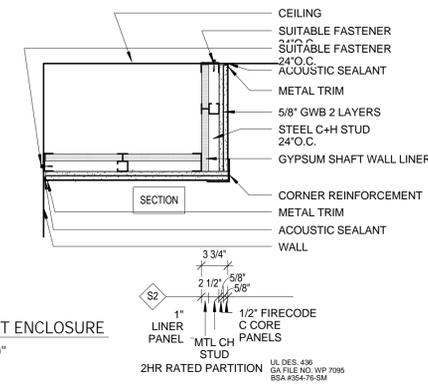
4 CEILING Moulding Detail at CATHEDRAL 01
 SCALE: 3" = 1'-0"



5 CEILING Moulding Details
 SCALE: 3" = 1'-0"



7 CEILING Moulding Detail at CATHEDRAL 02
 SCALE: 3" = 1'-0"



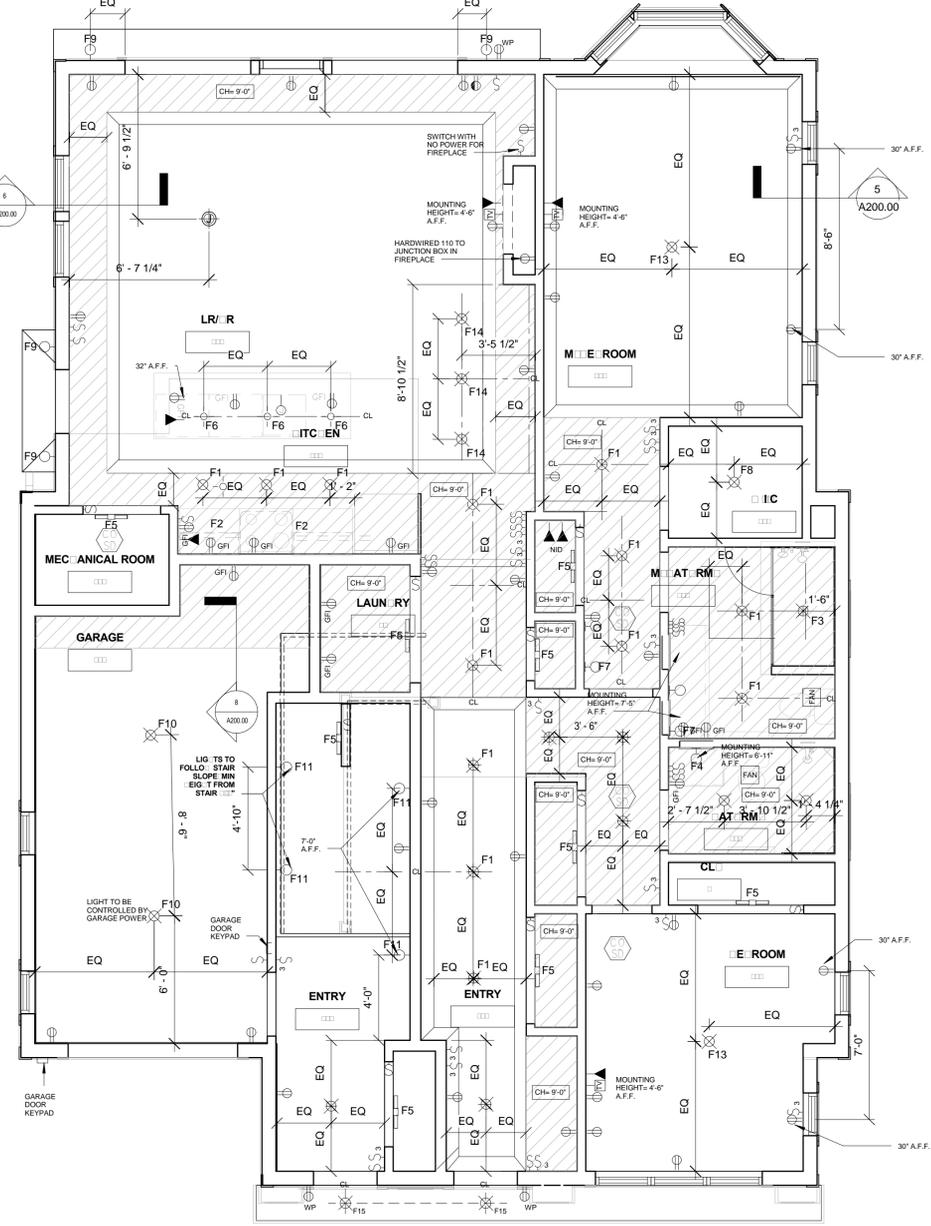
8 2HR RATED DUCT ENCLOSURE
 SCALE: 1" = 1'-0"

LEGEND: REFLECTED CEILING PLAN

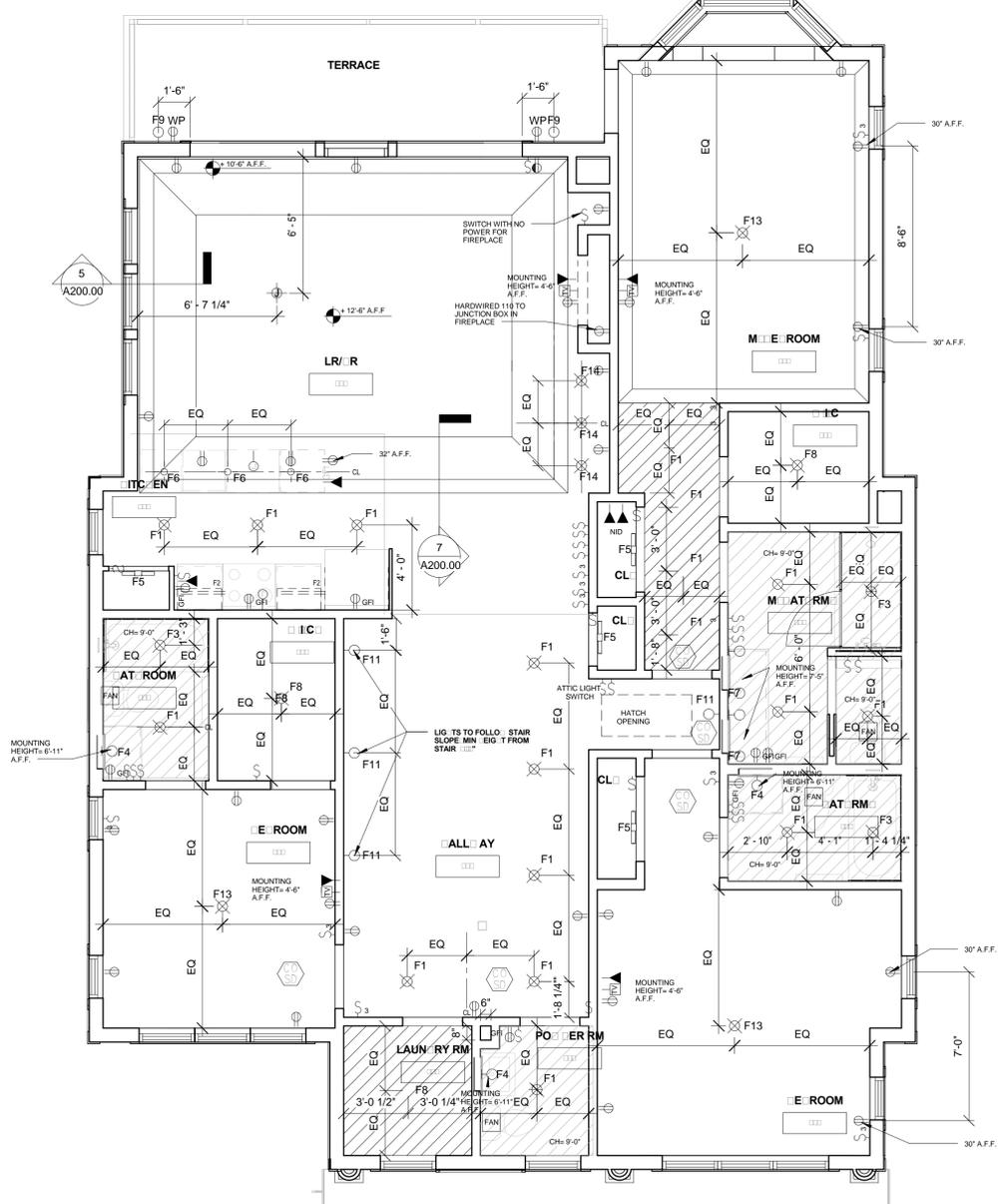
HO	WALL MOUNTED LIGHT FIXTURE
FX	RECESSED DOWN LIGHT
FX	SURFACE MOUNTED LIGHT
FX	PENDANT LIGHT FIXTURE
SW	LIGHT/OUTLET SWITCH MOUNTED 4'-0" A.F.F. UON
SW	3-WAY LIGHT/OUTLET SWITCH MOUNTED 4'-0" A.F.F. UON
EM	EMERGENCY EGRESS LIGHT
EXIT	EXIT SIGN FILLED QUARTER INDICATES DIRECTION SIGN FACES ARROWS
IND	INDICATE DIRECTION OF EGRESS WHERE REQUIRED
CD	CARBON MONOXIDE & SMOKE DETECTOR
X-XX	CEILING HEIGHT AS NOTED ON PLANS
GW	GW R CEILING; X'-X"
AC	ACOUSTICAL CEILING TILE

LEGEND: POWER & COMMUNICATION PLAN

GPI	WALL MOUNTED GPI DUPLEX POWER OUTLET
AO	WALL MOUNTED APPLIANCE OUTLET
DPO	WALL MOUNTED DUPLEX POWER OUTLET 15" AFF UON
WP	WATER PROOF OUTLET
SO	SWITCHED OUTLET
WDF	WALL MOUNTED PHONE/FAX OUTLET 15" AFF UON
WDT	WALL MOUNTED DATA OUTLET 15" AFF UON
CCTV	CABLE TV (CCTV) (CONTRACTOR TO PULL WIRE)
JB	JUNCTION BOX
WJB	WALL MOUNTED JUNCTION BOX
SP	SPEAKERS



1 1st FLOOR R.C.P.
 SCALE: 1/4" = 1'-0"



2 2nd FLOOR R.C.P.
 SCALE: 1/4" = 1'-0"

07.12.2013	ISSUE FOR BID
DATE	CONSTRUCTION ISSUES

PROJECT:
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P: 212.431.5552 F: 212.431.5663

STRUCTURAL ENGINEER:
 BLUE SKY DESIGN INC.
 121 W 27th STREET, SUITE 1001
 BROOKLYN, NY 10013
 718.625.2000

MECHANICAL ENGINEER:
 S&C ENGINEERING PC
 916 62nd STREET, SUITE 606
 BROOKLYN, NY 10019
 718.625.2000

ELECTRICAL ENGINEER:
 KENNETH ROOMS ARCHITECT
 300 EAST TROMBAY AVENUE
 BROOKLYN, NY 10011



PROJECT:
 49/51 ISLAND POINT,
 CITY ISLAND,
 BRONX, NY

ADDRESS:
 ON THE SOUND
 AT CITY ISLAND
 BRONX, NY

DOB# 220240709

TITLE:
 REFLECTED CEILING PLANS I

DWG BY: Author DATE: 05/11/12
 SCALE: As Indicated JOB NO: XXXX

OF 9
 © COPYRIGHT KUTNICKI BERNSTEIN ARCHITECTS 2012

GENERAL NOTES:
 -5 INCHES WIDE HARDIE TRIM, 1 FOOT WIDE FASCIA, SOFFIT AND PANELS TO BE ARTIC WHITE TYPICAL
 -ALL ANDERSEN WINDOWS TO HAVE ANDERSEN 41/2" FLAT TRIM, WHITE



3 North Elevation
 SCALE: 1/4" = 1'-0"



4 East Elevation
 SCALE: 1/4" = 1'-0"



1 South Elevation
 SCALE: 1/4" = 1'-0"



2 West Elevation
 SCALE: 1/4" = 1'-0"

GENERAL NOTES:
 TYP. IN. O. SILL. EIG. T. FROM F.F.
 IN. ES. IE. AR. IE TRIM. FOOT. IE. AR. IE FASCIA.
 AR. IE TRIM. FASCIA. SOFFIT AN. PANELS TO. E ARTIC. ITE TYPICAL.
 ALL SI. NG CLAP. OAR. TRIM. PANELS AN. SOFFITS TO. E AMES. AR. IE CONTACT.
 RAN. ON. NO. LOC. P.
 ALL ROOFING TO. E CERTAINTEE. COLOR. T. CONTACT.
 TOM TUFFY. P. TYP. ALL UNITS.
 ALL IN. O. AN. OOR. E. TERIOR TRIM TO. E 1/2\"/>

KEY NOTES:
 1. CLAPBOARD WITH TRIM TO MATCH WITH HOUSE COLOR
 2. ASPHALT SHINGLE ROOFING BY CERTAINTEED COLOR T.B.D.
 3. JAMES HARDIE SOFFIT PANEL WITH VENT & INSECT SCREEN
 4. JAMES HARDIE 5" TRIM (TYP.)
 5. PRINCETON 6" HALF ROUND GUTTER ALUMINUM, WHITE
 6. EXTERIOR RAILING BY VINTAGE WOOD WORKS MODEL NO. 3902 POLYURETHANE, WHITE (TYP.)
 7. COLUMN COVERS ARE BY PACIFIC COLUMNS MODEL AS REQUIRED PER COLUMN DIMENSION WHITE (TYP.)

8. COLUMN BASE BY PACIFIC COLUMNS MODEL AS REQUIRED PER COLUMN BASE DIMENSION WHITE (TYP.)
 9. PILASTERS ARE BY PACIFIC COLUMNS MODEL AS REQUIRED PER PILASTER DIMENSION WHITE (TYP.)
 10. JAMES HARDIE PLANK LAP SIDING, LIGHT MIST
 11. ALUMINUM LEADER CONNECT TO UNDERGROUND PIPING, WHITE
 12. THIN BRICK BY OWENS BORO, IMPERIAL BROWN
 13. JAMES HARDIE FASCIA
 14. EXTERIOR SILL AT BAY WINDOW TO BE TREATED AS EXTERIOR WALL WITH JAMES HARDIE PLANKS, TYVEK, DENSGLOSS & INSULATION

REFER TO Z100.00 FOR BASE PLANE ELEVATION

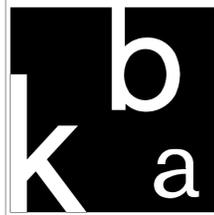
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PROJECT:
 49/51 ISLAND POINT,
 CITY ISLAND,
 BRONX, NY

ADDRESS:
 ON THE SOUND
 AT CITY ISLAND
 BRONX, NY

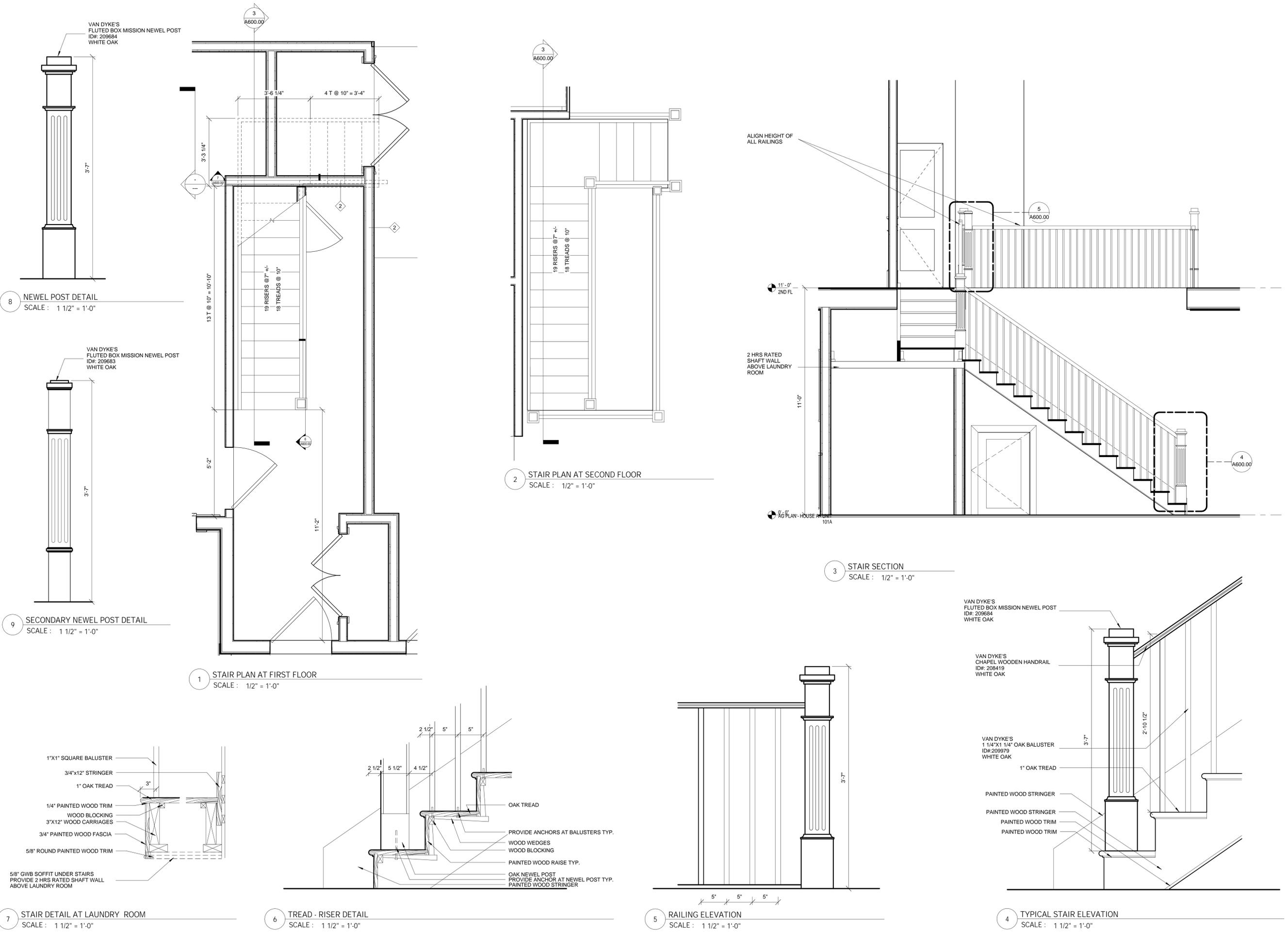
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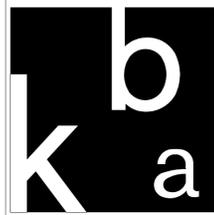
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DOB# 220240709
 TITLE:
**STAIR RAILING
 SECTIONS: PARTITION
 TYPES**
 DWG BY: Author DATE: 022912
 SCALE: As Indicated JOB NO: XXXX
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 OF 9

Addendum 4
Construction Health and Safety Plan (CHASP)

**CONSTRUCTION
HEALTH AND
SAFETY PLAN**

**OER Project No. 14CVCP169X
On The Sound
226 Fordham Place
Block 5643, Lot 235
City Island, Bronx, New York**

**Prepared By:
Carlin-Simpson & Associates
61 Main Street
Sayreville, New Jersey**

November 2013

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Attachment A: Health and Safety Briefing/Site Orientation Record/Hazard Communication

Attachment B: Hospital Map

1.0 INTRODUCTION

This Construction Health and Safety Plan (CHASP) presents information regarding known site-specific health and safety hazards using available information, and identifies the equipment, materials, and procedures that will be used to eliminate or control these hazards during the remedial activities planned for 226 Fordham Place in City Island, Bronx, New York. This CHASP addresses the potential hazards related to the work outlined in the Remedial Action Work Plan (RAWP). The RAWP activities are as described below:

1. Site mobilization of General Contractor (GC) and Subcontractors
2. Excavation and off-site disposal of soil exceeding the Track 4 Site-Specific Soil Cleanup Objectives (SCOs) in two (2) pre-delineated hotspot areas.
3. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
4. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation).
5. Demarcation of residual soil/fill.
6. Importation of material to be used for backfill and cover material.
7. Installation of a Vapor Barrier System beneath each of the building slabs and outside foundation sidewalls below grade.
8. Construction and maintenance of an engineered Composite Cover System consisting of a 5 inch concrete slab in the building areas, 4 inches of concrete in sidewalk areas, 2.5 to 3.5 inches of asphalt in the paved areas, 4 inches of concrete pavers over 6 inches of clean soil in the esplanade area, and two (2) feet of clean imported soil in open space and landscape areas to prevent human exposure to residual soil/fill remaining under the Site.

The CHASP has been prepared in conformance with applicable regulations, safe work practices, and the project requirements. The content of this CHASP may change or undergo revision based upon additional information that is made available to health and safety personnel, monitoring results or changes in the technical scope of work.

This CHASP is written for the purpose of all personnel who will enter the site. The General Contractor (GC) and their subcontractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees. The General Contractor (GC) has the option of adopting this CHASP or providing its own for the planned scope of work under the Remedial Action Work Plan.

1.1 SITE DESCRIPTION

The subject site is located at 226 Fordham Place at the intersection with Fordham Street in City Island, Bronx, New York. The site is currently vacant and is bordered by the Long Island Sound to the east. There were previously four (4) buildings located on the property, which have been

demolished and completely removed. The subject site was formerly occupied by a shipyard and then various maritime related uses, including ship and yacht building, boat storage and boat repair, sail making, and a diving business. During the previous site investigations, soil contamination was detected in the subsurface soils in portions of the site at concentrations exceeding the NYSDEC soil cleanup objectives. Some remedial actions have already taken place for select areas of concern. The site also contains historic fill material that is tainted with metals and semi-volatile organic compounds.

1.2 **ROLES AND RESPONSIBILITIES**

Personnel responsible for implementing this Construction Health and Safety Plan (CHASP) are:

Name	Project Title/Assigned Role	Telephone Numbers
TBD SCE Environmental	Construction Manager	TBD
TBD SCE Environmental	Construction Safety Officer	TBD
TBD	Field Representative	TBD
Meredith R. Anke, PE Carlin-Simpson & Associates	Site Safety Officer	work: 732-432-5757 cell: 908-334-1080
Robert B. Simpson, P.E. Carlin-Simpson & Associates	Principal-in-Charge	work: 732-432-5757 cell: 732-261-0974

Construction Manager (CM): The construction manager is responsible for overall project administration and, with guidance from the site safety officer, for supervising the implementation of this CHASP. The CM Contractor will have responsibility for safety of its employees during the work performed at the site. Responsibilities of the CM include the following:

1. Verifies implementation of the CHASP.
2. Conducts periodic inspections and documents these in the field book.
3. Participates in incident investigations.
4. Verifies the CHASP has all of the required approvals before any site work is conducted.
5. Verifies that the client and/or CM site manager is informed of project changes, which require modifications of the CHASP.
6. Has overall responsibility for project health and safety.
7. Acts as the primary point of contact with the client for site related activities and coordination with non-project related site operations.
8. Ensures that fieldwork is scheduled with adequate personnel and equipment resources to complete the job safely.
9. Overseeing of performance of project tasks as outlined in the scope of work.
10. Plans field work using appropriate safe procedures and equipment.
11. Verifies and documents current OSHA Construction training compliance for all construction trades.
12. Verifies that subcontractors acknowledge and sign the projects CHASP.

Construction Health and Safety Officer (CHSO): The CHSO is a qualified health and safety professional with experience in construction activities. Responsibilities of the CHSO include the following:

1. Serves as the primary contact to review health and safety matters that may arise.
2. Approves revised or new safety protocols for field operations.
3. Coordinates revisions of this CHASP with field personnel.
4. Leads the investigation of all accidents/incidents.
5. Provides the necessary training of subcontractor trade field crews in accordance with OSHA regulations and provides proof of training to the SSO prior to subcontractor trade personnel entering the site.
6. Conducts and documents periodic safety briefings; ensures that field team members comply with this CHASP.

Site Safety Officers (SSO): The SSO is responsible for coordinating health and safety activities related to hazardous material exposure on-site. The site safety officer is responsible for the following:

1. Verifies that the CHASP is implemented and that all health and safety activities identified in the HASP are conducted and/or implemented
2. Educating personnel about information in this CHASP and other safety requirements to be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, and emergency procedures dealing with fire and first aid.
3. Coordinating site safety decisions with the project manager.
4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this CHASP.
5. Maintaining records of safety problems, corrective measures and documentation of chemical exposures or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).
6. Report all accidents/incidents to the CHSO and CM.
7. Stop work if necessary.
8. Identifies operational changes which require modifications to the CHASP and ensures that the procedure modifications are implemented and documented through changes to the CHASP, with CHSO approval.
9. Determines upgrades or downgrades of PPE based on site conditions and/or real-time monitoring results with CHSO approval.
10. Reports to the CHSO and provides summaries of field operations and progress.

Field Representative (FR): The FR is responsible for carrying out field work on a monthly, quarterly, or as-needed basis. Responsibilities of the FR include:

1. Conducts routine safety inspection of the work area.
2. Documenting occurrences of unsafe activity and what actions were taken to rectify the situation.
3. Reports any unsafe or potentially hazardous conditions to the SSO and CM.

4. Maintains familiarity of the information, instructions, and emergency response actions contained in the CHASP.
5. Complies with rules, regulations and procedures set forth in the CHASP.
6. Prevents admittance to work site by unauthorized personnel.
7. Inspects all tools and equipment, including PPE, prior to use and documents inspection on the daily safety meeting form or in the appropriate field book.
8. Verifies that monitoring instruments are calibrated.
9. Stops work if necessary.

Subcontractors: The CM Contractor may subcontract with various companies to conduct various work onsite on an as-needed basis. Contact information for these subcontractors will be available when such work is being conducted. The CM shall require its subcontractors to work in a responsible and safe manner. Subcontractors for this project may be required to develop their own CHASP for protection of their employees and must adhere to applicable requirements set forth in this CHASP. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the construction manager and site safety office will be consulted.

All Personnel: Ultimate control of health and safety is in the hands of each individual employee. Therefore, each employee must become familiar with and comply with all health and safety requirements associated with their position and daily operations. Employees also have the responsibility to notify the appropriate management of unsafe conditions and accidents/injuries immediately as well as preventing admittance to work sites by unauthorized personnel. When employees are issued respirators or any other personal protective equipment (PPE), they are responsible for ensuring that said items are used properly, cleaned as required and maintained in good working order.

Anyone who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

1.3 TRAINING AND SAFETY BRIEFINGS

All personnel performing investigation and remedial activities at the site and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the site shall receive training in accordance with 29 CFR 1910.120 before they are permitted to work at the site. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the CHSO and/or SSO prior to the start of field activities, when required.

On-site personnel will be given health and safety briefings by a safety officer or field representative to assist personnel in safely conducting work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's conditions, as well as periodic reinforcement of previously discussed topics. The briefings will

also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. These safety briefing will be documented on a daily safety briefing form or other appropriate media.

1.4 SITE VISITORS

A site-specific briefing will be provided to all site visitors who enter the site beyond the site entry point. The site-specific briefing will provide information about the site hazards and other pertinent safety and health requirements as appropriate.

2.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general physical hazards that can be expected at most sites, and presents a summary of documented or potential chemical and biological hazards at the subject site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during the proposed remedial activities.

2.1 PHYSICAL HAZARDS

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any construction type project. These physical hazards are due to motor vehicles, and heavy equipment operation, the use of improper use of power and hand tools, misuse of pressurized cylinders, walking on objects, tripping over objects, working on surfaces which have the potential to promote falling, mishandling and improper storage of solid and hazardous materials, skin burns, crushing of fingers, toes, limbs, hit on the head by falling objects or hit one's head due to not seeing the object of concern, temporary loss of one's hearing and/or eyesight. These hazards are not unique and are generally familiar to most workers at construction sites.

Construction Hazards, Backhoes, etc. The use of backhoes and other heavy equipment represent potentially serious construction hazards. Whenever such equipment is used, personnel in the vicinity should be limited to those who must be there to complete their assigned duties. All personnel must avoid standing within the turning radius of the equipment or below any suspended load. Job sites must be kept as clean, orderly and sanitary as possible. When water is used, care must be taken to avoid creating muddy or slippery conditions. If slippery conditions are unavoidable, barriers and warning signs must be used to warn of these dangers.

Never turn your back to operating machinery. Never wear loose clothing, jewelry, hair or other personal items around rotating equipment or other equipment that could catch or ensnare loose clothing, jewelry, hair or other personal items. Always stand far enough away from operating machinery to prevent accident contact which may result from mechanical or human error.

Additionally, the following basic personal protective measures must be observed: Hardhats must be worn to protect against bumps or falling objects. Safety glasses must be worn by all workers in the vicinity of drill rigs or other sources of flying objects. Goggles, face shields or other forms of eye protection must be worn when necessary to protect against chemicals or other hazards. Steel-toed safety shoes or boots are also required. The shoes must be chemically resistant or protected with appropriately selected boots/coverings where necessary. Unless otherwise specified, normal work clothes must be worn. Long sleeves and gloves are also required whenever necessary to protect against hazardous contact, cuts, abrasions or other possible skin hazards.

Excavations. All provisions of the OSHA trenching and excavation standard (29 CFR 1926.650-652) must be followed during excavation activities. This includes all test pit excavation and sampling activities. The estimated location of utility installations, such as sewer, telephone, electric,

water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation.

Excavations in contaminated or potentially contaminated areas must be tested for confined spaces atmospheric hazards prior to entry. Excavations should not be entered if other means are available to perform the task requiring entry. If entry into an excavation is required, the atmosphere within the space must be monitored by a trained person to assure that oxygen concentrations are at greater than or equal to 19.5 percent, that combustible gas levels are less than 10 percent, and that vapor levels are within applicable safe exposure (PEL and TLV) limits.

A ladder or similar means of egress must be located in excavations greater than 4 feet in depth so as to require no more than 25 feet of lateral travel for employees. No person should be allowed to enter an excavation in type B or C soil greater than 5 feet in depth unless the walls of the excavation have been protected using an approved shield (trench box), an approved shoring system, or the walls have been sloped back to an angle of 34 degrees, the excavation is free of accumulated water, and the excavation has been tested for hazardous atmospheres as noted previously. If personnel enter an excavation, the spoils pile and all materials must be placed at least 2 feet from the edge of the excavation to prevent the materials from rolling into the excavation. Personnel must remain at least 2 feet away from the edge of the excavation at all times. Upon completion of a test pit exploration, the excavation should be backfilled and graded. Excavation should never be left open unless absolutely necessary, and then only with proper barricading and controls to prevent accidental injury.

Heat and Cold Stress. Exposure to temperature extremes can pose significant risks to personnel if simple precautions are not taken. Typical control measures designed to prevent heat stress include dressing properly, drinking plenty of water, and establishing an appropriate work/break schedule. Typical control measures designed to prevent cold stress also include dressing properly and establishing an appropriate work/break schedule.

Noise. Noise exposure can be affected by many factors including the number and types of noise sources and the proximity to noise intensifying structures such as walls or buildings which cause noise to bounce back or echo. The single most important factor effecting noise exposure is distance from the source. The closer one is to the source, the louder the noise. The operation of heavy equipment, power tools, pumps, generators, and other equipment associated with earthwork can be sources of significant noise exposure. In order to reduce the exposure to this noise, personnel working in areas of excessive noise must use hearing protection (ear plugs or ear muffs).

Rule-of-Thumb: Wherever actual data from sound level meters or noise dosimeters is unavailable and it is necessary to raise one's voice above a normal conversational level to communicate with others within 3 to 5 feet away, hearing protection should be worn.

Slips, Trips, and Falls. Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces. Excavation at the sites will cause uneven footing in the trenches and around the stockpiles. Employees will wear proper footwear (i.e. steel toe/shank boots) and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

Lifting Hazards. Improper lifting by workers is one of the leading causes of industrial injuries. Failure to follow proper lifting technique can result in back injuries and strains. Field workers in the excavation program may be required to lift heavy objects. Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

Fire and Explosion. The possibility of flammable materials being encountered during field activities must be recognized and the appropriate steps necessary to minimize fire and explosion must be observed. This includes situations where organic vapors, free product or methane are, or may be, encountered. When this occurs, monitoring with a combustible gas indicator (CGI), is required.

In situations where hexane, methanol are needed for field activities, the following precautions must be observed: keep flammable and combustible materials away from heat, sparks and open flames; do not smoke around flammable or combustible materials; provide an ABC rated fire extinguisher appropriate for the materials present, and keep all flammable and combustible liquids in approved and properly labeled safety containers.

Fire extinguishers are located on heavy equipment operating on-site and within any work vehicles on the site. All fires should be reported to 911 emergency services. The Contractor and the Health & Safety Officer (CHSO) will determine if it is necessary to shut down site work for the day due to fire related issues.

Hand and Power Tools. In order to complete the various tasks for the project, personnel will use hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel at all times when using hand and power tools. Ground Fault Circuit Interrupter (GFCI)-equipped circuits will be used for all power tools. The Contractor is responsible for the safe condition of tools and equipment used by employees but the employees have the responsibility for properly using and maintaining tools. Saw blades, knives, or other tools be directed away from aisle areas and other employees working in close proximity. Knives and scissors must be sharp. Dull tools can be more hazardous than sharp ones. Appropriate personal protective equipment (PPE), e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools. Floors must be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools. Around flammable substances, sparks produced by iron and steel hand tools can be a potential ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

Ladder Safety. Portable ladders must be safely positioned each time they are used. Staff and subcontractors should follow all associated OSHA standards (CFR 1926.1053), the most updated of which can be found at <http://www.osha.gov>. OSHA standards supersede any guidelines stated within this CHASP.

Scaffolding Safety. Scaffolding presents significant fall hazards and various types of scaffolds may be present onsite. Staff and subcontractors should follow all associated OSHA standards (CFR 1926 Subpart L - Scaffolds), the most updated of which can be found at <http://www.osha.gov>.

Moving Vehicles, Traffic Safety. All vehicular traffic routes which could impact worker safety must be identified and communicated. Whenever necessary, barriers or other methods must be established to prevent injury from moving vehicles. Traffic vests must be worn by personnel working near moving vehicular traffic. This is particularly important when field activities are conducted in parking lots, driveways, ramps or roadways. OSHA 1926.201 specifies that when signs, signals or barricades do not provide adequate protection from highway or street traffic, flagmen must be utilized. Flagmen must wear red or orange garments. Garments worn at night must be reflective.

Overhead Utilities and Hazards. Overhead hazards can include low hanging structures which can cause injury due to bumping into them. Other overhead hazards include falling objects, suspended loads, swinging loads and rotating equipment. Hardhats must be worn by personnel in areas where these types of physical hazards may be encountered. Barriers or other methods must also be used to exclude personnel from these areas where appropriate. Electrical wires are another significant overhead hazard. According to OSHA (29 CFR 1926.550), the minimum clearance which must be maintained from overhead electrical wires is 10 feet from an electrical source rated ≤ 50 kV.

Underground Utilities and Hazards. The identification of underground utilities and other underground hazards is critically important prior to all drilling, excavating, and other intrusive activities. In accordance with OSHA 29 CFR 1926.650, the estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation. The same requirements apply to drilling operations and the use of soil-gas probes. Where public utilities may exist, the utility agencies or operators must be contacted directly or through a utility-sponsored service such as Dig-Safe. Where other underground hazards may exist, reasonable attempts must be made to identify their locations as well. Failure to identify underground hazards can lead to fire, explosion, flooding, electrocution or other life threatening accidents.

Water Hazards. Work on or immediately adjacent to a body of water can pose significant hazards. In addition to the slip, trip and fall hazards associated with wet surfaces, the potential for drowning accidents must be recognized. These hazards can be intensified by the use of some personnel protective equipment (PPE), particularly if respiratory protection is worn. OSHA 29 CFR 1926.106 requires that all employees working over or near water, where the danger of drowning exists, *must wear a U.S. Coast Guard-approved life jacket or buoyant work vest*. Ring buoys and emergency standby personnel must also be in place.

Pedestrian Traffic. The uncontrolled presence of pedestrians on the site can be hazardous to both pedestrians and site workers. Prior to the initiation of site activities, the site should be surveyed to determine if, when and where pedestrian may gain access. This includes walkways, parking lots, gates and doorways. Barriers or caution tape should be used to exclude all pedestrian traffic.

Exclusion of pedestrian traffic is intended to prevent injury to the pedestrians and eliminate distractions which could cause injury to site workers.

2.2 CHEMICAL HAZARDS

Laboratory testing of soil collected during subsurface investigations at the site has revealed elevated levels of semi-volatile organic compounds (SVOCs) and metals in historic fill material throughout the subject site. The primary routes of exposure to identified contaminants in soil to on-site construction workers are through inhalation of dust particles, accidental ingestion, and dermal absorption.

Chemicals Subject to OSHA Hazard Communication. All chemicals used in field activities such as solvents, reagents, decontamination solutions, or any other hazardous chemical must be listed and accompanied by the required labels, Material Safety Data Sheets (MSDS), and employee training documentation (OSHA 1910.1200).

Hydrogen Sulfide (H₂S). Hydrogen sulfide, characterized by its "rotten egg" odor, is produced by the decomposition of sulfur-containing organic matter. It is found in many of the same areas where methane is found such as landfills, swamps, sewers and sewer treatment facilities. An important characteristic of H₂S is its ability to cause a decrease in ones ability to detect its presence by smell. So although one may no longer be able to smell it, it could still be present in harmful concentrations.

The symptoms of over exposure include headache, dizziness, staggering and nausea. Severe over exposure can cause respiratory failure, coma, and death. The current OSHA PEL is 10 ppm as an 8-hour TWA. The ACGIH TLV is the same.

Methane. Methane is an odorless, colorless, tasteless, gas that cannot be detected by a photoionization detector (PID). When present in high concentrations in air, methane acts primarily as a simple asphyxiant without other significant physiologic effects. Simple asphyxiants dilute or displace oxygen below that required to maintain blood levels sufficient for normal tissue respiration.

Methane has a lower explosive limit (LEL) of 5 percent and an upper explosive limit (UEL) of 15 percent. The LEL of a substance is the minimum concentration of gas or vapor in air below which the substance will not burn when exposed to a source of ignition. This concentration is expressed in percent by volume. Below this concentration, the mixture is "too lean" to burn or explode. The UEL of a substance is the maximum concentration of gas or vapor in air above which the substance will not burn when exposed to a source of ignition. Above this concentration, the mixture is "too rich" to burn or explode. The explosive range is the range of concentrations between the LEL and UEL where the gas-air mixture will support combustion. For methane this range is 5 to 15 percent.

BTEX Compounds. Exposure to the vapors of benzene, ethylbenzene, toluene and xylenes above their respective permissible exposure limits (PELs), as defined by OSHA, may produce irritation of the mucous membranes of the upper respiratory tract, nose and mouth. Acute exposure may also result in the depression of the central nervous system. Symptoms of such exposure include drowsiness, headache, fatigue, confusion, and loss of coordination. Benzene has been determined

to be carcinogenic, targeting blood-forming system and bone marrow. The odor threshold for benzene is higher than the PEL and employees may be overexposed to benzene without sensing its presence, therefore, detector tubes must be utilized to evaluate airborne concentrations.

The vapor pressures of these compounds are high enough to generate significant quantities of airborne vapor. On sites where high concentrations of these compounds are present, a potential inhalation hazard to the field team during subsurface investigations can result. If the site is open and the anticipated quantities of BTEX contamination are small (i.e., part per million concentrations in the soil or groundwater), overexposure potential will also be small.

Volatile Organic Compounds (VOCs). See BTEX compounds.

Chromium Compounds. Hexavalent chromium compounds, upon contact with the skin can cause ulceration and possibly an allergic reaction. Inhalation of hexavalent chromium dusts is irritating and corrosive to the mucous membranes of the upper respiratory tract. Chrome ulcers and chrome dermatitis are common occupational health effects from prolonged and repeated exposure to hexavalent chromium compounds. Acute exposures to hexavalent chromium dusts may cause coughing or wheezing, pain on deep inspiration, tearing, inflammation of the conjunctiva, nasal itch and soreness or ulceration of the nasal septum. Certain forms of hexavalent chromium have been found to cause increased respiratory cancer among workers.

Trivalent chromium compounds (chromic oxide) are generally considered to be of lower toxicity, although dermatitis may occur as a result of direct handling.

Metal Compounds. Overexposure to metal compounds has been associated with a variety of local and systemic health hazards, both acute and chronic in nature, with chronic effects being most significant. Direct contact with the dusts of some metal compounds can result in contact or allergic dermatitis. Repeated contact with arsenic compounds may result in hyperpigmentation. Cases of skin cancer due to the trivalent inorganic arsenic compounds have been documented. The moist mucous membranes, particularly the conjunctivae, are most sensitive to the irritating effects of arsenic. Copper particles embedded in the eye result in a pronounced foreign body reaction with a characteristic discoloration of eye tissue.

Inhalation of copper and zinc dusts and fumes above their established PELs may result in flu-like symptoms known as "metal fume fever." Prolonged and repeated inhalation of the dusts of inorganic arsenic compounds above the established PEL may result in weakness, loss of appetite, a sense of heaviness in the stomach and vomiting. Respiratory problems such as cough, hoarseness and chest pain usually precede the gastrointestinal problems. Chronic overexposure to the dusts of inorganic arsenic may result in lung cancer.

The early symptoms of lead poisoning are usually nonspecific. Symptoms include sleep disturbances, decreased physical fitness, headache, decreased appetite and abdominal pains. Chronic overexposure may result in severe colic and severe abdominal cramping. The central nervous system (CNS) may also be adversely effected when lead is either inhaled or ingested in large quantities for extended periods of time. The peripheral nerve is usually affected. Lead has also been characterized as a male and female reproductive toxin as well as a fetotoxin. Exposure to lead (Pb) is regulated by a comprehensive OSHA standard (29 CFR 1910.1025).

Pesticides. Pesticides can be grouped into three major categories: organophosphates, carbamate and chlorinated hydrocarbons. The actual permissible exposure limits (PELs) as set by the Occupational Safety and Health Administration (OSHA), vary depending on the specific compound. Organophosphates, including Diazinon, Malathion and Parathion, are quickly absorbed into the body by inhalation, ingestion and direct skin contact. The symptoms of exposure include headache, fatigue, dizziness, blurred vision, sweating, cramps, nausea and vomiting. More severe symptoms can include tightness of the chest, muscle spasms, seizures and unconsciousness. It should also be noted that the Malathion and Parathion PELs both carry the *Skin* notation, indicating that these compounds adversely effect or penetrate the skin. OSHA specifies that skin exposure to substances carrying this designation be prevent or reduced through the use of the appropriate personal protective equipment (PPE).

Chlorinated Hydrocarbons such as Chlordane, DDT and Heptachlor can cause dizziness, nausea, abdominal pain and vomiting. The more severe symptoms include epileptic like seizures, rapid heart beat, coma and death. These compounds also carry the OSHA *Skin* notation. The symptoms of exposure to carbamate such Carbaryl (also known as Sevin) are similar to those described for the organophosphates. However, the OSHA exposure limit for Carbaryl *does not* carry the Skin notation.

Herbicides. Some of the commonly used herbicides present a low toxicity to man. However, other herbicides pose more serious problems. Organophosphorus and carbamate herbicides, if inhaled or ingested can interfere with the functioning of the central nervous system. Many herbicides can be readily absorbed through the skin to cause systemic effects. In addition to being absorbed through the skin, many herbicides, upon contact with the skin, may cause discoloring, skin irritation or dermatitis. Contaminants of commercial preparations of chlorinated phenoxy herbicides such as 2,4,5-T include 2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin). Dioxin is a known mutagen and a suspect carcinogen.

Petroleum Hydrocarbons (PHCs). Petroleum Hydrocarbons such as fuel oil are generally considered to be of low toxicity. Recommended airborne exposure limits have not been established for these vapors. However, inhalation of low concentrations of the vapor may cause mucous membrane irritation. Inhalation of high concentrations of the vapor may cause pulmonary edema. Repeated or prolonged direct skin contact with the oil may produce skin irritation as a result of defatting. Protective measures, such as the wearing of chemically resistant gloves, to minimize contact are addressed elsewhere in this plan. Because of the relatively low vapor pressures associated with PHCs, an inhalation hazard in the outdoor environment is not likely.

Polychlorinated Biphenyls (PCBs). Prolonged skin contact with PCBs may cause the formation of comedones, sebaceous cysts, and/or pustules (a condition known as chloracne). PCBs are considered to be suspect carcinogens and may also cause reproductive damage.

The OSHA permissible exposure limits (PELs) for PCBs are as follows:

<u>Compound</u>	<u>PEL (8-hour time-weighted average)</u>
Chlorodiphenyl (42% Chlorine)	1 mg/m ³ -Skin
Chlorodiphenyl (54% Chlorine)	0.5 mg/m ³ -Skin

It should be noted that PCBs have extremely low vapor pressures (0.001 mm Hg @ 42% Chlorine and 0.00006 mm Hg @ 54% Chlorine). This makes it unlikely that any significant vapor concentration (i.e., exposures above the OSHA PEL) will be created in the ambient environment. This minimizes the potential for any health hazards to arise due to inhalation unless the source is heated or generates an airborne mist. If generated, vapor or mists above the PEL may cause irritation of the eyes, nose, and throat. The exposure limits noted above are considered low enough to prevent systemic effects but it is not known if these levels will prevent local effects. It should also be noted that both PELs carry the *Skin* notation, indicating that these compounds adversely effect or penetrate the skin. OSHA specifies that skin exposure to substances carrying this designation be prevented or reduced through the use of the appropriate personal protective equipment (PPE).

Polycyclic Aromatic Hydrocarbons (PAHs). Due to the relatively low vapor pressure of PAH compounds, vapor hazards at ambient temperatures are not expected to occur. However, if site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore dust levels should be controlled with wetting if necessary. Repeated contact with certain PAH compounds has been associated with the development of skin cancer. Contact of PAH compounds with the skin may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultraviolet radiation. Protective measures, such as the wearing of chemically resistant gloves, are appropriate when handling PAH contaminated materials.

2.3 BIOLOGICAL HAZARDS

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects, and plants. Workers will be instructed in hazard recognition, health hazards, and control measures during site-specific training.

Insects. Insects represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact should be considered prior to all field activities. Disease or harmful effects can be transmitted through bites, stings, or through direct contact with insects or through ingestion of foods contaminated by certain insects. Examples of disease transmitted by insect bites include encephalitis and malaria from contaminated mosquitoes, Lyme disease and spotted fever from contaminated ticks. Stinging insects, such as bees and wasps, are prevalent throughout the country, particularly during the warmer months. The stings of these insects can be painful, and cause serious allergic reactions to some individuals.

Lyme Disease. Lyme disease is an infection caused by the bite of certain ticks, primarily deer, dog and wood ticks. The symptoms of Lyme disease usually start out as a skin rash then progress to more serious symptoms. The more serious symptoms can include lesions, headaches, arthritis and permanent damage to the neurological system. If detected early the disease can be treated successfully with antibiotics. If a tick is attached to the skin it should be removed with fine tipped tweezers. You should be alert for early symptoms over the next month or so. If you suspect that you have been bitten by a tick you should contact a physician for medical advice.

Poisonous Plants. The possible presence of poisonous plants should be anticipated for field activities in wooded or heavily vegetated areas. Poison ivy is a climbing plant with alternate green

to red leaves (arranged in threes) and white berries. Poison oak is similar to poison ivy and sumac but its leaves are oak-like in form. The leaves of these poisonous plants produce an irritating oil which causes an intensely itching skin rash and characteristic blister-like lesions. Contact with these plants should be avoided.

Rats, Snakes and Other Vermin. Certain animals, particularly those that feed on garbage and other wastes, can represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact with biting animals (such as rats) or animal waste (such as pigeon droppings) should be considered prior to all field activities. Rats, snakes and other wild animals can inflict painful bites. The bites can be poisonous (as in the case of some snakes), or disease causing (as in the case of rabid animals). Avoidance of these animals is the best protection.

Sun Exposure. Employees are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 15, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should wear safety glasses that offer protection from UVA/UVB rays.

3.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection.

It is anticipated that all work at the site will be performed in Level D PPE.

3.1 LEVEL D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

1. standard work clothes, coveralls, or tyvek, as needed;
2. steel toe and steel shank work boots;
3. hard hat;
4. gloves, as needed;
5. safety glasses;
6. hearing protection;
- a. equipment replacements are available as needed.

3.2 LEVEL C

Level C PPE shall be donned when sustained concentrations of measured total organic vapors in the breathing zone exceed the action levels established in Section 4.3. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

1. chemical resistant or coated tyvek coveralls;
2. steel-toe and steel-shank workboots;
3. chemical resistant overboots or disposable boot covers;
4. disposable inner gloves (surgical gloves);
5. disposable outer gloves;
6. full face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants;
7. hard hat;
8. splash shield, as needed; and,
9. ankles/wrists taped with duct tape.

The Site Safety Officer will verify if Level C is appropriate by checking organic vapor concentrations using compound and/or class-specific detector tubes. The exact PPE ensemble is

decided on a site-by-site basis by the Site Safety Officer with the intent to provide the most protective and efficient worker PPE.

3.3 ACTIVITY-SPECIFIC LEVELS OF PERSONAL PROTECTION

The required level of PPE is activity-specific and is based on air monitoring results (Section 4.0) and properties of identified or expected contaminants. **It is expected that all site work will be performed in Level D.** If air monitoring results indicate the necessity to upgrade the level of protection, engineering controls (i.e. facing equipment away from the wind and placing site personnel upwind of excavations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

4.0 AIR MONITORING AND ACTION LEVELS

Air monitoring identifies and quantifies airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of worker protection needed on site. This monitoring will provide worker safety against exposure to combustible gases, oxygen deficient atmospheres, and potential chemical exposures. This monitoring will also help the safety officers to identify the type and level of Personal Protective Equipment (PPE) required to carry out the task.

When possible, engineering control measures will be utilized to suppress the volatile organic vapors. Engineering methods can include utilizing a fan to promote air circulation, utilizing volatile suppressant foam, providing artificial ground cover or covering up the impacted material with a tarp to mitigate volatile odors. Dust can be controlled with the use of water spray to keep down visible dust levels.

4.1 AIR MONITORING REQUIREMENTS

If excavation work is performed, air will be monitored for VOCs with a portable photoionization detector. If necessary, Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor (or equivalent). Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work.

The designated site safety officer will record air monitoring data and ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. Monitoring results will be recorded in a field notebook and will be transferred to instrument reading logs.

4.2 WORK STOPPAGE RESPONSES

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage are exceeded:

1. The CHSO and/or the SSO will be consulted immediately
2. All personnel (except as necessary for continued monitoring and contaminant migration, if applicable) will be cleared from the work area (e.g. from the exclusion zone).
3. Monitoring will be continued until intrusive work resumes.

4.3 ACTION LEVELS DURING EXCAVATION ACTIVITIES

Instrument readings will be taken in the breathing zone above the excavation pit unless otherwise noted. Each action level is independent of all other action levels in determining responses.

Photoionization Detector - Breathing Zone Readings (will be completed by SSO):

0 to 35 units	Remain in Level D PPE.
35 to 250 units	If sustained readings, withdraw from work area and contact Project Management. Proceed to Level C protection for re-entry, or discontinue operation.
> 250 units	Secure operations, withdraw from work area, and discontinue work at that location until contaminants can be evaluated and a detailed site plan can be implemented.

Combustible Gas Indicator CGI/LEL Meter (if required) - Readings Near Vapor Source:

<ul style="list-style-type: none">• < 10% LEL:	Continue to monitor with caution. Eliminate all ignition sources.
<ul style="list-style-type: none">• 10% to 20% LEL:	Stop operations until appropriate vapor control measures (i.e., foam, sand, polyethylene, film, portable blower etc.) and resample before resuming activity.
<ul style="list-style-type: none">• > 20% LEL:	Stop operations and withdraw from area. Contact SSO before proceeding.

4.4 ACTION LEVELS FOR DOWNWIND MONITORING

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 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.

Volatile Organic Compound Monitoring

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 causing the vapors 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 causing the vapors 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

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations during invasive work. 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/m³) 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 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work creating the dust 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 mcg/m³ of the upwind level and in preventing visible dust migration.

5.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. Emergency telephone numbers and a map to the hospital will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment.

5.1 EMERGENCY EQUIPMENT ON-SITE

Private telephones: Site personnel.

Two-way radios: Site personnel where necessary.

Emergency Alarms: On-site vehicle horns.

First aid kits: On-site, in vehicles or office.

Fire extinguisher: On-site, in office or on equipment.

5.2 EMERGENCY TELEPHONE NUMBERS

General Emergencies, Police Fire Department, Ambulance: 911

Hospital: 718-904-3333

Montefiore Weiler Hospital, 1825 Eastchester Road, Bronx, NY

Map and directions to the hospital are attached.

Other Numbers:

NYSDEC Spills Hotline: 1-800-457-7362

National Response Center: 1-800-424-8802

Poison Control: 1-800-222-1222

OER Project Manager: 212-442-6372 (Hannah Moore)

Site Safety Officer: 908-334-1080 (Meredith Anke)

5.3 PERSONNEL RESPONSIBILITIES DURING AN EMERGENCY

The construction manager (CM) is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer (SSO) shall act as the construction manager's on-site designee and perform the following tasks:

1. Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;
2. Ensure that appropriate federal, state, and local agencies are informed and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;

3. Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;
4. Determine the cause of incidents and make recommendations to prevent recurrence; and,
5. Ensure that all required reports have been prepared.

5.4 MEDICAL EMERGENCIES

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. An accident report shall be filled out for any injury. A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital.

5.5 FIRE OR EXPLOSION

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on-site. If it is safe to do so, site personnel may use fire-fighting equipment available on site or remove or isolate flammable or other hazardous materials that may contribute to the fire.

5.6 EVACUATION ROUTES

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed. Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication. When evacuating the site, personnel will follow these instructions:

1. Keep upwind of smoke, vapors, or spill location.
2. Exit through the decontamination corridor if possible.
3. If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.
4. The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.

5. If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

5.7 SPILL CONTROL PROCEDURES

Spills associated with site activities may be attributed to project equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

6.0 GENERAL SAFETY CONSIDERATIONS

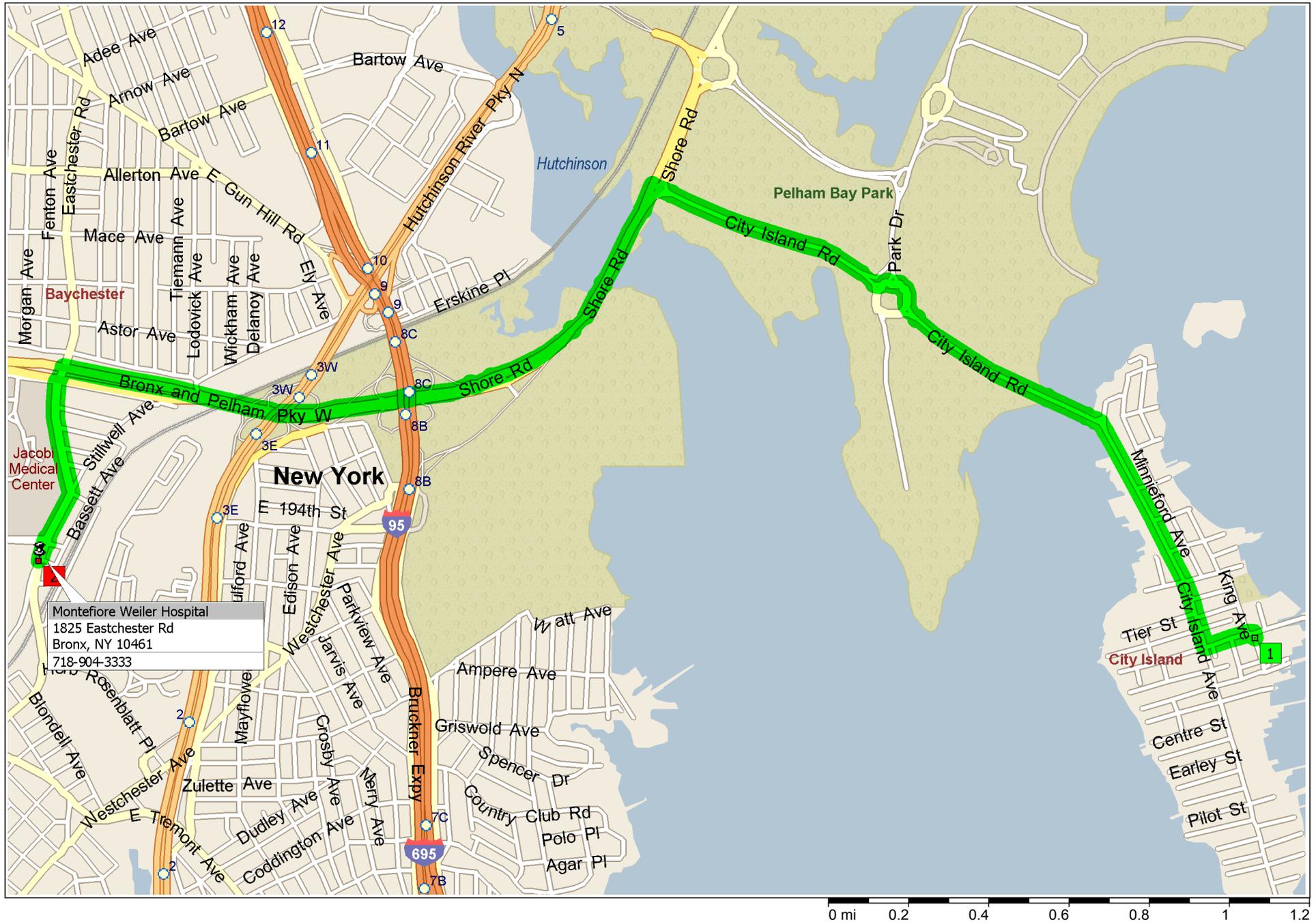
All personnel conducting site activities must read this CHASP, be familiar with its requirements, and agree to its implementation. All other personnel onsite for regulatory, observational and other activities not directly associated with site activities must read this CHASP for hazard communication purposes.

In addition to the specific requirements of this CHASP, common sense should be used at all times. The general safety rules and practices below will be in effect at the Site at the discretion of the Construction Manager, safety officers, or other authorized personnel.

1. The site will be suitably marked or barricaded as necessary to prevent unauthorized visitors but not hinder emergency services if needed.
2. As needed, all open holes, trenches and obstacles will be properly barricaded in accordance with local site requirements. These requirements will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench or obstacle. If holes are required to be left open during nonworking hours, they will be adequately decked over or barricaded and sufficiently lighted.
3. Before any digging or boring operations are conducted, underground utility locations will be identified. All boring, excavation and other site work will be planned and performed with consideration for underground lines.
4. Either workers or other people will enact dust-mitigating procedures when there exists the potential for the inhalation of dust particles.
5. The act of smoking and ignition sources in the vicinity of potentially flammable or contaminated material is strictly prohibited.
6. Drilling, boring, and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; canopies; building and other structures and construction; and natural features such as trees, boulders, bodies of water, and terrain.
7. When working in areas where flammable vapors may be present, particular care shall be exercised with tools and equipment that may be sources of ignition. All tools and equipment provided must be properly bonded and/or grounded. Metal buttons and zippers are prohibited on safety clothing for areas that may contain a flammable or explosive atmosphere.
8. Approved and appropriate safety equipment (as specified in this CHASP), such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required.

9. Beards interfere with respirator fit and are not allowed within the site boundaries because all site personnel may be called upon to use respirator protection in some situations.
10. No smoking, eating, chewing tobacco, gum chewing or drinking will be allowed in the contaminated areas.
11. Contaminated tools and hands must be kept away from the face.
12. Personnel must use personal hygiene safe guards (washing up) at the end of the shift or as soon as possible after leaving the Site.
13. Persons with long hair and/or loose fitting clothing that could become entangled in power equipment must take adequate precautions.
14. Horseplay is prohibited in the work area.
15. Work while under the influence of intoxicants, narcotics or controlled substances is prohibited.

Attachment B - Hospital Map

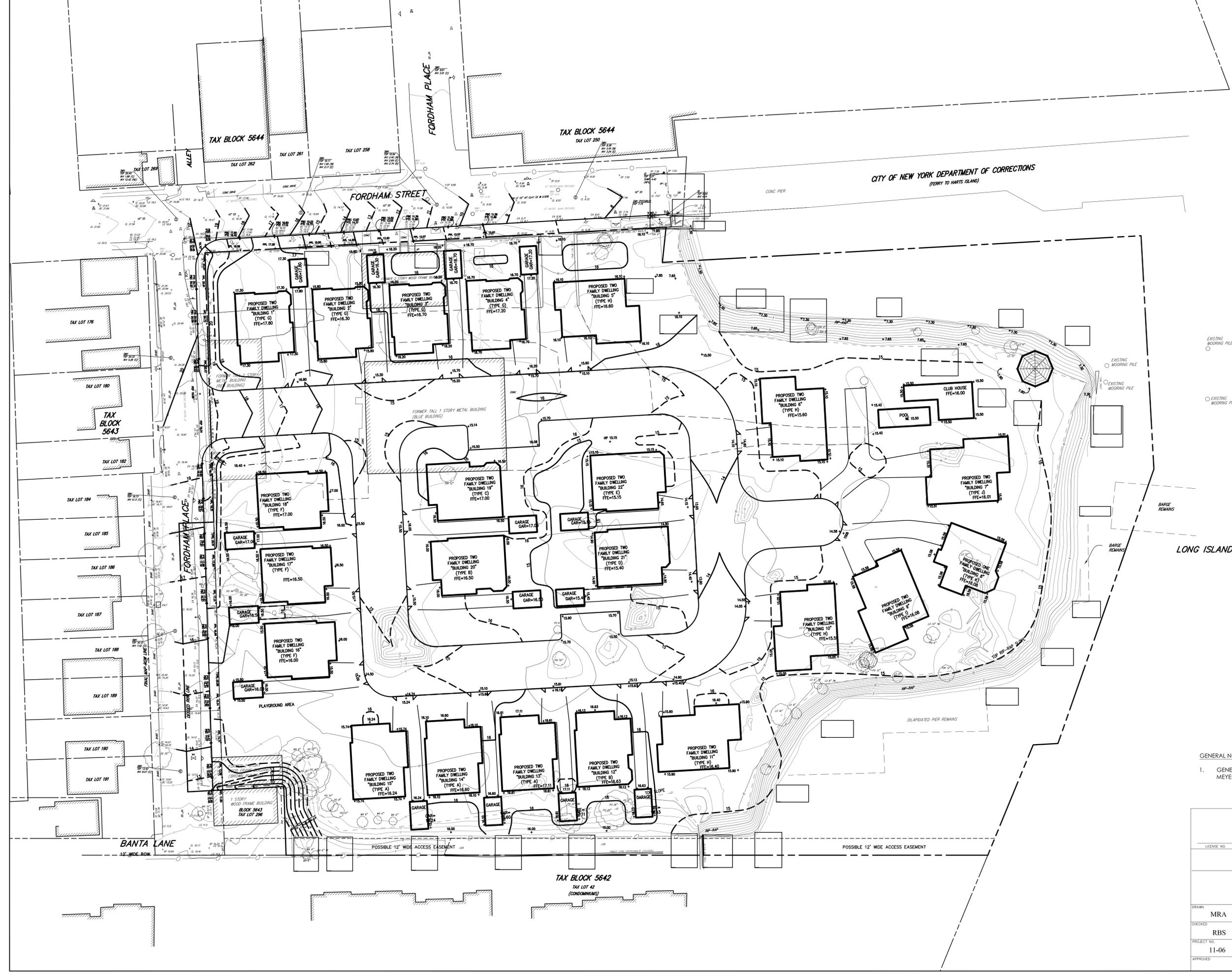


Montefiore Weiler Hospital
 1825 Eastchester Rd
 Bronx, NY 10461
 718-904-3333

Addendum 5
Figures



**FIGURE 1
SITE LOCATION MAP**



GENERAL NOTES:
 1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING PREPARED BY JOHN MEYER CONSULTING, ENTITLED 'EXISTING CONDITIONS PLAN'.

ROBERT B. SIMPSON, P.E. PROFESSIONAL ENGINEER		
LICENSE NO.	SIGNATURE	DATE
REDEVELOPMENT PLAN		
CITY ISLAND ESTATES FORDHAM STREET & FORDHAM PLACE CITY ISLAND, NEW YORK		
DRAWN MRA	SCALE 1" = 30'	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872
CHECKED RBS	DATE 1 MAY 13	
PROJECT NO. 11-06	DWG NO. FIG-2	
APPROVED		



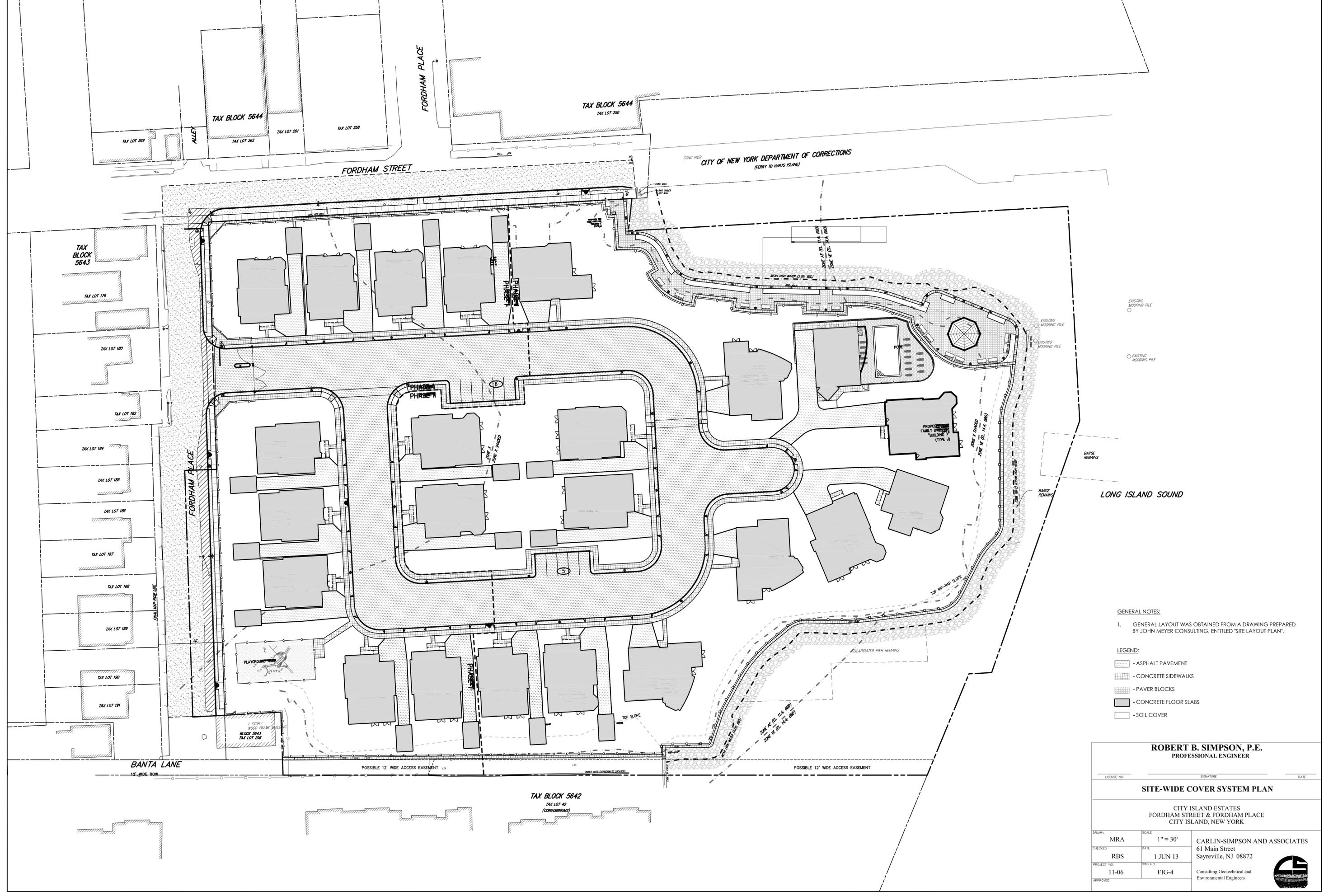


GENERAL NOTES:
 1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING PREPARED BY JOHN MEYER CONSULTING, ENTITLED 'SITE LAYOUT PLAN'.

LEGEND:
 ◆ - SOIL BORING, MONITORING WELL, OR SOIL VAPOR SAMPLE LOCATION

ROBERT B. SIMPSON, P.E. PROFESSIONAL ENGINEER		
LICENSE NO. _____	SIGNATURE _____	DATE _____
HOT-SPOT EXCAVATION PLAN		
CITY ISLAND ESTATES FORDHAM STREET & FORDHAM PLACE CITY ISLAND, NEW YORK		
DRAWN: MRA	SCALE: 1" = 30'	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872 Consulting Geotechnical and Environmental Engineers
CHECKED: RBS	DATE: 1 JUN 13	
PROJECT NO.: 11-06	DWG NO.: FIG-3	
APPROVED: _____		





GENERAL NOTES:
 1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING PREPARED BY JOHN MEYER CONSULTING, ENTITLED "SITE LAYOUT PLAN".

- LEGEND:**
- ASPHALT PAVEMENT
 - CONCRETE SIDEWALKS
 - PAVER BLOCKS
 - CONCRETE FLOOR SLABS
 - SOIL COVER

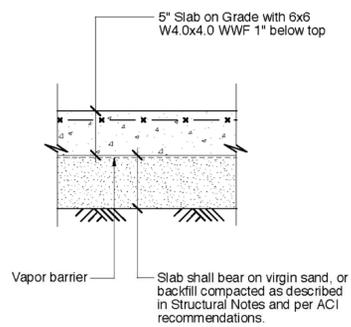
ROBERT B. SIMPSON, P.E.
 PROFESSIONAL ENGINEER

SITE-WIDE COVER SYSTEM PLAN

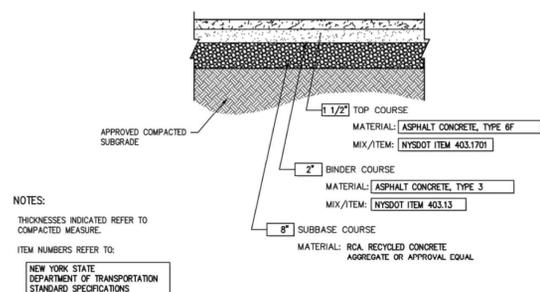
CITY ISLAND ESTATES
 FORDHAM STREET & FORDHAM PLACE
 CITY ISLAND, NEW YORK

DRAWN MRA	SCALE 1" = 30'	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872 Consulting Geotechnical and Environmental Engineers
CHECKED RBS	DATE 1 JUN 13	
PROJECT NO. 11-06	DWG NO. FIG-4	
APPROVED		



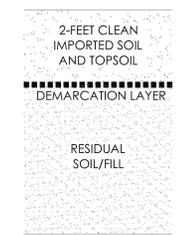


TYPICAL FLOOR SLAB SECTION

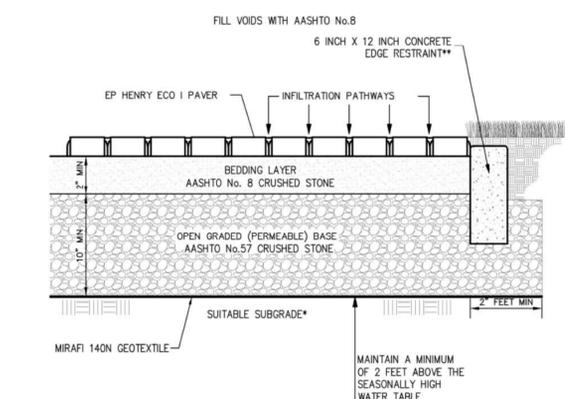


NOTES:
THICKNESSES INDICATED REFER TO COMPACTED MEASURE.
ITEM NUMBERS REFER TO:
NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS

SITE PAVEMENT SECTION

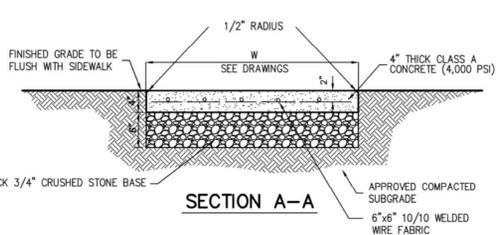
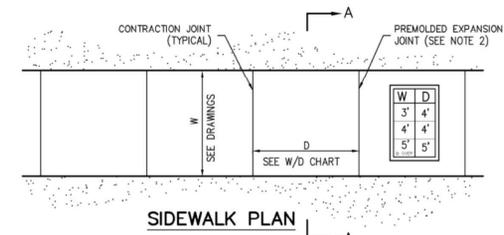


LANDSCAPE AREA SECTION



- AVOID COMPACTION OF THE NATURAL SUBGRADE SOILS UNLESS PROVISIONS ARE MADE TO ENSURE ADEQUATE PERCOLATION AFTER COMPACTION. UNDERDRAINS MAY BE USED TO PROVIDE POSITIVE DRAINAGE. SEE SPECIFICATIONS FOR MORE INFORMATION.
 - OPEN GRADED BASE MATERIAL TO BE INSTALLED IN 6" LIFTS AND COMPACTED. THERE SHOULD BE A MINIMUM OF FOUR PASSES WITH NO VISIBLE MOVEMENT OF THE MATERIAL.
 - AASHTO #8 MATERIAL TO BE MOST PRIOR TO INSTALLATION. PRESS MATERIAL INTO TOP OF AASHTO #57 WITH COMPACTION EQUIPMENT.
 - PAVERS TO BE SET USING 5000 LBF PLATE COMPACTOR.
 - FOR BEST RESULTS, MAINTAIN GRADES OF LESS THAN 2 PERCENT. SUBGRADE SOILS MUST NOT BE SLOPED.
- *FOR CLAYEY SOILS AND SOILS WITH LOW PERMEABILITY, CONSULT A GEOTECHNICAL ENGINEER. AREAS WHERE ROCK IS FOUND AT SUBGRADE SHALL BE OVERCUT TO A MINIMUM OF 12 INCHES AND REPLACED WITH A SUITABLE (PERMEABLE) SUBGRADE MATERIAL.
** EP HENRY'S CURBSTONE MAY BE SUBSTITUTED WHEN SET IN CONCRETE.

CONCRETE PAVERS SECTION



- NOTES:
- SIDEWALK CROSS SLOPE SHALL BE 1% MIN. TO 2% MAX.
 - PROVIDE 1/2" PREFORMED EXPANSION JOINTS AT 20' INTERVALS UNLESS OTHERWISE DIRECTED.
 - REINFORCING SHALL NOT EXTEND THROUGH EXPANSION JOINTS.
 - SIDEWALK SHALL HAVE LIGHT BROOM FINISH.

CONCRETE SIDEWALK & DRIVEWAY SECTION

ROBERT B. SIMPSON, P.E. PROFESSIONAL ENGINEER	
LICENSE NO. _____	SIGNATURE _____
SITE-WIDE COVER SYSTEM SECTIONS	
CITY ISLAND ESTATES FORDHAM STREET & FORDHAM PLACE CITY ISLAND, NEW YORK	
DRAWN MRA	SCALE NONE
CHECKED RBS	DATE 27 NOV 13
PROJECT NO. 11-06	DWG NO. FIG-5
APPROVED _____	
CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872 Consulting Geotechnical and Environmental Engineers	



Addendum 6
Pre-Delineation Sampling Results

Table 3
Summary Table for Delineation Sampling

Sample No.	Depth (feet)	Date	Mercury (mg/kg)	Lead (mg/kg)
B-111_4-5	4'-5'	5-Aug-13	0.74	NA
B-111-01_3-4	3'-4'	5-Aug-13	12	NA
B-111-02_3-4	3'-4'	5-Aug-13	<0.072	NA
B-111-03_3-4	3'-4'	5-Aug-13	<0.081	NA
B-111-04_3-4	3'-4'	5-Aug-13	0.12	NA
B-111-05_3-4	3'-4'	5-Aug-13	0.31	NA
B-110_2-3	2'-3'	5-Aug-13	NA	430
B-110-01_0-2	0-2'	5-Aug-13	NA	180
B-110-02_0-2	0-2'	5-Aug-13	NA	120
B-110-03_0-2	0-2'	5-Aug-13	NA	8.3
B-110-04_0-2	0-2'	5-Aug-13	NA	91
NYSDEC Track 4 SCO:			3.0	1,200

Notes:

All results reported in mg/kg

Values that exceed the SCO are highlighted and bold

NA – Not Analyzed

SCO – Soil Cleanup Objectives



ANALYTICAL REPORT

Lab Number:	L1314906
Client:	Integral Consulting, Inc. 61 Broadway Suite 1601 New York, NY 10006-2756
ATTN:	Keith Brodock
Phone:	(212) 962-4301
Project Name:	CITY ISLAND
Project Number:	E052
Report Date:	08/13/13

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1314906-01	B-111_4-5	CITY ISLAND, BRONX, NY	08/05/13 08:10
L1314906-02	B-111_5-6	CITY ISLAND, BRONX, NY	08/05/13 08:12
L1314906-03	B-111_6-7	CITY ISLAND, BRONX, NY	08/05/13 08:14
L1314906-04	B-111_7-8	CITY ISLAND, BRONX, NY	08/05/13 08:16
L1314906-05	B-111-01_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:20
L1314906-06	B-111-02_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:25
L1314906-07	B-111-03_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:30
L1314906-08	B-111-04_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:40
L1314906-09	B-111-04_7-8	CITY ISLAND, BRONX, NY	08/05/13 08:42
L1314906-10	B-111-05_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:55
L1314906-11	B-111-06_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:05
L1314906-12	B-111-06_7-8	CITY ISLAND, BRONX, NY	08/05/13 09:08
L1314906-13	B-111-07_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:18
L1314906-14	B-111-08_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:32
L1314906-15	B-111-09_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:35
L1314906-16	B-111-09_5-6	CITY ISLAND, BRONX, NY	08/05/13 09:40
L1314906-17	B-111-09_7-8	CITY ISLAND, BRONX, NY	08/05/13 09:45
L1314906-18	B-111-10_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:50
L1314906-19	B-111-11_3-4	CITY ISLAND, BRONX, NY	08/05/13 09:57
L1314906-20	B-111-11_5-6	CITY ISLAND, BRONX, NY	08/05/13 10:08
L1314906-21	B-111-11_7-8	CITY ISLAND, BRONX, NY	08/05/13 10:10
L1314906-22	B-111-12_3-4	CITY ISLAND, BRONX, NY	08/05/13 10:15
L1314906-23	B-111-13_3-4	CITY ISLAND, BRONX, NY	08/05/13 10:20
L1314906-24	B-111-14_3-4	CITY ISLAND, BRONX, NY	08/05/13 10:23
L1314906-25	B-111-14_5-6	CITY ISLAND, BRONX, NY	08/05/13 10:28
L1314906-26	B-111-14_7-8	CITY ISLAND, BRONX, NY	08/05/13 10:30
L1314906-27	B-111-15_3-4	CITY ISLAND, BRONX, NY	08/05/13 10:40
L1314906-28	B-111-16_3-4	CITY ISLAND, BRONX, NY	08/05/13 10:55
L1314906-29	B-111-16_5-6	CITY ISLAND, BRONX, NY	08/05/13 11:00
L1314906-30	B-111-16_7-8	CITY ISLAND, BRONX, NY	08/05/13 11:05
L1314906-31	B-110_2-3	CITY ISLAND, BRONX, NY	08/05/13 12:32

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1314906-32	B-110_3-4	CITY ISLAND, BRONX, NY	08/05/13 12:34
L1314906-33	B-110_4-5	CITY ISLAND, BRONX, NY	08/05/13 12:36
L1314906-34	B-110_5-6	CITY ISLAND, BRONX, NY	08/05/13 12:38
L1314906-35	B-110_6-7	CITY ISLAND, BRONX, NY	08/05/13 12:40
L1314906-36	B-110_7-8	CITY ISLAND, BRONX, NY	08/05/13 12:42
L1314906-37	B-110-01_0-2	CITY ISLAND, BRONX, NY	08/05/13 12:43
L1314906-38	B-110-02_0-2	CITY ISLAND, BRONX, NY	08/05/13 12:45
L1314906-39	B-110-02_4-5	CITY ISLAND, BRONX, NY	08/05/13 12:47
L1314906-40	B-110-02_7-8	CITY ISLAND, BRONX, NY	08/05/13 12:50
L1314906-41	B-110-03_0-2	CITY ISLAND, BRONX, NY	08/05/13 12:55
L1314906-42	B-110-04_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:08
L1314906-43	B-110-05_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:10
L1314906-44	B-110-05_4-5	CITY ISLAND, BRONX, NY	08/05/13 13:12
L1314906-45	B-110-05_7-8	CITY ISLAND, BRONX, NY	08/05/13 13:14
L1314906-46	B-110-06_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:21
L1314906-47	B-110-07_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:25
L1314906-48	B-110-08_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:30
L1314906-49	B-110-09_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:34
L1314906-50	B-110-10_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:38
L1314906-51	B-110-11_0-2	CITY ISLAND, BRONX, NY	08/05/13 13:45
L1314906-52	B-110-11_4-5	CITY ISLAND, BRONX, NY	08/05/13 13:50
L1314906-53	B-110-11_7-8	CITY ISLAND, BRONX, NY	08/05/13 13:55
L1314906-54	B-110-12_0-2	CITY ISLAND, BRONX, NY	08/05/13 14:05
L1314906-55	B-110-13_0-2	CITY ISLAND, BRONX, NY	08/05/13 14:12
L1314906-56	B-110-14_0-2	CITY ISLAND, BRONX, NY	08/05/13 14:20
L1314906-57	B-110-15_0-2	CITY ISLAND, BRONX, NY	08/05/13 14:25
L1314906-58	B-110-16_0-2	CITY ISLAND, BRONX, NY	08/05/13 14:30
L1314906-59	B-110-16_4-5	CITY ISLAND, BRONX, NY	08/05/13 14:35
L1314906-60	B-110-16_7-8	CITY ISLAND, BRONX, NY	08/05/13 14:40

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Michelle M. Morris

Title: Technical Director/Representative

Date: 08/13/13

METALS

Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-01

Date Collected: 08/05/13 08:10

Client ID: B-111_4-5

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Mercury, Total	0.74		mg/kg	0.09	0.02	1	08/12/13 10:56	08/12/13 13:01	EPA 7471B	1,7471B	MC
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-05

Date Collected: 08/05/13 08:20

Client ID: B-111-01_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Mercury, Total	12		mg/kg	0.40	0.08	5	08/12/13 10:56	08/12/13 13:53	EPA 7471B	1,7471B	MC
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-06

Date Collected: 08/05/13 08:25

Client ID: B-111-02_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Mercury, Total	ND		mg/kg	0.07	0.02	1	08/12/13 10:56	08/12/13 13:05	EPA 7471B	1,7471B	MC
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-07

Date Collected: 08/05/13 08:30

Client ID: B-111-03_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Mercury, Total	ND		mg/kg	0.08	0.02	1	08/12/13 10:56	08/12/13 13:07	EPA 7471B	1,7471B	MC
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-08

Date Collected: 08/05/13 08:40

Client ID: B-111-04_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Mercury, Total	0.12		mg/kg	0.08	0.02	1	08/12/13 10:56	08/12/13 13:09	EPA 7471B	1,7471B	MC
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-31

Date Collected: 08/05/13 12:32

Client ID: B-110_2-3

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Lead, Total	430		mg/kg	2.3	0.09	1	08/13/13 08:39	08/13/13 13:21	EPA 3050B	1,6010C	TT
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-37

Date Collected: 08/05/13 12:43

Client ID: B-110-01_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Lead, Total	180		mg/kg	2.2	0.09	1	08/13/13 08:39	08/13/13 13:52	EPA 3050B	1,6010C	TT
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-38

Date Collected: 08/05/13 12:45

Client ID: B-110-02_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Lead, Total	120		mg/kg	2.2	0.09	1	08/13/13 08:39	08/13/13 13:56	EPA 3050B	1,6010C	TT
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-41

Date Collected: 08/05/13 12:55

Client ID: B-110-03_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Lead, Total	8.3		mg/kg	2.1	0.09	1	08/13/13 08:39	08/13/13 13:59	EPA 3050B	1,6010C	TT
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-42

Date Collected: 08/05/13 13:08

Client ID: B-110-04_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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Total Metals - Westborough Lab

Lead, Total	91		mg/kg	2.3	0.09	1	08/13/13 08:39	08/13/13 14:03	EPA 3050B	1,6010C	TT
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Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01,05-08 Batch: WG628175-1									
Mercury, Total	ND	mg/kg	0.08	0.02	1	08/12/13 10:56	08/12/13 12:32	1,7471B	MC

Prep Information

Digestion Method: EPA 7471B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 31,37-38,41-42 Batch: WG628508-1									
Lead, Total	ND	mg/kg	2.0	0.08	1	08/13/13 08:39	08/13/13 12:47	1,6010C	TT

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis Batch Quality Control

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01,05-08 Batch: WG628175-2 SRM Lot Number: 0518-10-02								
Mercury, Total	108		-		67-133	-		
Total Metals - Westborough Lab Associated sample(s): 31,37-38,41-42 Batch: WG628508-2 SRM Lot Number: 0518-10-02								
Lead, Total	86		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01,05-08 QC Batch ID: WG628175-4 QC Sample: L1314904-03 Client ID: MS Sample												
Mercury, Total	0.08J	0.166	0.28	169	Q	-	-		70-130	-		35
Total Metals - Westborough Lab Associated sample(s): 31,37-38,41-42 QC Batch ID: WG628508-4 QC Sample: L1314615-27 Client ID: MS Sample												
Lead, Total	55.	39	100	115		-	-		75-125	-		35

Lab Duplicate Analysis

Batch Quality Control

Project Name: CITY ISLAND

Project Number: E052

Lab Number: L1314906

Report Date: 08/13/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01,05-08 QC Batch ID: WG628175-3 QC Sample: L1314904-03 Client ID: DUP Sample						
Mercury, Total	0.08J	0.03J	mg/kg	NC		35
Total Metals - Westborough Lab Associated sample(s): 31,37-38,41-42 QC Batch ID: WG628508-3 QC Sample: L1314615-27 Client ID: DUP Sample						
Lead, Total	55.	53	mg/kg	4		35

INORGANICS & MISCELLANEOUS

Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-01

Date Collected: 08/05/13 08:10

Client ID: B-111_4-5

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.6		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-05
Client ID: B-111-01_3-4
Sample Location: CITY ISLAND, BRONX, NY
Matrix: Soil

Date Collected: 08/05/13 08:20
Date Received: 08/06/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-06
Client ID: B-111-02_3-4
Sample Location: CITY ISLAND, BRONX, NY
Matrix: Soil

Date Collected: 08/05/13 08:25
Date Received: 08/06/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.6		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-07

Date Collected: 08/05/13 08:30

Client ID: B-111-03_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.0		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-08

Date Collected: 08/05/13 08:40

Client ID: B-111-04_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-31

Date Collected: 08/05/13 12:32

Client ID: B-110_2-3

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-37

Date Collected: 08/05/13 12:43

Client ID: B-110-01_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-38

Date Collected: 08/05/13 12:45

Client ID: B-110-02_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.7		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-41

Date Collected: 08/05/13 12:55

Client ID: B-110-03_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.2		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

SAMPLE RESULTS

Lab ID: L1314906-42

Date Collected: 08/05/13 13:08

Client ID: B-110-04_0-2

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	08/07/13 20:18	30,2540G	RT



Lab Duplicate Analysis

Batch Quality Control

Project Name: CITY ISLAND

Project Number: E052

Lab Number: L1314906

Report Date: 08/13/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,05-08,31,37-38,41-42 QC Batch ID: WG627297-1 QC Sample: L1314906-01 Client ID: B-111_4-5						
Solids, Total	74.6	79.2	%	6		20

Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1314906-01A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)
L1314906-02A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-03A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-04A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-05A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)
L1314906-06A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)
L1314906-07A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)
L1314906-08A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)
L1314906-09A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-10A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-11A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-12A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-13A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-14A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-15A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-16A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-17A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-18A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-19A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-20A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-21A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-22A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-23A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-24A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-25A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-26A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-27A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()

*Values in parentheses indicate holding time in days

Project Name: CITY ISLAND

Lab Number: L1314906

Project Number: E052

Report Date: 08/13/13

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1314906-28A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-29A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-30A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-31A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),PB-TI(180)
L1314906-32A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-33A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-34A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-35A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-36A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-37A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),PB-TI(180)
L1314906-38A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),PB-TI(180)
L1314906-39A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-40A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-41A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),PB-TI(180)
L1314906-42A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),PB-TI(180)
L1314906-43A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-44A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-45A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-46A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-47A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-48A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-49A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-50A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-51A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-52A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-53A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-54A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-55A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-56A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-57A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-58A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-59A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()
L1314906-60A	Amber 120ml unpreserved	A	N/A	2.1	Y	Absent	HOLD()

*Values in parentheses indicate holding time in days



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.

Report Format: DU Report with "J" Qualifiers



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

Data Qualifiers

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with "J" Qualifiers



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1314906
Report Date: 08/13/13

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



C **r** **/A** **r** **P** **r** **S** **r**
 Last revised July 2, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
 For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

C **r** **P** **r** **Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.**

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. *Organic Parameters:* Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). *Microbiology Parameters:* Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. *Organic Parameters:* PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. *Microbiology Parameters:* Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. *Organic Parameters:* PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP (Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270).)

S **r** **Certificate/Lab ID: 003155. NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. *Organic Parameters:* EPA 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. *Organic Parameters:* EPA 608, 624, 625.)

Hazardous and Solid Waste (Inorganic Parameters: EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. *Organic Parameters:* 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

M **r** **S** **r** **Certificate/Lab ID: 2009024.**

Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500CI-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. *Organic Parameters:* 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CI-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. *Organic Parameters:* 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330,)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

LA Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

NE LAP/TNI S A d

EPA Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. EPA 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. EPA N Iodomethane (methyl iodide), Methyl methacrylate. EPA S Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. EPA A PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. EPA C Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. EPA 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix. EPA Total Petroleum Hydrocarbons, Oil & Grease.



ANALYTICAL REPORT

Lab Number:	L1315636
Client:	Integral Consulting, Inc. 61 Broadway Suite 1601 New York, NY 10006-2756
ATTN:	Keith Brodock
Phone:	(212) 962-4301
Project Name:	CITY ISLAND
Project Number:	E052
Report Date:	08/15/13

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1315636-01	B-111-05_3-4	CITY ISLAND, BRONX, NY	08/05/13 08:55

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Michelle M. Morris

Title: Technical Director/Representative

Date: 08/15/13

METALS

Project Name: CITY ISLAND

Lab Number: L1315636

Project Number: E052

Report Date: 08/15/13

SAMPLE RESULTS

Lab ID: L1315636-01

Date Collected: 08/05/13 08:55

Client ID: B-111-05_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Mercury, Total	0.31		mg/kg	0.08	0.02	1	08/15/13 09:24	08/15/13 11:32	EPA 7471B	1,7471B	MC



Project Name: CITY ISLAND

Lab Number: L1315636

Project Number: E052

Report Date: 08/15/13

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG628919-1									
Mercury, Total	ND	mg/kg	0.08	0.02	1	08/15/13 09:24	08/15/13 10:41	1,7471B	MC

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: CITY ISLAND

Project Number: E052

Lab Number: L1315636

Report Date: 08/15/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG628919-2 SRM Lot Number: 0518-10-02								
Mercury, Total	111		-		67-133	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: CITY ISLAND

Lab Number: L1315636

Project Number: E052

Report Date: 08/15/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG628919-4 QC Sample: L1315408-01 Client ID: MS Sample												
Mercury, Total	ND	0.213	0.25	117		-	-		70-130	-		35

Lab Duplicate Analysis

Batch Quality Control

Project Name: CITY ISLAND

Project Number: E052

Lab Number: L1315636

Report Date: 08/15/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG628919-3 QC Sample: L1315408-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/kg	NC		35

INORGANICS & MISCELLANEOUS

Project Name: CITY ISLAND

Lab Number: L1315636

Project Number: E052

Report Date: 08/15/13

SAMPLE RESULTS

Lab ID: L1315636-01

Date Collected: 08/05/13 08:55

Client ID: B-111-05_3-4

Date Received: 08/06/13

Sample Location: CITY ISLAND, BRONX, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.0		%	0.100	NA	1	-	08/14/13 01:28	30,2540G	RT



Lab Duplicate Analysis

Batch Quality Control

Project Name: CITY ISLAND

Project Number: E052

Lab Number: L1315636

Report Date: 08/15/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG628763-1 QC Sample: L1315636-01 Client ID: B-111-05_3-4						
Solids, Total	93.0	90.8	%	2		20

Project Name: CITY ISLAND

Lab Number: L1315636

Project Number: E052

Report Date: 08/15/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1315636-01A	Amber 250ml unpreserved	A	N/A	2.1	Y	Absent	TS(7),HG-T(28)

*Values in parentheses indicate holding time in days

Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.

Report Format: DU Report with "J" Qualifiers



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

Data Qualifiers

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with "J" Qualifiers



Project Name: CITY ISLAND
Project Number: E052

Lab Number: L1315636
Report Date: 08/15/13

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



C **r** **/A** **r** **P** **r** **S** **r**
 Last revised July 2, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
 For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

C **r** **P** **r** **S** **r** **Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.**

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Selenium, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. *Organic Parameters:* Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). *Microbiology Parameters:* Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. *Organic Parameters:* PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. *Microbiology Parameters:* Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. *Organic Parameters:* PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270).)

S **r** **Certificate/Lab ID: 003155. NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. *Organic Parameters:* EPA 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. *Organic Parameters:* EPA 608, 624, 625.)

Hazardous and Solid Waste (Inorganic Parameters: EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. *Organic Parameters:* 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

M **r** **S** **r** **Certificate/Lab ID: 2009024.**

Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500CI-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. *Organic Parameters:* 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CI-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. *Organic Parameters:* 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014, 9040B, 9045C, 6010C, 6020A, 7471B, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B, 9038, 9251. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260C, 8270D, 8330, 8151A, 8081B, 8082A, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035.)

M **E** **P** **Certificate/Lab ID:** M-MA086.

Drinking Water (Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

Non-Potable Water (Inorganic Parameters: (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

N **E** **S** **Certificate/Lab ID:** 200307. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, SW-846 6010C, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9010C, 9030, 9040B, 9040C, SM2120B, 2310B, 2320B, 2340B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 4500SO3-B, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D, 3060A. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082A, 8081B, 8015C, 8151A, 8330, 8270D-SIM.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010C, 6020A, 7196A, 7471B, 1010, 1010A, 1030, 9010C, 9012B, 9014, 9030B, 9040C, 9045C, 9045D, 9050, 9065, 9251, 1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3050B, 3580A, 3620D, 3630C, 5030B, 5035, 8260C, 8270D, 8270D-SIM, 8330, 8151A, 8015B, 8015C, 8082A, 8081B.)

N **E** **S** **Certificate/Lab ID:** 2064. **NELAP Accredited.**

Drinking Water (Organic Parameters: EPA Di-isopropyl ether (DIPE), Ethyl-t-butyl ether (ETBE), Tert-amyl methyl ether (TAME)).

Non-Potable Water (Organic Parameters: EPA 1,3,5-Trichlorobenzene. EPA CMTPH.)

Solid & Chemical Materials (Organic Parameters: EPA 1,3,5-Trichlorobenzene.)

N **P** **Certificate/Lab ID:** MA935. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.1, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500CI-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, SW-846 9040B, 9040C, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010C, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ EPH.)

9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035L, 5035H, NJ EPH.)

Norfolk County Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO₃-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH₃-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO₃-F, 4500-NO₂-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 3015, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330, 8082A, EPA 3510C, 5030B, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

Norfolk County Elected Norfolk County Certificate/Lab ID : 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO₃-F, 353.2, 4500P-E, 4500SO₄-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311,1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania County Elected Prince Georges County Certificate/Lab ID : 68-03671. NELAP Accredited.

Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO₃-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A,3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH₃-H, 4500NO₂-B, 4500NO₃-F, 4500S-D, 4500SO₃-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH₃-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

Randolph County Certificate/Lab ID: LAO00065. NELAP Accredited via NJ-DEP.

Refer to MA-DEP Certificate for Potable and Non-Potable Water.

Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Tarrant County Elected Queen Anne's County Certificate/Lab ID: T104704476. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH₃-H, 4500NO₂B, 4500P-E, 4500 S²⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Prince Georges County Elected Loudoun County Certificate/Lab ID: 460195. NELAP Accredited.

Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO₃-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C, 4500NH₃-H, 4500NO₂-B, 4500NO₃-F, 4500 SO₃-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm

9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330,)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

LA Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

NELAP/TNI S A d

EPA Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. EPA 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. EPA N Iodomethane (methyl iodide), Methyl methacrylate. EPA S Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. EPA A PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. EPA C Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. EPA 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix. EPA Total Petroleum Hydrocarbons, Oil & Grease.



NJ CHAIN OF CUSTODY

PAGE 1 OF 6

Date Rec'd in Lab: 8/7/13

ALPHA Job #: 6134906 @ 11315236

WESTBORO, MA
8 Walkup Drive
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: CITY ISLAND
Project Location: CITY ISLAND, BLONX, NY
Project #: E052
Project Manager: KEITH BRODOCK
ALPHA Quote #:

Report Type

Data Summary NJ Full
 NJ Reduced Other ADEX

Billing Information

Same as Client info PO #:

Client Information

Client: INTEGRAL CONSULTING
Address: 61 BROADWAY SUITE 1601
NY, NY 10006
Phone: 212-962-4301
Fax: 212-962-4302
Email: KBRODOCK@INTEGRAL-CORP.COM
 These samples have been previously analyzed by Alpha

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: 8/13/13 Time: 8/15/13

Regulatory Requirements

SRS-Residential/Non Residential
 SRS-Impact To Groundwater
 NJ Ground Water Quality Standards
 Other

Site Information

Is this site impacted by Petroleum?
Yes / No (circle one)
(Please indicate Petroleum Product - See Table 2-1 on reverse side)
Petroleum Product: _____
Are any samples for waste disposal?
Yes / No (circle one)
(Please indicate which samples below in Sample Specific Comments field)

For EPH you MUST indicate Category 1 or 2. Please check one of the following:

Category 1 Category 2

ANALYSIS	LEAD	Mercury	Total Hg	SAMPLE HANDLING		TOTAL # BOTTLES
				Filtration	Preservation	
				<input type="checkbox"/> Done	<input type="checkbox"/> Lab to do	
				<input type="checkbox"/> Not needed	<input type="checkbox"/> Lab to do	
				<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
				<i>(Please specify below)</i>		
				Sample Specific Comments		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS	LEAD	Mercury	Total Hg	SAMPLE HANDLING	TOTAL # BOTTLES
		Date	Time								
14700-01	B-III-4-5	8/5/13	0810	S	JPL		X				1
02	B-III-5-6		0812				X			Hold	
03	B-III-6-7		0814				X			Hold	
04	B-III-7-8		0816				X			Hold	
05	B-III-01-3-4		0820				X				
06	B-III-02-3-4		0825				X				
07	B-III-03-3-4		0830				X				
08	B-III-04-3-4		0840				X				
09	B-III-04-7-8		0842				X			Hold	
10	B-III-05-3-4		0855				X	X		Hold	

Preservative Code:
A = None
B = HCl
C = HNO3
D = H2SO4
E = NaOH
F = MeOH
G = NaHSO4
H = Other

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type: A
Preservative: A

Relinquished By: *[Signature]* Date/Time: 8/6/13 18:28
Received By: *[Signature]* Date/Time: 8/6/13 9:30
Albert M. Dubois *William McIlwain*

Please print clearly, legibly and completely. Sample can not be collected and turn around time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Addendum 7
Signage



NYC Brownfield Cleanup Program

This property is enrolled in the New York City Brownfield Cleanup Program for environmental remediation. This is a voluntary program administered by the NYC Office of Environmental Remediation.

For more information, log on to:
www.nyc.gov/oer



If you have questions or would like more information, please contact:

Hannah Moore at (212) 788-8841
or email us at brownfields@cityhall.nyc.gov

226 Fordham Place
Site #: 14CVCP169X

Addendum 8

Signed & Stamped RAWP Certification

CERTIFICATION

I, Robert B. Simpson, P.E., am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the On The Sound Site, Site numbers 14CVCP169X and 13RH-A145X.

I, Meredith R. Anke, P.E., am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the On The Sound Site, Site numbers 14CVCP169X and 13RH-A145X.

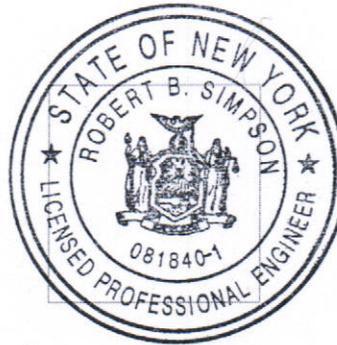
I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site 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.

Robert B. Simpson, P.E.
Name

081840
NYS PE License Number

[Signature]
Signature

12/3/13
Date



Meredith R. Anke, P.E.
QEP Name

[Signature]
QEP Signature

12/3/13
Date

Addendum 9
Insurance Fact Sheet

FACT SHEET – BIG PROGRAM INSURANCE REQUIREMENTS

Investigation Grants – for a developer or site owner to be eligible for a BIG investigation grant, its environmental consultant(s) must be:

- a Qualified Vendor in the BIG Program; and
- maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

Cleanup Grants – for a developer or site owner to be eligible for a BIG cleanup grant:

- Its general contractor or excavation/foundation contractor hired to perform remedial work must maintain Commercial General Liability (CGL) insurance of at least \$1M per occurrence and \$2M in the general aggregate. It is recommended that the general contractor or excavation/foundation contractor also maintain a Contractors Pollution Liability policy (CPL) of at least \$1M per occurrence.
- Its subcontractors who are hired by the general contractor etc. to perform remedial work at a site, including soil brokers and truckers, must also maintain a CGL policy in the amount and with the terms set forth above. It is recommended that subcontractors also maintain a CPL policy in the amount and with the terms set forth above.

The CGL policy, and the CPL policy if in force, must list the city, EDC and BRS as additional insureds, include completed operations coverage and be primary and non-contributory to any other insurance the additional insureds may have.

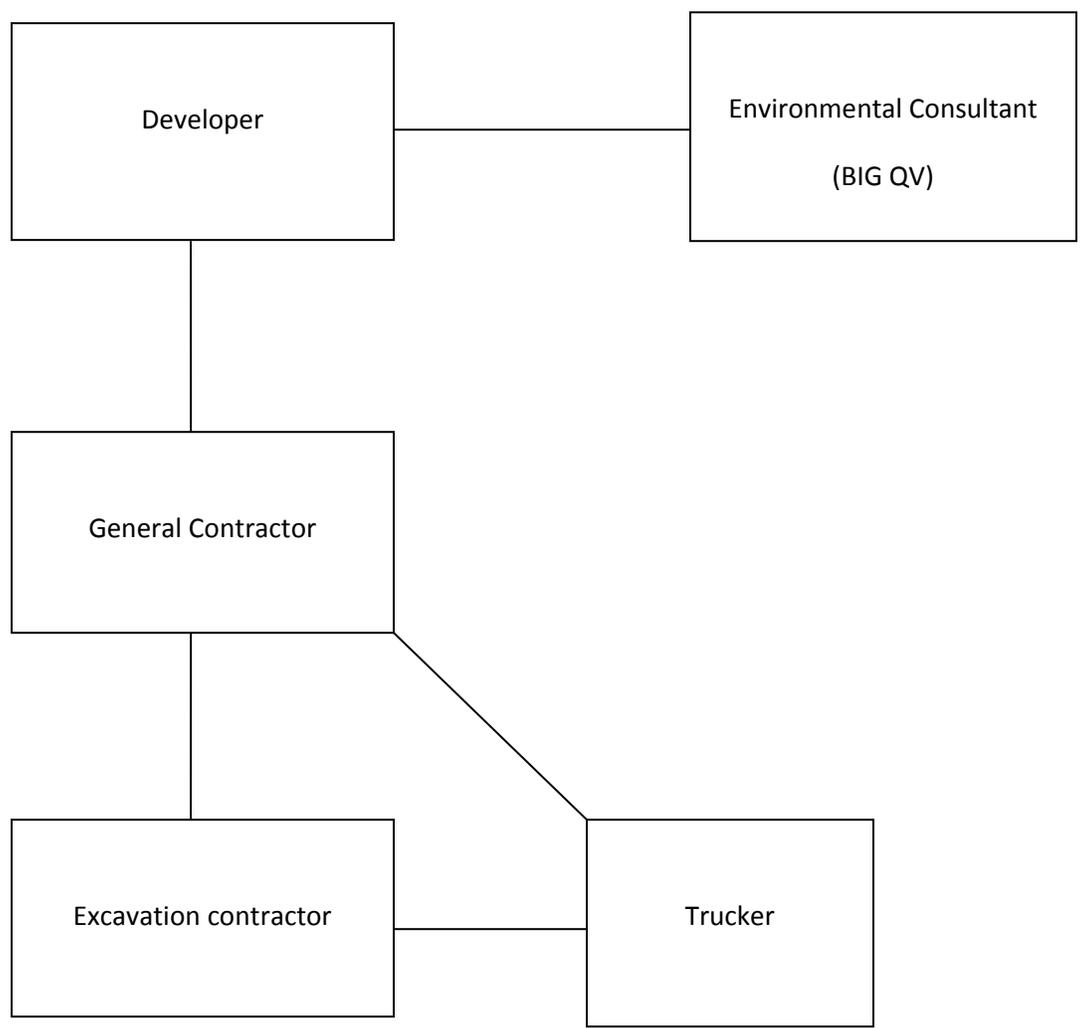
- Its environmental consultant(s) hired to oversee the cleanup must be:
 - a. a BIG Qualified Vendor; and
 - b. maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

If, in the alternative, the developer hires its environmental consultant to perform the cleanup, the environmental consultant must maintain CGL insurance in the amount and with the terms set forth above. It is recommended that the environmental consultant also maintain CPL coverage in the amount and with the terms set forth in the first two bulleted items listed above.

A schematic presenting the contractual relationships described above appears on page 2. Parties who must be named as Additional Insureds on Cleanup Grant insurance policies (CGL and CPL) are presented on page 3.

Example of Contractual Relationships for Cleanup Work

The Office of Environmental Remediation’s Voluntary Cleanup Plan program requires applicants to identify the parties who are engaged in active remediation of their sites including: the General Contractor hired to remediate and/or the excavation contractor hired to excavate soil from the site and the trucking firm(s) that remove soil from the site for disposal at approved facilit(ies).



The chart above shows contractual relationships that typically exist for projects that are enrolled in the Voluntary Cleanup Program.

BIG Program Additional Insureds

The full names and addresses of the additional insureds required under the Required CGL Policy and recommended CPL Policy are as follows:

“City and its officials and employees”
New York City Mayor’s Office of Environmental Remediation
253 Broadway, 14th Floor
New York, NY 10007

“NYC EDC and its officials and employees”
New York City Economic Development Corporation
110 William Street
New York, NY 10038

“BIG Grant Administrator and its officials and employees”
Brownfield Redevelopment Solutions, Inc.
739 Stokes Road, Units A & B
Medford, NJ 08055

Addendum 10
Daily Report Template

Generic Template for Daily Status Report

Instructions

The Daily Status Report submitted to OER should adhere to the following conventions:

- Remove this cover sheet prior to editing.
- Remove all the **red text** and replace with site-specific information.
- Submit the final version as a Word or PDF file.

Daily Status Reports

Daily status 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.

DAILY STATUS REPORT

Prepared By: Name

WEATHER	Snow		Rain		Overcast		Partly Cloudy		Bright Sun	
TEMP.	< 32		32-50		50-70		70-85		>85	

VCP Project No.:	14CVCP169X	E-Number:	Number	Date:	Date
Project Name:	On The Sound, 226 Fordham Place, City Island				

Consultant: Robert Simpson, PE Carlin-Simpson & Associates	Safety Officer: Meredith Anke, PE Carlin-Simpson & Associates
--	---

General Contractor: Person(s) Name SCE Environmental	Site Manager/ Supervisor: Person(s) Name and Company Name
--	--

Work Activities Performed (Since Last Report):
Provide details about the work activities performed.

Working In Grid #: A1, B1, C1

Samples Collected (Since Last Report):
No samples collected or provide details

Air Monitoring (Since Last Report):
No air monitoring performed or provide details

Problems Encountered:
No problems encountered or provide details

Planned Activities for the Next Day/ Week:
Provide details about the work activities planned for the next day/ week.

Facility # Name/ Location Type of Waste Solid <u>Or</u> Liquid	Facility # Name Location Type of Waste Solid <u>Or</u> Liquid		Example: ##### Clean Earth Carteret, NJ petroleum soils Solid							
	Trucks	Cu. Yds. <u>Or</u> Gallons	Trucks	Cu. Yds.						
(Trucks, Cu.Yds. <u>Or</u> Gallons)										
Today									5	120
Total									25	600

NYC Clean Soil Bank		Receiving Facility: Name/ Address (Approved by OER)			
Tracking No.:	13CCSB000				
Today	Trucks 5	Cu. Yds. 25	Total	Trucks 120	Cu. Yds. 600

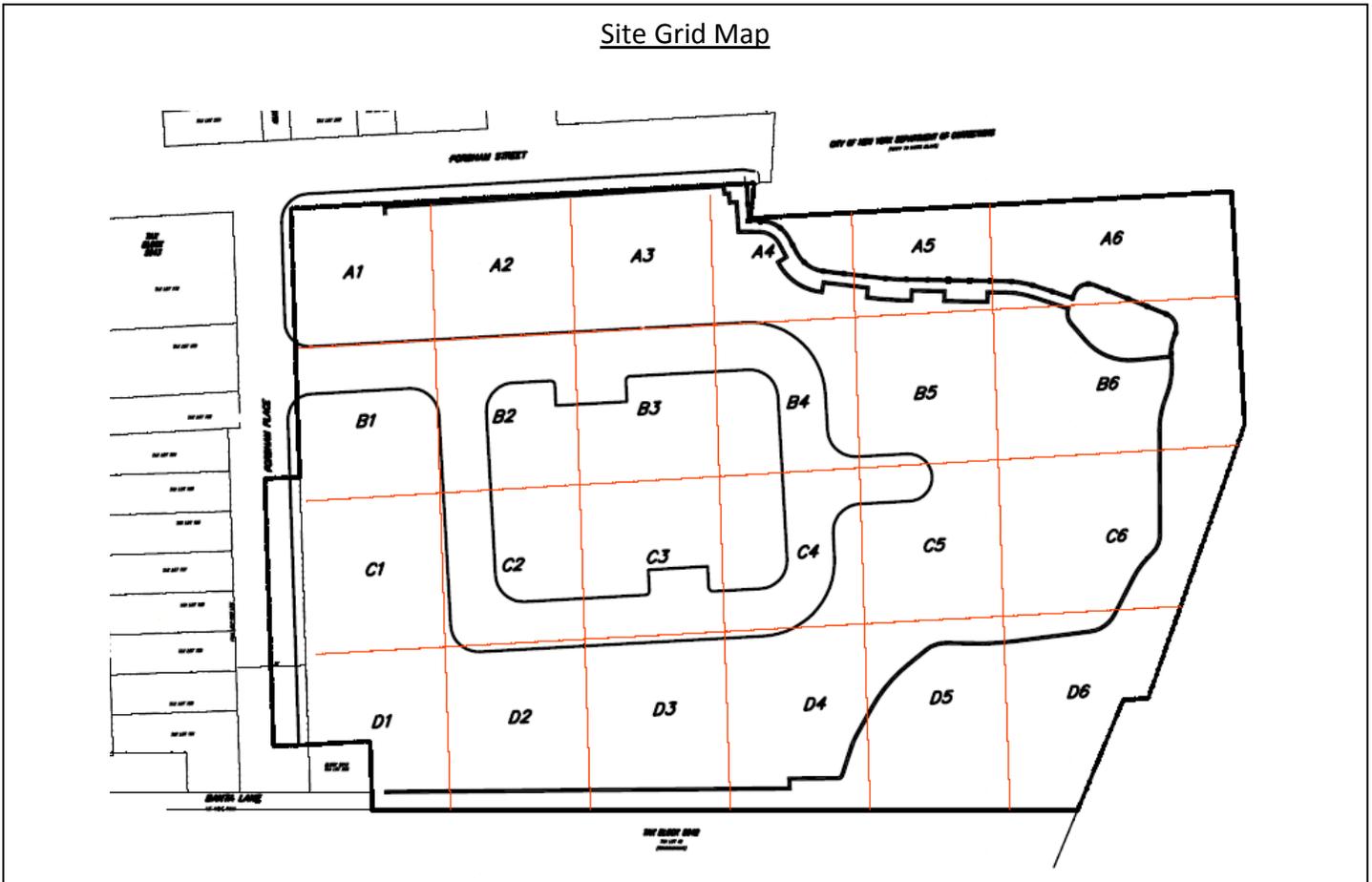


Photo Log

Photo 1 – provide a caption	Insert Photo Here – Photo of the entire site
Photo 2 – provide a caption	Insert Photo Here – Photo of the work activities performed
Photo 3 – provide a caption	Insert Photo Here – Photo of the work activities performed

ON THE SOUND
CITY ISLAND, BRONX, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 14CVCP169X
OER Project Number: 13RH-A145X

Prepared for:

CityIsland Reserve LLC
152 West 57th Street – 60th Floor
New York, NY10019
(212) 649-9700

Prepared by:

Carlin-Simpson & Associates
61 Main Street
Sayreville, NJ08872
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AUGUST 2013

REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
BCA	Brownfield Cleanup Agreement
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	NYSDEC Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
OSHA	US 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

Acronym	Definition
RI	Remedial Investigation
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, Robert B. Simpson, P.E., am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the On The Sound Site, Site numbers 14CVCP169X and 13RH-A145X.

I, Meredith R. Anke, P.E., am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the On The Sound Site, Site numbers 14CVCP169X and 13RH-A145X.

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.

Robert B. Simpson, P.E.
Name

081840
NYS PE License Number

Signature

Date



Meredith R. Anke, P.E.
QEP Name

QEP Signature

Date

EXECUTIVE SUMMARY

City Island Reserve LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 6.4 acre site located at 226 Fordham Place in City Island, Bronx, 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 Site is located at 226 Fordham Place in the City Island section in Bronx, New York and is identified as Block 5643 and Lot 235 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 6.4 acres and is bounded by the Fordham Street and a New York City Department of Corrections ferry terminal to the north, a multi-family residential property to the south, the Long Island Sound to the east, and Fordham Place to the west. Currently, the Site is vacant and undeveloped.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of will consist of 21 two-family residential buildings, one (1) single family building, plus a club house building. Select structures will also have a detached garage. All structures will be slab on grade. Layout of the proposed site development is presented in Figure 2. The current zoning designation is R3A, which is a residence district that features modest single-family and two-family detached residences. The proposed use is consistent with existing zoning for the property.

The proposed construction will also include new underground utilities, asphalt paved roads, and landscaped areas. In addition, there will be a pedestrian walkway/esplanade from Fordham Street to the easternmost portion of the site, which will be an open space/viewing area that will be open to the public. As part of the proposed development, the site will be re-graded using the on-site soil material. Cuts are planned for portions of the property but the majority of the site will be filled to achieve the proposed site grades. Landscape areas and open space areas

shall be capped with two (2) feet of clean imported fill material.

The redevelopment of the Site may be performed in two (2) phases. There is a potential that the Phase 2 work could begin approximately 6 to 12 months after the Phase 1 work was completed. During the dormant time, the portion of the site that remains undeveloped will be fenced to restrict access to this portion of the property. In addition, the undeveloped area will be vegetated to reduce erosion and stormwater runoff.

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

Summary of Past Uses of Site and Areas of Concern

The Site was developed prior to 1893 for use as a shipyard with woodworking, storage, a machine shop, and a dwelling. The Site has been used since that time for various maritime related uses, including ship and yacht building, boat storage and boat repair, sail making, and a diving business. From 1976 to 1978, the Site was also used as a contractor's yard. Sometime between 1978 and 1981, the Site was filled to its current grade.

The following structures on the property were demolished in 2012: 1) a two-story wood frame structure in the northern portion of the site, which was reportedly used as an office building; 2) a one-story metal building in the western portion of the site, which was reportedly used as a machine shop; 3) a two-story metal building in the center, northern portion of the property, which was reportedly used as a garage and was also used by a diving business; and 4) a dilapidated two-story wood frame structure in the southwest corner of the site, which was at one time identified as a carpentry building.

The following Areas of Concern have been identified and addressed under previous remedial actions:

1. Two (2) 10,000-gallon USTs which were removed and documented by HDR's August 2007 Tank Closure Report;
2. Previous boring B-3 and a 550-gallon UST which has not been located since GTA's 2003 Investigation. This tank is believed to have been removed based on multiple test pits and GPR surveys;

3. A former drum storage area which was excavated and documented by Carlin-Simpson's July 2012 RACR. Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill;
4. Stained surface area west of the former garage building which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
5. Stained surface area near southeast corner of the site which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
6. Area of discarded batteries which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
7. Discolored area east of the office building which was excavated and documented by Carlin-Simpson's July 2012 RACR; Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill;
8. Previous boring B-10 and an area of high metal concentrations which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
9. Previously stockpiled areas which were removed. Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill; and
10. Groundwater contamination which was addressed under NYSDEC Petroleum Spill 07-02222 by installing an absorbent sock in a groundwater well in response to a sheen/ lens identified during excavation. No petroleum was identified, and no oil recovery was required. The spill was closed on October 17, 2012.

Summary of Environmental Findings

1. The majority of the Site is relatively flat with surface elevations ranging from approximately elevation +10.0 feet to elevation +20.0 feet. In the eastern portion of the property, the surface elevations slope down steeply to the adjacent Long Island Sound, which has a mean high water level at elevation +2.05.
2. Depth to groundwater ranges from 10.25 feet to 14.25 feet below the existing ground surface at the Site. Groundwater flow beneath the Site is tidally influenced as a result of the adjacent Long Island Sound.
3. Depth to bedrock is approximately 13 feet in the northwest portion of the Site. Bedrock is more than 25 feet below the surface in the remainder of the site.
4. The stratigraphy of the site, from the surface down, consists of 6 feet to 22 feet of fill material (Class 7) that is underlain by medium dense to dense Sand or Silty Sand with Gravel and occasional cobbles (Class 3b).
5. Soil/fill samples collected during the RI showed that there is historic fill material present throughout the Site and that the fill material showed no detectable concentrations of PCBs. One VOC (acetone) was detected in one sample at a concentration that exceeds the Unrestricted Use SCO but is well below the Residential Use SCO. All other VOCs detected were found to be at very low levels, including PCE at a max concentration of 0.0007 ppm. One pesticide (4,4'-DDT) was detected at a concentration that slightly exceeded the Unrestricted Use SCO but is well below the Residential Use SCO. Five SVOCs including benzo(a)anthracene (max 3.2 ppm), benzo(a)pyrene (max 3.9 ppm), benzo(b)fluoranthene (max 4.7 ppm), dibenz(a,h)anthracene (max 0.80 ppm), and indeno(1,2,3-cd)pyrene (max 3.1 ppm) exceeded Restricted Residential Use Soil Cleanup Objectives (SCOs) in most shallow and roughly a quarter of the deep soil samples. These SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs) which are commonly found in historic fill material. Eight metals exceeded Track 1 Unrestricted Use SCOs, and six of these metals, arsenic (max of 20.0 ppm), barium (max of 506 ppm), chromium (max of 113 ppm), copper (max of 382 ppm), lead (max of 3,960

ppm), and mercury (max of 4.9 ppm), also exceeded Track 2 Restricted Residential Use SCOs. These sampling results, with the exception of two shallow hotspot areas, one for lead and one for mercury, are consistent with findings in historic fill material at Sites throughout NYC.

6. Groundwater samples collected during the RI showed that dissolved metals including antimony, cobalt, iron, magnesium, manganese, and sodium exceeded the New York State 6 NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Two SVOCs (benzo(a)anthracene and benzo(b)fluoranthene) were detected above GQSs in one sample. Three petroleum-related VOCs were also detected at trace concentrations, but were well below their GQSs. Groundwater samples showed no detectable concentrations of PCBs or pesticides. Given that the Site is located immediately adjacent to the Long Island Sound, we expect that the groundwater below the Site is brackish.
7. Soil vapor samples collected during the RI showed several petroleum and chlorinated VOCs at generally low concentrations. Acetone (maximum of 89 $\mu\text{g}/\text{m}^3$) and carbon disulfide (maximum of 79 $\mu\text{g}/\text{m}^3$) were detected in all samples. Most other detections were generally less than 10 $\mu\text{g}/\text{m}^3$. PCE was identified in nine of ten soil vapor samples at a maximum concentration of 12 $\mu\text{g}/\text{m}^3$, TCE was identified in two of the ten soil vapor samples at a maximum concentration of 1.0 $\mu\text{g}/\text{m}^3$, carbon tetrachloride was identified in two samples at a max concentration of 1.0 $\mu\text{g}/\text{m}^3$, and 1,1,1-TCA was identified in five samples at a max concentration of 6.2 $\mu\text{g}/\text{m}^3$. None of these chlorinated VOCs were identified in groundwater samples collected during this RI, and only PCE was identified at trace levels in soil. All soil vapor concentrations were reported below the monitoring level ranges established within the NYS DOH soil vapor guidance matrices. Methane was only detected in one sample at 0.032 percent which is well below its explosive limit. The soil vapor results are attached in Appendix A of the RI Report.

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 performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan (CPP).
2. Performance of a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs). Excavation and removal of soil/fill exceeding Track 4 Site-Specific SCOs in the two hotspot areas.
4. Pre-delineation sampling in two (2) identified hotspot areas that exceed the Track 4 SCOs to determine the horizontal and vertical limits of the soil/fill exceeding the Track 4 Site-Specific SCOs.
5. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations;
8. 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.

9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs if additional hotspots are encountered during the remedial action.
10. Import of material to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
11. Demarcation of residual soil/fill.
12. Installation of a Vapor Barrier System (minimum of 20 mil thickness) beneath each of the building slabs and outside foundation sidewalls below grade. Seal all utility entries and other penetrations through the slab or foundation sidewall below grade.
13. Construction and maintenance of an engineered Composite Cover System consisting of a 5 inch concrete slab in the building areas, 4 inches of concrete in sidewalk areas, 2.5 to 3.5 inches of asphalt in the paved areas, 4 inches of concrete pavers over 6 inches of clean soil in the esplanade area, and two (2) feet of clean imported soil in open space and landscape areas to prevent human exposure to residual soil/fill remaining under the Site.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Submission of an approved Site Management Plan (SMP) in the Remedial Action Report (RAR) for long-term management of residual contamination, including plans for maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
17. Establishment of common ownership of the land within the project area by a homeowners association and continuous management of Site Management requirements by this common owner/homeowners association to ensure that engineering controls and

institutional controls remain in place. The RAR will provide satisfactory evidence that requirements for maintenance, inspection and certification of engineering and institutional controls will be implemented by the common owner/homeowners association.

18. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
19. The property will continue to be registered with a RE designation with the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include 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 and 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 Construction Health and Safety Plan (CHASP) 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 (OSHA). This plan includes many protective elements including those discussed below.

Site Safety Coordinator. This project will have 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 Meredith Anke of Carlin-Simpson & Associates and can be reached at 732-432-5757. There will also be a Site Safety Coordinator from SCE Environmental (the General Contractor) during the general construction work.

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 Project Manager Thomas Pugliese at 212-649-9792 or NYC Office of Environmental Remediation Project Manager Hannah Moore at 212-442-6372.

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 general hours of operation are between 7:00 am and 5:00 pm Monday through Friday.

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 Thomas Pugliese at 212-649-9792, the NYC Office of Environmental Remediation Project Manager Hannah Moore at 212-442-6372, 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 City Island Library.

Long-Term Site Management. To provide long-term protection after the cleanup is complete, 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 (OER). The site will be registered with an E Designation at the NYC Buildings Department. 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

City Island Reserve LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 226 Fordham Place in the City Island section of Bronx, 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. The RAWP has been compiled as part of requirements of a Restrictive Declaration that was agreed to on 18 April 2007 (Document ID No. 2007050101595001). This RAWP establishes remedial action objectives, provides a remedial alternatives 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 consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located at 226 Fordham Place in the City Island section in Bronx, New York and is identified as Block 5643 and Lot 235 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 6.4 acres and is bounded by the Fordham Street and a New York City Department of Corrections ferry terminal to the north, a multi-family residential property to the south, the Long Island Sound to the east, and Fordham Place to the west. Currently, the Site is vacant and undeveloped.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will consist of 21 two-family residential buildings, one (1) single family building, plus a club house building. Select structures will also have a detached garage. All structures will be slab on grade. Layout of the proposed site development is presented in Figure 2. The current zoning designation is R3A, which is a residence district that

features modest single- and two-family detached residences. The proposed use is consistent with existing zoning for the property.

The proposed construction will also include new underground utilities, asphalt paved roads, and landscaped areas. In addition, there will be a pedestrian walkway/esplanade from Fordham Street to the easternmost portion of the site, which will be an open space/viewing area that will be open to the public. As part of the proposed development, the site will be re-graded using the on-site soil material. Cuts are planned for portions of the property but the majority of the site will be filled to achieve the proposed site grades. Landscape areas and open space areas shall be capped with two (2) feet of clean imported fill material.

The redevelopment of the Site may be performed in two (2) phases. There is a potential that the Phase 2 work could begin approximately 6 to 12 months after the Phase 1 work was completed. During the dormant time, the portion of the site that remains undeveloped will be fenced to restrict access to this portion of the property. In addition, the undeveloped area will be vegetated to reduce erosion and stormwater runoff.

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

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The area immediately surrounding the Site generally consists of residential and commercial properties. There are single family and multi-family residential properties to the west and multi-family residential buildings to the south. To the north of the site, across Fordham Street, are commercial and residential properties. There are no sensitive receptors such as schools, hospitals, or day care facilities within a 500-foot radius of the site. Figure 1 and Figure 2 show 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, City Island Estates*”, dated May, 2013 (RIR).

Summary of Past Uses of Site and Areas of Concern

The Site was developed prior to 1893 for use as a shipyard with woodworking, storage, a machine shop, and a dwelling. The Site has been used since that time for various maritime related uses, including ship and yacht building, boat storage and boat repair, sail making, and a diving business. From 1976 to 1978, the Site was also used as a contractor's yard. Sometime between 1978 and 1981, the Site was filled to its current grade.

The following structures on the property were demolished in 2012: 1) a two-story wood frame structure in the northern portion of the site, which was reportedly used as an office building; 2) a one-story metal building in the western portion of the site, which was reportedly used as a machine shop; 3) a two-story metal building in the center, northern portion of the property, which was reportedly used as a garage and was also used by a diving business; and 4) a dilapidated two-story wood frame structure in the southwest corner of the site, which was at one time identified as a carpentry building.

The following Areas of Concern have been identified and addressed under previous remedial actions:

1. Two (2) 10,000-gallon USTs which were removed and documented by HDR's August 2007 Tank Closure Report;
2. Previous boring B-3 and a 550-gallon UST which has not been located since GTA's 2003 Investigation. This tank is believed to have been removed based on multiple test pits and GPR surveys;
3. A former drum storage area which was excavated and documented by Carlin-Simpson's July 2012 RACR. Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill;
4. Stained surface area west of the former garage building which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
5. Stained surface area near southeast corner of the site which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was

- stockpiled on-site until the 2011-2012 Remedial Action;
6. Area of discarded batteries which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
 7. Discolored area east of the office building which was excavated and documented by Carlin-Simpson's July 2012 RACR; Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill;
 8. Previous boring B-10 and an area of high metal concentrations which was excavated and documented by HDR's August 2007 Tank Closure Report. Excavated material was stockpiled on-site until the 2011-2012 Remedial Action;
 9. Previously stockpiled areas which were removed. Residual levels of SVOCs and metals above Restricted Residential SCOs remain and are believed to be associated with historic fill; and
 10. Groundwater contamination which was addressed under NYSDEC Petroleum Spill 07-02222 by installing an absorbent sock in a groundwater well in response to a sheen/ lens identified during excavation. No petroleum was identified, and no oil recovery was required. The spill was closed on October 17, 2012.

The scope of work for the RI was developed in response to the proposed development project. An investigation of soil, soil vapor, and groundwater was performed to characterize the Site for potential environmental contamination from historic on-site uses, operations, filling, etc. The sampling event was designed to provide general coverage across the entire site and to characterize the historic fill material that remains on Site.

Summary of the Work Performed under the Remedial Investigation

As part of this investigation, Carlin-Simpson & Associates performed the following scope of work:

1. Installed 12 soil borings across the entire project Site, and collected 19 soil samples

for chemical analysis from the soil borings to evaluate soil quality;

2. Installed 5 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality;

In addition, Environmental Maintenance Contractors, Inc. (EMC) performed the following scope of work:

1. Installed 13 soil vapor probes across the project Site and collected 10 samples for chemical analysis. Three probes were not sampled due to a shallow water table.

Summary of Environmental Findings

8. The majority of the Site is relatively flat with surface elevations ranging from approximately elevation +10.0 feet to elevation +20.0 feet. In the eastern portion of the property, the surface elevations slope down steeply to the adjacent Long Island Sound, which has a mean high water level at elevation +2.05.
9. Depth to groundwater ranges from 10.25 feet to 14.25 feet below the existing ground surface at the Site. Groundwater flow beneath the Site is tidally influenced as a result of the adjacent Long Island Sound.
10. Depth to bedrock is approximately 13 feet in the northwest portion of the Site. Bedrock is more than 25 feet below the surface in the remainder of the site.
11. The stratigraphy of the site, from the surface down, consists of 6 feet to 22 feet of fill material (Class 7) that is underlain by medium dense to dense Sand or Silty Sand with Gravel and occasional cobbles (Class 3b).
12. Soil/fill samples collected during the RI showed that there is historic fill material present throughout the Site and that the fill material showed no detectable concentrations of PCBs. One VOC (acetone) was detected in one sample at a concentration that exceeds the Unrestricted Use SCO but is well below the Residential Use SCO. All other VOCs detected were found to be at very low levels, including PCE at a max concentration of 0.0007 ppm. One pesticide (4,4'-DDT) was detected at a concentration that slightly exceeded the Unrestricted Use SCO but is

well below the Residential Use SCO. Five SVOCs including benzo(a)anthracene (max 3.2 ppm), benzo(a)pyrene (max 3.9 ppm), benzo(b)fluoranthene (max 4.7 ppm), dibenz(a,h)anthracene (max 0.80 ppm), and indeno(1,2,3-cd)pyrene (max 3.1 ppm) exceeded Restricted Residential Use Soil Cleanup Objectives (SCOs) in most shallow and roughly a quarter of the deep soil samples. These SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs) which are commonly found in historic fill material. Eight metals exceeded Track 1 Unrestricted Use SCOs, and six of these metals arsenic (max of 20.0 ppm), barium (max of 506 ppm), chromium (max of 113 ppm), copper (max of 382 ppm), lead (max of 3,960 ppm), and mercury (max of 4.9 ppm), also exceeded Track 2 Restricted Residential Use SCOs. These sampling results, with the exception of two shallow hotspot areas, one for lead and one for mercury, are consistent with findings in historic fill material at Sites throughout NYC.

13. Groundwater samples collected during the RI showed that dissolved metals including antimony, cobalt, iron, magnesium, manganese, and sodium exceeded the New York State 6 NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Two SVOCs (benzo(a)anthracene and benzo(b)fluoranthene) were detected above GQSs in one sample. Three petroleum-related VOCs were also detected at trace concentrations, but were well below their GQSs. Groundwater samples showed no detectable concentrations of PCBs or pesticides. Given that the Site is located immediately adjacent to the Long Island Sound, we expect that the groundwater below the Site is brackish.
14. Soil vapor samples collected during the RI showed several petroleum and chlorinated VOCs at generally low concentrations. Acetone (maximum of 89 $\mu\text{g}/\text{m}^3$) and carbon disulfide (maximum of 79 $\mu\text{g}/\text{m}^3$) were detected in all samples. Most other detections were generally less than 10 $\mu\text{g}/\text{m}^3$. PCE was identified in 9 of ten soil vapor samples at a maximum concentration of 12 $\mu\text{g}/\text{m}^3$, TCE was identified in two of the ten soil vapor samples at a maximum concentration of 1.0 $\mu\text{g}/\text{m}^3$, carbon tetrachloride was identified in two samples at a max concentration of 1.0 $\mu\text{g}/\text{m}^3$, and 1,1,1-TCA was identified in five samples at a max concentration of 6.2 $\mu\text{g}/\text{m}^3$. None of these

chlorinated VOCs were identified in groundwater samples collected during this RI, and only PCE was identified at trace levels in soil. All soil vapor concentrations were reported below the monitoring level ranges established within the NYS DOH soil vapor guidance matrices. Methane was only detected in one sample at 0.032 percent which is well below its explosive limit. The soil vapor results are attached in Appendix A of the RI Report.

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:

Groundwater

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater contamination.

Soil Vapor

- Prevent migration of potential soil vapor into dwellings 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 Remedial Action Objectives (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 (2) remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

Remedial Alternative 1 (Track 1 Cleanup) involves:

1. Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
2. Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Previous investigations indicated that the historic fill material extends to a depth of 22 feet in portions of the property. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs were still present at the base of the excavation, additional excavation would be performed to ensure complete

- removal of soil that does not meet Track 1 Unrestricted Use SCOs.
3. No Engineering or Institutional Controls are required for a Track 1 cleanup, but a vapor barrier would be installed beneath the foundation and behind foundation sidewalls of each of the new structures as a part of development to prevent any potential future exposures from off-Site soil vapor.
 4. Placement of a final cover over the entire Site as part of new development.

Remedial Alternative 2 (Track 4 Cleanup) involves:

1. Establishment of Track 4 Site-Specific SCOs.
2. Removal of all shallow soil/fill exceeding Track 4 Site-Specific SCOs. The limits of soil/fill exceeding the Track 4 SCOs were determined by pre-delineation sampling prior to excavation. Based on the results of the remedial investigation, this alternative will require excavation of two (2) identified hotspot areas. Refer to Figure 3 for locations. Therefore, if soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new buildings is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOs.
3. Placement of a composite cover consisting of concrete slabs, roadways and two feet of clean fill in landscaped areas over the entire Site to prevent exposure to remaining soil/fill.
4. Installation of a vapor barrier beneath the building slabs and behind foundation sidewalls for each of the residential structures as a part of development.
5. 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 prevent future exposure pathways.
6. Establishment of an approved Site Management Plan (SMP) 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. One comprehensive SMP will be prepared to manage all 22 residential buildings and club house. SMP will note that the property management (owners) and property owner's successors and assigns must comply with the

approved SMP.

7. Establishment of common ownership of the land within the project area by a homeowners association and continuous management of Site Management requirements by this common owner/homeowners association to ensure that engineering controls and institutional controls remain in place. The RAR will provide satisfactory evidence that requirements for maintenance, inspection and certification of engineering and institutional controls will be implemented by the common owner/homeowners association.
8. The property will be registered with a RE designation with the NYC Department of Buildings to memorialize the remedial action and the Engineering and Institutional Controls 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 all contaminated soil/fill exceeding Track 1 SCOs, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by removing identified areas that exceed the Track 4 SCOs and 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. Establishment of Track

4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater. Implementing institutional controls including registration of the site with a RE designation with the NYC Building Department would ensure that the composite cover system remains intact and protective.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan (CHASP), an approved Soil/Materials Management Plan, and a Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use would be prohibited by the city laws and regulations. An RE designation would be maintained on the property. 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)

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative 1 would achieve compliance with the remedial goals, chemical specific 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 residential buildings slab and continuing the vapor barrier around foundation walls, as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical specific SCGs and RAOs for soil through removal of shallow 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 (SMP) would ensure that controls remained protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both alternatives, 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. These measures will protect on-site workers and the surrounding community from exposure to Site-related contaminants.

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 1 and 2 have similar-short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. However, the scale of removal necessary to achieve Alternative 1 given the depth of historical fill material, is much greater than Alternative 2 and thus the associated impacts are also potentially much higher.

Both alternatives would employ appropriate measures to prevent short term impacts, including a Construction Health and Safety Plan (CHASP), 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. Removal of on-Site contaminant sources will prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing some on-Site contamination and generally attaining Track 4 Site-Specific SCOs, establishing Engineering Controls including a composite cover system across the Site, establishing Institutional Controls to ensure long-term management including use restrictions, a Site Management Plan (SMP), and registration of the site with a RE designation to memorialize these controls for the long term. The SMP will ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide a continuous high level of protection in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing a high level, effective, and permanent remedy over the long-term and would address contaminated soil and eliminate or minimize any leaching to groundwater.

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 Track 1 Unrestricted Use SCOs.

Alternative 2 would remove some of the impacted soil present on the Site and remaining shallow soil beneath the composite cover would meet Track 4 Site-Specific 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.

The techniques, materials, and equipment to implement Alternatives 1 and 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. They use standard materials and services that are well established. The reliability of both alternatives is high. However, Alternative 1 would be challenging to implement due to the large amount of excavation that would be required across the entire site to meet the Track 1 Unrestricted Use SCOs. Moreover, Alternative 1 would require excavation of soil/fill below the

water table in order to meet the Track 1 Unrestricted Use SCOs. This may not be achievable below certain depths due to engineering and health and safety issues. In addition, construction dewatering is not practical given that the Long Island Sound is located immediately adjacent to the Site.

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.

Costs associated with Alternative 1 would be significantly higher than Alternative 2 based on both the volume of soil/fill that requires excavation and off-Site disposal and the volume of material that would be imported to the Site to replace the excavated soil/fill. In addition, shoring and dewatering would be required to achieve Unrestricted Use SCOs for Track 1 remedy. The long-term costs for Alternative 2 are 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 (CPP) for the project is provided in Appendix B. Observations here will be supplemented by public comment received on the RAWP.

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 Brownfield 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 SCOs or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. Improvements in the current environmental 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.

Alternative 1 would result in a higher consumption of virgin and non-renewable

resources, such as virgin soil and crushed stone, because a larger volume of material would have to be imported to the Site to replace the excavated soil/fill material. In addition, Alternative 1 would result in more energy consumption and greenhouse gas emissions than Alternative 2 because a larger volume of soil/fill material would have to be excavated and transported off-Site and a larger volume of soil material would have to be imported to the Site.

Alternative 2 is a better alternative with respect to sustainable remedial action because of the reduced volume of soil/fill material to be excavated and transported off-Site and the reduced volume of soil material to be imported to the Site.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial action alternative is Alternative 2, the Track 4 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 performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan (CPP).
2. Performance of a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs). Excavation and removal of soil/fill exceeding Track 4 Site-Specific SCOs in the two hotspot areas.
4. Pre-delineation sampling in two (2) identified hotspot areas that exceed the Track 4 SCOs to determine the horizontal and vertical limits of the soil/fill exceeding the Track 4 Site-Specific SCOs.
5. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills

(if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations;

8. 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.
9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs if additional hotspots are encountered during the remedial action.
10. Import of material to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
11. Demarcation of residual soil/fill.
12. Installation of a Vapor Barrier System (minimum of 20 mil thickness) beneath each of the building slabs and outside foundation sidewalls below grade. Seal all utility entries and other penetrations through the slab or foundation sidewall below grade.
13. Construction and maintenance of an engineered Composite Cover System consisting of a 5 inch concrete slab in the building areas, 4 inches of concrete in sidewalk areas, 2.5 to 3.5 inches of asphalt in the paved areas, 4 inches of concrete pavers over 6 inches of clean soil in the esplanade area, and two (2) feet of clean imported soil in open space and landscape areas to prevent human exposure to residual soil/fill remaining under the Site;
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Submission of an approved Site Management Plan (SMP) in the Remedial Action Report (RAR) for long-term management of residual contamination, including plans for maintenance, inspection and certification of Engineering and Institutional Controls and

reporting at a specified frequency.

17. Establishment of common ownership of the land within the project area by a homeowners association and continuous management of Site Management requirements by this common owner/homeowners association to ensure that engineering controls and institutional controls remain in place. The RAR will provide satisfactory evidence that requirements for maintenance, inspection and certification of engineering and institutional controls will be implemented by the common owner/homeowners association.
18. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
19. The property will continue to be registered with a RE designation with the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include 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 4 Site-Specific Soil Cleanup Objectives (SCOs) are proposed for this project. The following Track 4 Site-specific SCOs, also listed in Table 1, are proposed for this Site:

Lead	1,200 ppm
Mercury	2.5 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 (SMMP) in Appendix D. The locations of planned hotspot excavations are shown in Figure 3.

Discrete contaminant sources (such as spills) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Pre-Delineation Sampling for Identified Removal Areas

Removal actions established under this RAWP will be performed in conjunction with pre-delineation sampling, which was performed to determine the horizontal and vertical limits of the shallow soil/fill exceeding the Track 4 Site-Specific SCOs around borings B-110 and B-111 prior to excavation. For comparison to Track 4 SCOs, analytes for the pre-delineation sampling only included lead for the boring B-110 area and mercury for the boring B-111 area; these analytes were approved by OER.

On 5 August 2013, Integral Consulting Inc. performed pre-delineation sampling at the Site. The pre-delineation sampling involved the installation of 16 borings at the two (2) identified removal areas. These areas are identified on Figure 3. The borings were performed using direct-push sampling technology. The borings were performed in rings around the original sample locations (B-110 and B-111) that were performed during the Remedial Investigation. The borings were performed to a maximum depth of 8 feet below grade. In the area of B-110, soil samples for horizontal delineation were collected at each boring location from a depth of 0 to 2 feet below grade. Near B-110, samples were collected for vertical delineation in one-foot intervals to eight feet below grade. At select borings from each of the delineation rings, deeper samples were collected from 4 to 5 feet below grade and 7 to 8 feet below grade. In the area of B-111, soil samples were collected for horizontal delineation at each boring location from a depth of 3 to 4 feet below grade. Near B-111, samples were collected for vertical delineation in one-foot intervals to eight feet below grade. At select borings from each delineation ring, deeper samples were collected from 5 to 6 feet below grade and 7 to 8 feet below grade.

A total of 60 soil samples were collected from the two removal areas for horizontal and vertical delineation purposes. Initially, only the samples collected from the first delineation ring and one deeper sample from the original sampling location (B-110 and B-111) were analyzed. The soil samples from the borings performed around B-110 were analyzed for lead and the soil samples from the borings performed around B-111 were analyzed for mercury. A New York

State ELAP certified lab (Alpha Analytical) was used for all sample analyses. The analytical results were compared to the Track 4 Site-Specific SCOs and a copy of the analytical results is presented in Appendix F.

The analytical results for the B-110 samples indicate that the lead concentrations detected in the first ring of delineation samples and in the deeper sample at B-110 all meet the Track 4 SCO for lead (1,200 mg/kg). Therefore, the removal area around B-110 has been delineated to an area approximately 7 feet by 7.5 feet by 2 feet deep, which is approximately 4.07 cubic yards.

The analytical results for the B-111 samples indicate that the mercury concentrations detected in three of the four samples from the first delineation ring and the deeper sample at B-111 all meet the Track 4 SCO for mercury (2.5 mg/kg). One sample to the north of B-111 exceeded the Track 4 SCO. Subsequent analysis of a sample (in a northerly direction) from the second delineation ring indicates that soil meets the Track 4 SCO for mercury. Therefore, the removal area around B-111 has been delineated to an area approximately 10 feet by 15 feet by 4 feet deep, which is approximately 22 cubic yards.

The final excavation extent in the two removal areas will be based on the analytical results of these soil samples that were collected during the pre-delineation sampling. These limits are shown on Figure 3. The pre-delineation sampling precludes the need for verification sampling after excavation.

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 26.07 cubic yards or 45 tons. The actual quantity excavated and disposed off-Site will be reported in the RAR.

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

End-Point Sampling for Other Removal Actions

In the event that additional hotspot areas are identified during the remedial program, removal will be performed in conjunction with post remedial end-point samples to ensure that identified areas are fully removed. Analytes for end-point sampling will be those parameters that

are driving the removal action and will be approved by OER. Frequency for end-point sample collection is as follows:

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.

Post-remediation end-point 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 confirmation and end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and 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 compounds and elements as

described above 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.

In the event that 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

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or “cold-paks” to maintain a temperature of 4°C.

Dedicated disposable sampling equipment will be used for the collection of endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of one (1) for every eight (8) samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water

- Wash withalconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for metals, SVOCs, or pesticides. One (1) blind duplicate sample will be prepared and submitted for analysis every 20 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 (SMMP) in Appendix D. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 6,800 cubic yards. The estimated quantity of on-site soil expected to be reused as cover soil on the Site is 2,000 cubic yards. Minor grading (cutting and filling) and relocating of on-Site fill material will also be performed in compliance with the SMMP reuse requirements.

4.3 ENGINEERING CONTROLS

Engineering Controls are employed in the remedial action to address residual contamination remaining at the site. The Site has two (2) primary Engineering Control Systems: (1) Composite Cover System across the entire Site; and (2) Vapor Barrier System.

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, Composite Cover System to be built on the Site. The entire property will be covered by an engineered permanent cover system. This cover system will be comprised of the following:

- 2.5 to 3.5 inches of asphalt pavement in the paved areas;
- 4 inches of concrete pavers over six inches of clean soil in the esplanade area;
- 4 inches of concrete in the sidewalk areas;
- 5 inches of concrete slab in the building areas; and

- Two (2) feet of clean cover soil in the open space or landscape areas.

The development plans and details, including details for the components of the remedial cover system, are included in Appendix A. Figure 4 shows the location of each cover type to be built at the Site.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and certified at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan (SMP) 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 (SMP) in the RAR.

Vapor Barrier

Migration of potential soil vapor will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of a 20 mil polyethylene vapor barrier liner or OER approved equivalent. The vapor barrier will be installed beneath the entire surface area of the concrete slab for each of the residential buildings. The specifications for installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all vapor barrier seams, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions¹. The PE certifying this Remedial Action will ensure that there is staff under his/her supervision that will provide oversight of installation of the vapor barrier and seals under this cleanup plan to ensure that this work is properly performed.

The proposed vapor barrier membrane will be installed below each building floor slab as shown on Figure 4. Installation details with respect to the proposed building slab, are also provided in Appendix A. The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturer's certificate of warranty.

¹ If a self-adhesive membrane is used, taping and welding will not be conducted, as it is not in conformance with the manufacturer's instructions.

4.4 INSTITUTIONAL CONTROLS

Institutional Controls (IC) have been incorporated in 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. The property will be registered with a RE designation with the NYC Buildings Department.

Institutional Controls for this remedial action are:

- The property will be registered with a RE designation by the NYC Buildings Department;
- This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a Site Management Plan (SMP) in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection 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 at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- 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 restricted residential use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

Site Management is 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. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. 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 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) operation and maintenance of EC's; and (3) inspection and certification of EC's.

Site management activities, reporting, and EC/IC certification will be scheduled by OER 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 July 30 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure 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 QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Historic fill material is present at the Site from grade to depths ranging from approximately 6 feet to 22 feet below grade. Based on the results of the Remedial Investigation Report, the contaminants of concern found are as follows:

Soil - Soil/fill samples collected during the RI showed that there is historic fill material present throughout the Site and that the fill material contains SVOCs and metals at concentrations that exceed the Track 1 Unrestricted Use SCOs and the Track 2 Residential Use SCOs. The detected SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs). The data indicates that the PAHs and metals, which are typical constituents of historic fill material, are widespread across the site at concentrations typical for this material. In addition there are two discrete hotspots for mercury and lead.

Groundwater - Groundwater samples collected during the RI showed that the groundwater contains dissolved metals (antimony, cobalt, iron, magnesium, manganese, and sodium) at concentrations exceeding the Class GA groundwater standards. In addition, two SVOCs (benzo[a]anthracene and benzo[b]fluoranthene) were detected in one sample at concentrations exceeding the Class GA groundwater standards.

Soil vapor - Soil vapor samples collected during the RI indicate that on-site vapor concentrations are well below the NYSDOH monitoring thresholds. Analytical results also indicated that only one sample (VP-2) contains methane at a concentration of 0.0320%, well below its lower explosive level.

Nature, Extent, Fate and Transport of Contaminants

The soil/fill material at the site contains concentrations of SVOCs and metals above applicable standards. The elevated constituents are associated with historic fill, which is present throughout the full extent of the property and ranges from approximately 6 feet to 22 feet in thickness. Groundwater below the site is affected by metals and slightly affected by SVOCs.

Potential Routes of Exposure

The five elements of an exposure pathway are: 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with water, fill, or soil.

Receptor Populations

On-Site Receptors – The Site is currently vacant. Access to the area is limited by a chain link fence. Potential receptors include site representatives and trespassers. During redevelopment of the Site, the on-Site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include adult and child residents and visitors.

Off-Site Receptors - Potential off-Site receptors within a 0.25-mile radius of the Site include: adult and child residents, and commercial workers, pedestrians, trespassers, and cyclists based on the following:

1. Residential Buildings (up to 0.25 mile) – existing and future

2. Commercial Businesses (up to 0.25 mile) – existing and future
3. Pedestrians, Trespassers, Cyclists (up to 0.25 mile) – existing and future

Potential Points of Exposure

Current Conditions: There is a potential for exposure to historic fill since the Site is 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. There are no structures on Site where soil vapor could potentially accumulate.

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. Construction workers could also come into direct contact with groundwater. On-Site construction workers potentially could ingest, inhale or have dermal contact with any exposed impacted soil, and fill. 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: Under future remediated conditions, there will be no potential on-Site or off-Site exposure points. The Site will be fully capped with concrete building slabs, asphalt pavement, concrete sidewalks, or a soil cap limiting potential exposure to soil remaining in place. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. A Vapor Barrier System will prevent migration of soil vapors into occupied structures.

Overall Human Health Exposure Assessment

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current unremediated and the construction/remedial action phase. Under current conditions, on-Site exposure is limited by preventing access to the Site and limiting Site activity. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the

Community Air Monitoring Program (CAMP), the Soil/Materials Management Plan (SMMP), and a Construction Health and Safety Plan (CHASP). After the remedial action is complete, there will be no remaining exposure pathways to identified contaminants. The Composite Cover System and use restrictions will prevent contact with residual soil or groundwater. A Vapor Barrier System will prevent migration of soil vapors into occupied structures. Continued protection after the remedial action will be achieved by the implementation of a Site Management Plan (SMP) 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 Meredith R. Anke, P.E., Project Manager for Carlin-Simpson & Associates and Thomas Pugliese, Project Manager for City Island Reserve, LLC. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Robert B. Simpson, P.E. and Meredith R. Anke, P.E., respectively. The General Contractor (GC) is SCE Environmental.

5.2 SITE SECURITY

Site access will be controlled through gated entrances to the fenced property.

5.3 WORK HOURS

The hours for operation of remedial construction will be between 7:00 am and 5:00 pm Monday through Friday, or as approved by the New York City Department of Buildings. 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 D. The Site Safety Coordinator will be Meredith Anke of Carlin-Simpson & Associates. There will also be a Site Safety Coordinator from SCE Environmental during the general construction work. 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 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 causing the vapors 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 causing the vapors 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 during invasive work. 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 creating the dust 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.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

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 will 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. 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.

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, haybales; 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 the 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.

5.8 PHASING OF SITE DEVELOPMENT

The redevelopment of the Site may be performed in two (2) phases. If the site redevelopment work is phased, the work performed during Phase 1 will include any necessary environmental permitting, the clearing and rough grading of the entire site, construction of the entire seawall and esplanade, installation of the storm water quality vault including the associated laterals and outflow structure, construction of select residential buildings and garages, installation of new underground utilities for the new structures, and construction of sidewalks and roadways for the new structures.

The Phase 2 portion of the property will be capped when the Phase 2 work is completed. There is a potential that the Phase 2 work could begin approximately 6 to 12 months after the

Phase 1 work is finished. During the dormant time, the portion of the site that remains undeveloped will be fenced to restrict access to this portion of the property. In addition, the undeveloped area will be vegetated to prevent erosion and reduce stormwater runoff.

The undeveloped portion of the site will also be inspected monthly to ensure that there is no erosion on the site, no surface water runoff is leaving the site, the fencing is intact, and there are no other issues on the site that need to be addressed. In the event that problems are identified during the inspection, remedial measures will be performed promptly and communicated with OER.

5.9 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP 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 as follows:

- 1) Exit Site via Fordham Place and turn left onto Fordham Street (heading west).
- 2) Turn right onto City Island Avenue (heading north).
- 3) City Island Avenue turns into City Island Road (heading northwest).
- 4) Turn left onto Shore Road (heading south-southwest).
- 5) Follow signs for I-95 (north or south).

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 prepared by either Carlin-Simpson & Associates or SCE Environmental and under the supervision of the PE for the Remedial Action. The reports for each work day shall 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. If required, an alpha-numeric site map will be used to identify locations described in reports submitted to OER.

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;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- 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.
- Registration of the property with a RE designation with the NYC Department of Buildings.

- 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, Robert B. Simpson, P.E. 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 On The Sound Site, Site number 13RH-A145X.

I, Meredith R. Anke, P.E. am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the On The Sound Site, Site number 13RH-A145X

I certify that the OER-approved Remedial Action Work Plan dated August 2013 and Stipulations in a letter dated August 2013, 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 the anticipated 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. At this time, it is anticipated that the site will be developed in two (2) phases. The schedule for Phase 2 is unknown at this time. Once a schedule for Phase 2 has been determined, an updated schedule will be submitted to OER. Currently, a 12 month construction period is anticipated for Phase 1.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization for Phase 1	1	1
Remedial Excavation of Hot Spots	2	1 (day)
Phase 1 Site Development Work & Site Capping Secure Phase 2 Perimeter	2	52
Demobilization for Phase 1	52	1
Submit Remedial Action Report for Phase 1	56	-
Mobilization for Phase 2	Unknown	
Phase 2 Site Development Work & Site Capping	Unknown	
Demobilization for Phase 2	Unknown	
Record Declaration of Covenants and Restrictions for the Site	Unknown	
Submit Remedial Action Report for Phase 2	Unknown	

FIGURES

TABLES

Table 1

Track 4 Site-Specific Soil Cleanup Objectives (SCOs)

Parameter	Track 4 SCOs (ppm)
Lead	1,200
Total Mercury	2.5

Table 2
Imported Backfill Limits
Residential Use SCOs (ppm)

Metals	
Arsenic	16
Barium	350
Beryllium	14
Cadmium	2.5
Chromium, hexavalent	22
Chromium, trivalent	36
Copper	270
Total Cyanide	27
Lead	400
Manganese	2,000
Total Mercury	0.81
Nickel	140
Selenium	36
Silver	36
Zinc	2,200

Pesticides/PCBs	
2,4,5-TP Acid (Silvex)	58
4,4'-DDE	1.8
4,4'-DDT	1.7
4,4'-DDD	2.6
Aldrin	0.019
alpha-BHC	0.097
beta-BHC	0.072
Chlordane (alpha)	0.91
delta-BHC	100 ^a
Dibenzofuran	14
Dieldrin	0.039
Endosulfan I	4.8
Endosulfan II	4.8
Endosulfan sulfate	4.8
Endrin	2.2
Heptachlor	0.42
Lindane	0.28
Polychlorinated biphenyls	1

Table 2 (Cont.)
Imported Backfill Limits
Residential Use SCOs (ppm)

Semi-Volatile Organic Compounds (SVOCs)	
Acenaphthene	100
Acenaphthylene	100
Anthracene	100
Benz(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	1
Chrysene	1
Dibenz(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	100
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	100
Naphthalene	100
o-Cresol	100
p-Cresol	34
Pentachlorophenol	2.4
Phenanthrene	100
Phenol	100
Pyrene	100

Volatile Organic Compounds (VOCs)	
1,1,1-Trichloroethane	100
1,1-Dichloroethane	19
1,1-Dichloroethene	100
1,2-Dichlorobenzene	100
1,2-Dichloroethane	2.3
cis-1,2-Dichloroethene	59
trans-1,2-Dichloroethene	100
1,3-Dichlorobenzene	17
1,4-Dichlorobenzene	9.8
1,4-Dioxane	9.8
Acetone	100
Benzene	2.9
Butylbenzene	100
Carbon tetrachloride	1.4
Chlorobenzene	100
Chloroform	10
Ethylbenzene	30
Hexachlorobenzene	0.33
Methyl ethyl ketone	100
MTBE	62
Methylene chloride	51
n-Propylbenzene	100
sec-Butylbenzene	100
tert-Butylbenzene	100
Tetrachloroethene	5.5
Toluene	100
Trichloroethene	10
1,2,4-Trimethylbenzene	47
1,3,5- Trimethylbenzene	47
Vinyl chloride	0.21
Xylene (mixed)	100

APPENDIX A
PROPOSED REDEVELOPMENT PLANS & DETAILS

Appendix B

Citizen Participation Plan

The NYC Office of Environmental Remediation and City Island Reserve 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, City Island Reserve 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, Hannah Moore, 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. City Island Reserve LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

City Island Library

320 City Island Avenue

(between Bay and Fordham Streets)

Bronx, NY 10464

(tel) 718-885-1703

Monday and Thursday 11:00 am – 7:00 pm

Tuesday and Wednesday 11:00 am – 6:00 pm

Friday and Saturday 10:00 am – 5:00 pm

Sunday Closed

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 City Island Reserve LLC, reviewed and approved by OER prior to distribution and mailed by City Island Reserve 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 C

SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

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.

This project intends to use recycled concrete aggregate wherever possible in grading and backfilling the Site. 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.

Reduce Consumption of Virgin and Non-Renewable Resources. Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

The project will reduce the consumption of virgin materials by substituting recycled concrete aggregate for mined gravel and/or sand backfill whenever possible. An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided 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.

Recycled concrete materials and other backfill materials will be locally sourced reducing the energy consumption associated with transporting these materials to the Site. 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.

Storm-water Retention. Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

The proposed re-development of the site will include a new storm-water management system and unpaved surfaces. An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

Paperless Voluntary Cleanup Program. City Island Reserve 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. City Island Reserve 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 D

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 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 as follows:

- 1) Exit Site via Fordham Place and turn left onto Fordham Street (heading west).
- 2) Turn right onto City Island Avenue (heading north).
- 3) City Island Avenue turns into City Island Road (heading northwest).
- 4) Turn left onto Shore Road (heading south-southwest).
- 5) Follow signs for I-95 (north or south).

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 Enrollee 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 Bronx, 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 Enrollee. 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 RAR.

The Remedial Action Report 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 RAR.

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 RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

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 below the composite cover system. The soil cleanup objectives for on-Site reuse are listed in Table 2. '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 the NYC VCP agreement subject to Engineering and Institutional 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 RAWP are followed. In addition, it is expected that on-site virgin soil material will be excavated from the northwestern portion of the site and reused as cover soil in the northern portion of the property.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

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 in landscaping areas. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; 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. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and/or within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill soil quality objectives are listed in Table 2. Approximately 6,800 cubic yards of soil is anticipated to be imported to the Site for use as clean cover. All imported soil for use as clean soil cover will be uncontaminated, clean soil that meets the lesser of the NYSDEC 6 NYCRR Part 375-6.8(a) Restricted Residential Use SCOs and the NYSDEC 6 NYCRR Part 375-6.8 groundwater protection SCOs.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;

- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility maintains a 6NYCRR Part 360 registration for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived

from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the PE to ensure:

1. That the material is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
2. That the material does not include any solid waste, including construction and demolition material, as it's prohibited;
3. That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and
4. That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 500 cubic yards and analyzed for the following 6 NYCRR Part 375 parameters:
 - VOCs by EPA Method 8260C (rev. 2006)
 - SVOCs by EPA Method 8270D (rev. 2007)
 - Pesticides by EPA Method 8081B (rev. 2000)
 - PCBs by EPA Method 8082A (rev. 2000)
 - TAL Metals by EPA Method 6010C (rev. 2007)

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to OER for review/approval prior to importing. The report will include the following:

1. Summary of number of samples collected and analyzed, tabulated data and comparison to the selected Site Use SCOs;
2. Analytical data sheets and chain of custody documentation;
3. Summary of the quantity;
4. Photographs from the segregated stockpile at the source with sample point locations identified;

5. An affidavit from the source/facility on company letterhead stating that the segregated stockpile has been properly maintained at the source and complies with the requirements listed above; and
6. A copy of source/facility NYSDEC permit;

A highly visible demarcation barrier (i.e. orange geosynthetic fencing material or equivalent) will be installed beneath the clean soil/fill surface cover in landscaped areas. Upon importing and grading the OER approved clean soil cover on top of a highly visible demarcation barrier, the following documentation will be presented in the RAR:

1. Confirmation of OER approved clean soil cover material imported and graded at the site on top of highly visible demarcation barrier;
2. Site plan depicting all areas where the OER approved clean soil cover has been placed; and
3. Photographs documenting the importing and grading of the OER approved clean soil cover across the site with the underlying highly visible demarcation barrier (i.e. orange geosynthetic fencing material or equivalent).

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 work area and inspected in accordance with NYSDEC regulations (e.g. 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, the work creating the odors 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 causing the dust emissions 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 E
CONSTRUCTION HEALTH AND SAFETY PLAN

APPENDIX F
PRE-DELINEATION SAMPLING
LABORATORY ANALYTICAL RESULTS