

# **New Housing New York Legacy Project**

**700-730 Brook Avenue**

**BRONX, NEW YORK**

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## **Final Engineering Report**

**NYSDEC Site Number: C203043**

### **Prepared for:**

Via Verde Homes, LLC

Via Verde Rental Associates, L.P.

902 Broadway, 13<sup>th</sup> Floor

New York, New York 10010

### **Prepared by:**

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**DECEMBER 2011**

## CERTIFICATIONS

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

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

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

**Stephen J. Osmundsen, P.E.**

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Stephen Osmundsen of 514 Pantigo Road, East Hampton, NY 11937-2648 am certifying as Owner's Designated Site Representative [and I have been authorized and designated by all site owners to sign this certification] for the site.

056136  
NYS Professional Engineer #

12/21/11  
Date

  
Signature



P.E. Seal

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## LIST OF ACRONYMS

Acronym	Definition
AST	Aboveground Storage Tank
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CA RICH	CA RICH Consultants, Inc.
CLP	Contract Laboratory Protocol
COC	Certificate of Completion
DUSR	Data Usability Summary Report
EC	Engineering Controls
ELAP	Environmental Laboratory Accreditation Program
ESA	Environmental Site Assessment
EWP	Excavation Work Plan
HASP	Health and Safety Plan
IC	Institutional Controls
ISCO	In-Situ Chemical Oxidation
LEL	Lower Explosive Limit
NYCRR	New York Codes Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYCDEP	New York City Department of Environmental Protection
NYSDOH	New York State Department of Health
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene or perchloroethene
PID	Photoionization Detector
PRR	Periodic Review Report
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
Acronym	Definition
ROD	Record of Decision
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SVOCs	Semi-volatile Organic Compounds



<b>SSD</b>	<b>Sub Slab Depressurization</b>
<b>SSSALs</b>	<b>Site-Specific Soil Action Levels</b>
<b>SVI</b>	<b>Soil Vapor Intrusion</b>
<b>SWPPP</b>	<b>Storm-Water Pollution Prevention Plan</b>
<b>TAL</b>	<b>Target Analyte List</b>
<b>TOGS</b>	<b>Technical and Operational Guidance Series</b>
<b>VOCs</b>	<b>Volatile Organic Compounds</b>
<b>QAPP</b>	<b>Quality Assurance Project Plan</b>
<b>QEP</b>	<b>Qualified Environmental Professional</b>

# FINAL ENGINEERING REPORT

## 1.0 BACKGROUND AND SITE DESCRIPTION

Via Verde Homes, LLC, Via Verde Rental Associates, L.P., and the City of New York Department of Housing Preservation and Development (“HPD”) entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in February 2009 to investigate and remediate a 1.41-acre property located in the Bronx, New York. The property was remediated to restricted residential, use, and will be used for mixed commercial and residential purposes. It is noted that the Deed was transferred on December 30, 2009 and HPD no longer has any ownership interest.

The Site is located in the County of the Bronx, New York and is identified as Section 9, Block 2359; Lot 51, which includes Condominium Lots 1001, 1002, 1003, and 1004, and was formerly part of Lots 1 and 3 on the Bronx County Tax Map. The Site is an approximately 1.41-acre area bounded by East 156th Street to the north, an athletic field to the south, New York City Housing Authority Bronxchester Houses and South Bronx High School to the east, and Brook Avenue to the west (see Figure 1). The boundaries of the Site are more fully described in Appendix A – Metes and Bounds.

An electronic copy of this FER with all supporting documentation is included as Appendix C.

## **2.0 SUMMARY OF SITE REMEDY**

### **2.1 REMEDIAL ACTION OBJECTIVES**

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this site.

#### **2.1.1 Groundwater RAOs**

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

#### **2.1.2 Soil RAOs**

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

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

## **2.2 DESCRIPTION OF SELECTED REMEDY**

The site was remediated in accordance with the remedy selected by the NYSDEC in the RAWP dated July 2009. The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

1. Excavation of soil/fill exceeding Track 4 Site Specific Soil Action Levels (“SSSALs”) established for the Site as listed in Table 1. Excavation depths ranged from 2.5 feet to 22 feet as illustrated on Figure 2. This included collection and analysis of end-point samples in accordance with DER-10 Technical Guidance for Site Investigation and Remediation (“DER-10”) dated May 2010 to evaluate the performance of the remedy with respect to attainment of the Track 4 SSSALs, as well as appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.
2. Construction and maintenance of an engineered composite cover consisting of: (1) a two-foot clean fill buffer in all landscaped/non-capped areas. The two-foot thick cover consists of clean soil underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the residual soil. The top six inches of soil are of sufficient quality to support vegetation and/or the appropriate materials to support the non-impervious surfaces above. Clean soil constitutes soil that meets the soil cleanup objectives outlined in 6 NYCRR Part 375-6.7(d); and (2) Non-vegetated areas (concrete building foundations, sidewalks/pathways and asphalt roadways) covered by a paving system or concrete at least four inches thick to prevent human exposure to remaining contaminated soil/fill remaining at the site. The composite cover system is illustrated on Figures 3, 9 & 9a.

3. Removal of all USTs, hydraulic lifts, and associated petroleum contaminated soil in accordance with applicable regulations as illustrated on Figure 4.
4. Injection of Regenox™ and ORC® Advanced (ISCO treatment) into the shallow groundwater (approximately 22 feet below sidewalk grade) and soil/fill in the smear zone (approximately 17-21 feet below sidewalk grade) in the northern portion of the Site (see Figure 8 for injection locations). This also includes collection and analysis of post-remedial groundwater samples to evaluate the performance of the remedy. Post-remedial groundwater monitoring well locations are illustrated on Figure 5.
5. A vapor barrier and an active SSD system incorporated into the building's foundation as illustrated on Figures 10, 11, 11a & 11b. The SSD system consists of horizontal trenches filled with perforated pipes. The horizontal pipes are connected to vertical risers that extend seven feet above the roof of the building. All pipe penetrations through the vapor barrier were sealed in accordance with the manufacturer's recommendations. The vapor barrier specifications are enclosed as Appendix E.
6. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site.
7. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;
8. Periodic certification of the institutional and engineering controls listed above.

### **3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS**

The remedy for this site was performed as a single project, and no interim remedial measures, operable units or separate construction contracts were performed.

### **4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED**

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP) for the New Housing New York Legacy Project Site dated July 2009. All deviations from the RAWP are noted below.

#### **4.1 GOVERNING DOCUMENTS**

##### **4.1.1 Site Specific Health & Safety Plan (HASP)**

A Site-specific HASP (dated April 2009) was prepared for the remedial Actions performed at the Site and was included as Appendix D in the approved RAWP.

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

The Health and Safety Plan (HASP) was complied with for all remedial and invasive work performed at the Site.

##### **4.1.2 Quality Assurance Project Plan (QAPP)**

The QAPP was included as Appendix F of the Remedial Action Work Plan (RAWP) approved by the NYSDEC. The QAPP describes the specific policies, objectives, organization, functional activities and quality assurance/ quality control activities designed to achieve the project data quality objectives.

#### **4.1.3 Construction Quality Assurance Plan (CQAP)**

The Construction Quality Assurance Plan(s) (CQAPs) managed performance of the Remedial Action tasks through designed and documented QA/QC methodologies applied in the field and in the lab. The CQAP provided a detailed description of the observation and testing activities that were used to monitor construction quality and confirm that remedial construction was in conformance with the remediation objectives and specifications.

The following procedures were employed to assure that QA/QC protocols were implemented during this remedial action.

- One of the Field Technicians identified on the organization chart (ie: environmental scientists and geologists) was present on-site during the soil removal program to monitor particulates and VOC vapor at the Site boundary in accordance with the Community Air Monitoring Plan (CAMP). Any exceedances were reported to the Field Coordinator. The Field Coordinator then relayed this information to the Remedial Engineer and the Project Director.
- During excavation, the Field Technician met with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. This information was forwarded to the Field Coordinator on a daily basis and the Project Director & Remedial Engineer on a weekly basis.
- The Field Coordinator ensured that the Field Technicians read the QAPP and were prepared to collect these samples in accordance with the Plan.
- The Remedial Engineer or his designee was on-site during the installation of the vapor barrier.

#### **4.1.4 Soil/Materials Management Plan (S/MMP)**

The Soil/Materials Management Plan (S/MMP) describes the procedures that were performed during the handling of soil/fill materials on-site during the remedial activities.

##### **4.1.4.1 Soil Screening Methods**

Visual, olfactory and PID soil screening and assessment were performed by a Qualified Environmental Professional (QEP) during all remedial excavations into known or potentially contaminated material. Soil screening was performed regardless of when the invasive work was done and included all excavation and invasive work performed during the remedy and during the development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion (COC).

##### **4.1.4.2 Stockpile Methods**

Stockpiles of soil were inspected at a minimum of once each week and after every storm event. Results of inspections were recorded in a logbook maintained at the Site and were available for inspection by NYSDEC.

Stockpiles of soil were kept covered at all times with appropriately anchored tarps. Stockpiles were routinely inspected and damaged tarp covers were promptly replaced. A hose connected to a fire hydrant was available on-site for dust control.



#### **4.1.4.3 Materials Excavation and Load Out**

The Remedial Engineer or a qualified environmental professional under his supervision oversaw all invasive work as well as the excavation and load-out of all excavated material. A record of the load out of all excavated materials was kept on-site.

The presence of utilities and easements on the Site was investigated prior to the start of remedial activities. The Brownfield Cleanup Program (BCP) Volunteer determined that no risk or impediment to the work under the RAWP was posed by utilities or easements on the Site.

Loaded vehicles leaving the Site were appropriately tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements).

A truck wash was operated on-site. The Remedial Engineer or a qualified environmental professional under his supervision ensured that all outbound trucks were washed at the truck wash, if needed, before leaving the Site until the remedial construction was complete. Locations where vehicles enter or exit the Site were inspected daily for evidence of off-site sediment tracking.

The Remedial Engineer or a qualified environmental professional under his supervision was responsible for ensuring that all egress points for truck and equipment transport from the Site were clean of dirt and other materials derived from the Site during Site remediation and development.

#### **4.1.4.4 Materials Transport Off-Site**

All transport of materials was performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers were appropriately licensed and trucks properly placarded.

Truck transport routes were determined after the disposal facilities for this project were selected. All trucks loaded with Site materials exited the vicinity of the Site using only the approved truck routes. The truck routes took into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city 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.

Trucks were encouraged not to stop and idle in the neighborhood outside the project Site. Egress points for truck and equipment transport from the Site were kept clean of dirt and other materials during Site remediation and development. Queuing of trucks was performed on-site to the extent possible in order to minimize off-site disturbance. Off-site queuing was used only when necessary.

Material transported by trucks exiting the Site was secured with tight-fitting covers. Loose-fitting canvas-type truck covers were prohibited. No loads contained wet material capable of producing free liquid. All trucks were washed prior to leaving the Site. Truck wash waters were collected and disposed of in an appropriate manner.

#### **4.1.4.5 Materials Disposal Off-Site**

Waste characterization samples were collected from the Site prior to commencing Site construction activities. Based on the results of the waste characterization testing, the soil/fill was approved for disposal at the the Pure Soil Technologies – Walter Earle Corp. facility in Jackson, New Jersey and the Bellmawr Waterfront Development Site disposal facility in New Jersey as non-hazardous regulated material. The following documentation was obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or his designee to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter stated that the material to be disposed is contaminated material generated at an environmental remediation Site in New York State, and included as an attachment, a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. The disposal facility information including location was reported to the NYSDEC Project Manager prior to commencing with the disposal activities. This information is included in Appendix F (note: includes confirmation that Bellmawr can accept “Solid Waste”).

During the remedial action, a total of 589.05 tons of soil/fill were disposed of at the Pure Soil Technologies – Walter Earle Corp. facility and a total of 1,014.22 tons of soil/fill were disposed of at the Bellmawr Waterfront Development Site (see Table 2). All soil/fill excavated and removed from the Site was treated as contaminated and regulated material and was disposed of in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations.

A demolition contractor was retained to demolish the existing structure. The construction and demolition debris was disposed of at Cardella Waste of North Bergen, NJ. The volume of construction and demolition debris removed from the Site during

demolition was 1,040 cubic yards (see Table 2). In addition, 1,217-gallons of petroleum product/water mixture, 1,860 gallons of #6 fuel oil, and five 55-gallon drums of tank sludge was removed from the four identified USTs that contained liquid. All liquid (3,077 pounds total) and drums of sludge was disposed of at Clean Waters of Staten Island of Staten Island, New York (see Appendix H).

Bill of Lading system or equivalent were used for off-site movement of non-hazardous wastes and contaminated soils. Appropriately licensed haulers were used for material removed from this Site and were in full compliance with all applicable local, State and Federal regulations. The waste disposal manifests and/or receipts from the soil disposal, construction and demolition debris are enclosed as Appendix G. In addition, the manifests for the disposal of the petroleum product/water mixture and tank sludge are included in the Tank Closure Report (Appendix H).

#### **4.1.4.6 Demarcation**

After the completion of soil removal and any other invasive remedial activities and prior to placement of the foundation slab, a land survey was performed by a New York State licensed surveyor. The survey defined the top elevation of residual contaminated soils. A physical demarcation layer, consisting of either orange snow fence or a vapor barrier (beneath building slab) was placed on this surface to provide a visual reference. This demarcation layer constituted the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP. The survey is enclosed as Figure 6.

#### **4.1.4.8 Backfill from Off-Site Sources**

Due to extreme elevation differences at the Site, the redevelopment included cut and fill, and the importation of clean fill, with minimal off-Site disposal of soil/fill materials. Soil/fill from the western portion of the Site was used to bring up the elevation

on the eastern portion of the Site. In addition, importation of clean fill was performed to bring the Site up to grade. The cut/fill thicknesses are illustrated on Figure 7. The quantity of soil imported into the Site for backfill and cover soil is approximately 11,423 cubic yards. The quantity of soil/fill reused and relocated on Site is approximately 5,000 cubic yards. All of the materials reused on the Site were in compliance with Track 4 SSSALs as acceptable to NYSDEC/NYSDOH.

All imported soils were tested to ensure compliance with the lower of the protection of groundwater or the protection of public health SCOs for restricted residential use as outlined in 6 NYCRR Part 375-6.7(d) and table 375-6.8(b). The source of the clean fill used beneath the composite cover system at the Site is the Tilcon facility located in the Bronx, NY. It is noted that the materials imported from the Tilcon facility for use beneath the composite cover system exhibited some exceedances of base neutral organic compounds as compared with the Part 375 criteria. However, a waiver of those exceedances was issued by DEC/DOH for use of the Tilcon soils beneath the composite cover system but not for use as a two-ft. clean fill buffer. The waiver is included in Appendix D. The source of the clean fill for the 2-ft. buffer beneath non-impervious areas is Thalle Industries in Elmsford, NY, Documentation identifying the source(s) and location for imported soil, and certifying that the fill complies with 6 NYCRR Part 375-6.7(d) was submitted to NYSDEC for review and approval prior to delivery of the fill to the Site. Documentation included analytical results from a NY State ELAP-certified laboratory of soil samples collected by a Qualified Environmental Professional at the fill source. The samples were collected at a frequency of one per every 250 cubic yards of clean fill to be delivered to the Site. Chemical analysis included VOCs via EPA Method 8260, SVOCs via EPA Method 8270, pesticides, PCBs, and TAL metals.

#### **4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)**

The erosion and sediment controls for all remedial construction were performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control and the site-specific Storm Water Pollution Prevention Plan that was included as Appendix G of the RAWP.

#### **4.1.6 Community Air Monitoring Plan (CAMP)**

The CAMP was implemented during the remedial work performed at the Site. The CAMP included the following:

- VOCs were monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceeded 5 ppm above background, work activities were halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings were recorded and are available for State (NYSDEC and NYSDOH) personnel to review.
- Particulates were continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations during excavation activities. If the downwind particulate level were  $150 \mu\text{g}/\text{m}^3$  greater than the upwind particulate level, then dust suppression techniques were employed. All readings were recorded and are available for State (NYSDEC and NYSDOH) personnel to review, and are presented in Appendix J.

##### **4.1.6.1 Vapor Emission Response Plan**

If the ambient air concentration of organic vapors exceeded 5 ppm above background at the perimeter of the work area, activities were halted and monitoring continued. If the organic vapor level decreased below 5 ppm above background, work activities would resume. If the organic vapor levels were greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities could resume provided:

- The organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, was below 5 ppm over background.

- If the organic vapor level was above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

#### **4.1.6.2 Major Vapor Emission Response Plan**

If any organic levels greater than 5 ppm over background were identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities were to be halted.

If, following the cessation of the work activities or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality was monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

Upon activation, the following activities were to be undertaken (if necessary):

1. All Emergency Response Contacts as listed in the HASP will go into effect.
2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
3. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

If efforts to abate the emission source were unsuccessful and if organic vapor levels were approaching 5 ppm above background for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan would automatically be placed into effect. In addition, the Major Vapor Emission Response Plan would be immediately placed into effect if organic vapor levels were greater than 10 ppm above background.

It is noted that the Vapor Emission Response Plan did not need to be implemented during remedial activities.

#### **4.1.7 Contractors Site Operations Plans (SOPs)**

The Remedial Engineer or a qualified environmental professional under his supervision reviewed all plans and submittals for this remedial project (i.e. those listed above plus contractor and subcontractor submittals) and confirmed that they were in compliance with the RAWP. All remedial documents were submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

#### **4.1.8 Citizen Participation Plan**

The Citizen Participation Plan (CPP) provides members of the affected and interested public with information about how NYSDEC and the BCP Volunteer will inform and involve them during the investigation and remediation of the Site. The CPP includes a list of project contacts, the location of the document repository, a Site contact list, and planned CPP activities such as notices, fact sheets, and/or public meetings.



Copies of the CPP are available at the following document repositories established for this Site:

New York Public Library  
Woodstock Branch  
761 East 160th Street  
Bronx, NY 10456-7816  
(718) 665-6255

Hours:

Mon	Tue	Wed	Thurs	Fri	Sat	Sun
10-8	10-6	10-6	10-8	10-5	10-5	Closed

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(718) 585-7117  
Hours: Mondays-Fridays 9am to 5pm

Four fact sheets relating to the filing of the BCP application, RI, and remediation of the Site were distributed to the community. With submittal of this Report to NYSDEC/NYSDOH, a fifth fact sheet will be distributed informing the public that the cleanup action was completed at the Site and the Final Engineering Report is under review. Once the COC is issued, a sixth fact sheet will be distributed informing the public that NYSDEC certified the cleanup requirements achieved at the Site.

A Certification of Mailing was and will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

All final reports submitted to NYSDEC/NYSDOH were placed into the document repository. In addition, any future final reports submitted to NYSDEC/NYSDOH will be placed into the document repository.

## **4.2 REMEDIAL PROGRAM ELEMENTS**

### **4.2.1 Contractors and Consultants**

Stephen Osmundsen, P.E. was the Remedial Engineer of Record responsible for inspection of the environmental work subject to the NYSDEC/NYSDOH-approved RAWP, HASP, and CAMP. The following is a listing of contractors, along with their associated tasks who performed environmental-related work at the Site:

- Lettire Construction Corp – General Contractor
- RNC Industries, LLC – Excavation, Foundation
- Pure Earth Inc. – Disposal of Soil
- Bocella Precast, LLC – Installation of Forms, Walls, and Footings
- Masonry Services, Inc. - Masonry
- Domani Consulting, Inc. - Special Inspections
- Ro-Sal Plumbing – Plumbing
- Montrose Survey Group – Surveys
- Eliou & Scopelitis Steel Fabrication- Steel
- Security fence Systems, Inc. – Fence Installation
- Amberlight – Electrical to power up equipment
- Dattner Architects - Architect of Record
- Grimshaw Architects – Architect of Record
- Lee Weintraub – Landscape Architect
- Robert Silman Associates, P.C. – Structural Engineer
- Ettinger Engineering Associates – MEP Engineer
- Pillori Associates – Geotechnical Engineer
- Cardella Waste Services – Waste Management

- Aarco Environmental – UST Removal
- Eastern Environmental - In-Situ Chemical Oxidation & UST Removal
- CA RICH Consultants, Inc. – excavation oversight, direction and oversight of In-Situ Chemical Oxidation, installation/sampling of groundwater monitoring wells, supervision of SSD System Installation, and implementation of RAWP, HASP and CAMP.

#### **4.2.2 Site Preparation**

##### **4.2.2.1 Mobilization**

Site preparation activities including the installation of fencing, hanging the requisite BCP signs, installation of truck wash pad, etc. were completed from March 8 - 21, 2010.

##### **4.2.2.2 Erosion and Sedimentation Controls**

Erosion and sedimentation controls were established in accordance with Section 4.3.2 and Appendix G of the RAWP. As the Site is surrounded by New York City streets that are serviced with storm water catch basins, precipitation to the ground surface adjoining the Site did not result in a soil erosion issue. Excessive quantities of storm water never accumulated on-site; therefore, a NYCDEP wastewater discharge permit did not need to be obtained during soil excavation activities.

#### **4.2.2.3 Stabilized Construction Entrance(s)**

Prior to the commencement of excavation activities on March 22, 2010, a two to two-and-a-half inch diameter crushed stone path was constructed at the truck entrances for the Site located along Brook Avenue. All trucks drove over this path prior to leaving so that they did not get re-contaminated prior to departure from the Site. A laborer with a hose connected to a New York City fire hydrant checked the trucks as they left the Site. If necessary, the hose was used to wash soil from the truck as it left the Site.

#### **4.2.2.4 Utility Marker and Easements Layout**

The BCP Volunteer identified utilities that might be affected by work under the RAWP as well as Site redevelopment activities. Any utilities that would be affected were turned off by the appropriate utility company prior to remedial activities, which began on March 8, 2010.

The presence of utilities and easements on the Site was investigated by the Remedial Engineer or a qualified environmental professional under his supervision prior to start of construction. At that time, it was determined that no risk or impediment to the planned work under the RAWP was posed by utilities or easements on the Site.

#### **4.2.2.5 Sheet piling and Shoring**

Appropriate management of structural stability of on-site or off-site structures and installation of sheet piling and shoring during on-site activities including the excavation was handled by Lettice Construction Corp. and its on-site excavation and foundation contractor RNC. The contractor obtained any local, State or Federal permits or approvals that were required to perform work under this Plan.

#### **4.2.2.6 Equipment and Material Staging**

The “load and go” approach was used, when possible, for soil removal whereby the soil was excavated and then placed directly into trucks for disposal. The “load and go” approach eliminated the need for staging excavated soil on-site. However, it was not always possible to use this approach. Therefore, when excavated soil could not be directly loaded, it was sorted, staged on-site and covered with plastic sheeting to prevent erosion by precipitation on various occasions between March 22, 2010 and April 19, 2010. Stockpile locations are shown on Figure 2. In addition, all construction equipment and materials were stored within the fenced area of the Site.

#### **4.2.2.7 Decontamination Area**

The crushed stone paths described in Section 4.2.2.3 served as a decontamination area for the trucks leaving the Site. The only other equipment that required decontamination were the soil sampling tools. These were decontaminated using Alconox soap and a fresh water rinse in plastic buckets that were brought to the Site on an as needed basis. The area to be used for the decontamination of soil and groundwater sampling tools was decided on a day by day basis so as not to interfere with construction activities.

#### **4.2.2.8 Site Fencing**

A wood fence with numerous chain link locking gates was installed around the perimeter of the Site prior to site preparation which began on March 8, 2010. In addition, temporary silt fencing was placed along the low elevation Site boundaries.

#### **4.2.2.9 Agency Approvals**

Documentation of agency approvals required by the RAWP is included in Appendix G. No other non-agency permits relating to the remediation project were necessary. All SEQRA requirements and all substantive compliance requirements for attainment of applicable natural resource or other permits were achieved during this Remedial Action.

#### **4.2.2.10 Pre-Construction Meeting**

A pre-construction meeting was held with NYSDEC, the Remedial Engineer and representatives of the Volunteer and the General Contractor (Lettire) on January 28, 2010 at the DER offices in Long Island City, NY.

#### **4.2.2.11 NYSDEC BCP Signage**

A NYSDEC-approved project sign was erected at the project entrance prior to the start of any remedial excavation activities which began in March 2010. The sign indicated that the project was being performed under the “New York State Brownfield Cleanup Program”. The sign met the detailed specifications provided by the NYSDEC Project Manager and remained in place during all phases of the Remedial Action.

### **4.2.3 General Site Controls**

#### **4.2.3.1 Work Hours**

The hours for operation of remedial construction conformed to the New York City Department of Buildings construction code requirements. No complaints regarding work hours were issued by the Department of Buildings.

#### **4.2.3.2 Site Security**

The area around the Site was fully fenced, and a security guard was on-site from 3pm to 7am on weekdays, and 24-hours a day on weekends. Construction staff was on-site during normal working hours on weekdays.

#### **4.2.3.3 Traffic Control**

A traffic control plan was developed for use at the Site. The traffic control plan was implemented during the remedial work. There were no deviations from the plan.

#### **4.2.3.4 Job Site Record Keeping**

A QEP under the supervision of the Remedial Engineer was responsible for maintaining a record of all aspects of the Remedial Action including, but not limited to, tank removals, sample procedures and collection, excavation activities, PID screening of excavation, air and dust monitoring, chemical oxidation injections, installation of monitoring wells, groundwater monitoring, visual observations, and installation of the vapor barrier and SSD system. All daily activities were recorded in a field logbook maintained at the Site and available for inspection by NYSDEC.

#### **4.2.3.5 Erosion and Sedimentation Controls**

Erosion and sedimentation controls were employed in accordance with the Stormwater Pollution Prevention Plan included as Appendix G of the RAWP. The contractor implemented the measures in the plan to satisfy the following objectives:

1. Minimize unnecessary soil disturbance and dust generation on Site.
2. Minimize storm-water contamination from on-site activities.
3. Inhibit or slow the flow of runoff across the Site.
4. Remove sediment from on-site runoff before it leaves the Site.
5. Remove soil from vehicles leaving the Site.
6. Inhibit dust migration from the Site to surrounding streets and buildings without excessive use of water.
7. Prevent concrete washout from filling catch basins.
8. Minimize on-site pollution due to Site construction activity.

#### **4.2.3.6 Equipment Decontamination**

The crushed stone paths described in Section 4.2.2.3 served as decontamination areas for the trucks leaving the Site. In addition, where effective, equipment and/or machinery were “dry” decontaminated using a broom and/or brushes. If significant amounts of soil or other contaminants remained after the dry decontamination, the equipment was also washed with Alconox and Water before leaving the Site. Disposable items were containerized within the Site and transported for appropriate off-site disposal.

The only other equipment that required decontamination was the soil and groundwater sampling tools. These were decontaminated in accordance with the procedures outlined in the QAPP.



#### **4.2.3.7 Soil Screening Results**

All excavated soil was screened with a PID by a QEP. The soil screening results were recorded in the field logbook by the QEP. No PID readings above background were measured.

#### **4.2.3.8 Stockpile Methods**

Stockpiles were inspected at a minimum of once each week and after every storm event. Results of inspections were recorded in the field logbook. Stockpiles were kept covered at all times with appropriately anchored tarps. Damaged stockpile tarp covers were promptly replaced. Stockpile locations are shown on Figure 2.

#### **4.2.3.9 Problems Encountered**

There were no problems encountered during the Remedial Action.

### **4.2.4 Nuisance controls**

#### **4.2.4.1 Truck Wash and Egress Housekeeping**

All transport of materials was performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers were appropriately licensed and trucks properly placarded. Loaded vehicles leaving the Site were appropriately tarped, securely covered, and manifested in accordance with appropriate local, State, Federal and New York State Department of Transportation requirements (and all other applicable transportation requirements).

A truck wash was operated on-site. If needed, all outbound trucks were washed at the truck wash before leaving the Site until the remedial construction was complete.

Locations where vehicles entered or exited the Site were inspected daily for evidence of off-site sediment tracking. Cleaning of the adjacent streets was performed as needed to maintain a clean condition with respect to Site-derived materials.

#### **4.2.4.2 Dust Control**

A dust suppression plan that addressed dust management during invasive on-site work was included as Section 5.4.13.2 of the RAWP. The dust suppression plan was implemented during intrusive activities and included the items listed below:

- Dust suppression was achieved through the use of a dedicated on-site hose connected to a fire hydrant. The hose was equipped with a nozzle capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing was done in stages to limit the area of exposed, non-vegetated soils vulnerable to dust production.
- A gravel apron was provided at truck entry/exit points to the Site to provide a clean and dust-free road surface.
- On-site roads were limited in total area to minimize the area required for water truck sprinkling.

#### **4.2.4.3 Odor Control**

An odor control plan capable of controlling emissions of nuisance odors off-site was included as Section 5.4.13.1 of the RAWP. The odor control plan was implemented during intrusive activities and included the following:

- Specific odor control methods used on a routine basis included use of a PID meter to screen for VOCs and olfactory observations.
- Necessary means were available to prevent on- and off-site nuisances. These procedures included: (a) limiting the area of open excavations; (b) shrouding

open odorous excavations with tarps and other covers; (c) using foams to cover exposed odorous soils. If odors developed and could not be otherwise controlled, additional means to eliminate odor nuisances would include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

It is noted that no nuisance odors were identified during remedial actions.

#### **4.2.3.9 Truck Routing**

Truck transport routes were determined after the disposal facilities for this project were selected. All trucks loaded with Site materials exited the vicinity of the Site using only these approved truck routes. The approved truck routes took into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city 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.

Trucks were encouraged not to stop and idle in the neighborhood outside the project Site. Queuing of trucks was performed on-site to the extent possible in order to minimize off-site disturbance. Off-site queuing was used only when necessary.

Egress points for truck and equipment transport from the Site were kept clean of dirt and other materials during Site remediation and development. Material transported by trucks exiting the Site was secured with tight-fitting covers. Loose-fitting canvas-type truck covers were prohibited.

#### **4.2.4.5 Complaint Response**

There were no complaints from the community during the Remedial Action.

#### **4.2.5 CAMP results**

The CAMP was included as Section 5.0 in Appendix D (Health and Safety Plan) of the RAWP. A map showing the location of fixed and mobile sampling stations was developed by the Site Health & Safety Office prior to beginning the excavation program and the sampling station locations are shown on Figure 2. As there were no exceedences, no vapor response actions were necessary during the Remedial Action. Copies of all field data sheets relating to the CAMP are provided in electronic format in Appendix J.

#### **4.2.6 Reporting**

Daily reports were submitted to NYSDEC and NYSDOH Project Managers via e-mail by the end of each day following the reporting period and included:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions (if any);
- An explanation of notable Site conditions.

Daily Reports included a description of daily activities keyed to an alpha-numeric map for the Site that identified the work areas. These reports included a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

Monthly reports were submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period and included:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,
- An update of the remedial schedule, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

All daily and monthly reports are included in electronic format in Appendix K. The digital photo log required by the RAWP is also included in electronic format in Appendix L.

### **4.3 CONTAMINATED MATERIALS REMOVAL**

The removal of contaminated materials from the Site included: 1) removal of six USTs and associated tank liquid and sludge, and 2) the excavation and removal of subsurface soils, and construction and demolition debris. The remedy selected for this Site included a Track 4 cleanup with SSSALs and implementation of certain IC/ECs. The SSSALs were developed based upon 6 NYCRR Part 375 and data from the RI report. All excavation end-point soil samples met the Track 4 SSSALs. A list of the Track 4 SSSALs and applicable land use for this Site is provided in Table 1.

#### **4.3.1 Tank Removal**

A former filling station was present on the northwestern portion of the Site. Two 550-gallon, two 275-gallon, and one 750-gallon USTs were located within the former filling station. In addition, one 3,000-gallon UST was also present in the northwestern

portion of the Site but was not in the former filling station location. The six USTs, associated tank liquid and sludge, and associated fill ports and vent pipes and one piston with a small empty tank from a former hydraulic lift were removed during excavation activities in April 2010. The locations of the former USTs are illustrated on Figure 4. The Tank Closure Report summarized the removal activities (Appendix H).

#### **4.3.1.1 Disposal Details**

On March 24, 2010, during Site excavation activities in the northwestern portion of the Site which historically was used as a gasoline station, two 550-gallon steel USTs and one piston with a small tank from a former hydraulic lift were unearthed. As both tanks appeared to contain liquid, a vacuum truck was immediately mobilized to the Site. The vacuum truck removed 910 gallons of a petroleum/water mixture from the tanks, which was transported by Eastern Environmental Solutions, Inc. (Eastern) for disposal at the Clean Waters of Staten Island, New York waste disposal facility. Immediately following the liquid removal, the tanks were exposed, exhumed and placed on polyethylene sheeting for inspection by a CA RICH Qualified Environmental Professional (QEP).

The inspection of the tanks revealed that the two 550-gallon USTs were intact. The tank grave was then inspected by a QEP. Based on visual observations and limited screening of soil, it appeared that some leakage from the tanks had occurred. PID readings ranging from zero ppm to 169 ppm were noted from the limited exposed soils screened within the tank grave. At that time, it was unclear whether more than five-gallons of petroleum product had spilled. Therefore, a call was not made to the NYSDEC spill hotline; however, NYSDEC BCP Project Manager, Mandy Yau was notified of the discovery of the tanks as well as the limited impacted soil.

On March 25, 2010, further investigation and excavation of the petroleum impacted soil within this portion of the Site began. The petroleum contaminated soil was stockpiled separately from other stockpiled soils on the Site that were generated due to

redevelopment activities. The excavated soil was stockpiled on and covered with polyethylene sheeting. During excavation activities, two 275-gallon USTs were encountered underneath the remnants of the former hydraulic lift. Both tanks were in poor condition and contained saturated, petroleum stained soil with a strong petroleum odor. The saturated soil was removed from the tanks and stockpiled on polyethylene sheeting. Once the soil was removed, the tanks were excavated and placed on polyethylene sheeting for further inspection by a QEP. Based on the inspection, it was determined that one of the 275-gallon USTs contained number two fuel oil and the other 275-gallon UST contained waste oil.

The QEP then inspected the soils surrounding and underneath these tanks. Based on visual observations and screening of soil, it appeared that some leakage from these tanks occurred as well. PID readings from this portion of the tank grave ranged from 120 to 170 ppm. Therefore, soil excavation of petroleum impacted soil continued in this area. All excavated materials were screened with a PID.

Excavation continued to the north, east, and west to the extent possible without undermining the sidewalk or retaining wall. Excavation ceased at the northern sidewalk along East 156th Street, at the western sidewalk along Brook Avenue, and at the eastern retaining wall of the former gasoline station to a depth of approximately eight feet below sidewalk grade. As excavation could not continue further in these areas, excavation endpoint samples were collected at the property boundary at these locations. In addition, excavation in the area of the former hydraulic lift and two 275-gallon tanks continued down to the water table. As the excavation ceased at the water table, a “bottom” endpoint sample was collected, right above the water table. Based on the amount of soil that appeared to be impacted with petroleum, a requisite telephone call to the NYSDEC’s Spill Hotline was made, and Spill Number 0913723 was assigned to the Site.

Excavation of petroleum impacted soils continued on March 26, 2010. Once non-petroleum impacted soil was reached, the remaining excavation endpoint samples were

collected. All endpoint samples were submitted to ELAP and CLP certified Accutest Laboratories of Dayton, New Jersey. Endpoint samples from around the two 550-gallon USTs were analyzed for volatile organic compounds (VOCs) via EPA Method 8260, semi-volatile organic compounds (SVOCs) via EPA Method 8270, and Lead. Endpoint samples from around the two 275-gallon USTs and the former hydraulic lift were analyzed for VOCs via EPA Method 8260, SVOCs via EPA Method 8270, and the eight RCRA Metals. In addition, a composite sample of the stockpiled petroleum contaminated soil was collected for the purpose of procuring approval from an appropriate permitted waste disposal facility. As the piston with a small tank from a former hydraulic lift did not contain any petroleum product remnants, it did not need to be cleaned. On March 29, 2010, the piston and small tank were transported off-site for disposal at Sal's Metal Corp. in the Bronx, NY as scrap metal (see Appendix H).

On March 31, 2010, AARCO Environmental Services, Inc. (AARCO), a licensed tank contractor, mobilized to the Site to cut, clean, and remove the four recently discovered tanks under CA RICH supervision. First, the two 550-gallon USTs were cut open and the remaining sludge was inspected. Based on the sludge, it was determined that one of the 550-gallon USTs contained gasoline and the other 550-gallon UST contained number two fuel oil. AARCO then proceeded to cut and clean the two 275-gallon USTs. Based on the sludge, it was determined that one of the 275-gallon USTs contained waste oil and the other 275-gallon UST contained number two fuel oil. The excavator then removed the sludge from the tanks and stockpiled it on polyethylene sheeting along with the petroleum contaminated soil. Once the tanks were cleaned, they were placed into a dump truck and a trailer and disposed of off-site at Gershow Recycling in Lindenhurst, NY as scrap metal (See Appendix H).

On April 9, 2010, during site excavation/redevelopment activities, a fifth UST was encountered. This tank was discovered to the south of the former gasoline portion of the Site. Once the tank was encountered, excavation activities ceased. As only a small portion of the top of the tank was uncovered that day, the exact size and contents were



unknown. However, the presence of liquid within the tank was apparent. Therefore, a vacuum truck was mobilized to the Site on April 12, 2010 and 1,860-gallons of number six fuel oil were removed from the tank. The removed liquid was transported by Eastern for disposal at the Clean Waters of Staten Island, New York waste disposal facility. Immediately following the liquid removal, the tank was exposed, exhumed and placed on polyethylene sheeting for inspection by a CA RICH QEP. Based upon the inspection, this tank was measured to be 3,000 gallons in capacity and appeared intact with no holes or cracks observed.

On April 13, 2010, the 3,000-gallon UST was cut, cleaned, and disposed of off-site at Gershow Recycling in Lindenhurst, NY as scrap metal by Eastern, a licensed tank contractor, under CA RICH supervision (See Appendix B of the Tank Closure Report for Affidavit). In addition, the remaining tank sludge was placed into four 55-gallon drums, which were also removed from the Site that day and transported under non-hazardous waste manifest control to the Clean Waters of Staten Island, New York waste disposal facility. Once the 3,000-gallon tank was removed, the tank grave was inspected by a CA RICH QEP. Based on visual observations and field screening of the sides and bottom of the tank grave, it did not appear that the tank had leaked. Therefore, the five requisite endpoint samples were collected. All endpoint samples were submitted to ELAP and CLP-certified Accutest Laboratories of Dayton, New Jersey. Endpoint samples from around the 3,000-gallon UST were analyzed for VOCs via EPA Method 8260, SVOCs via EPA Method 8270, and Lead.

On April 15, 2010, as part of redevelopment activities, the retaining wall from the former gasoline station was demolished. Upon destruction of the wall, a sixth UST with a capacity of 750-gallons was encountered. As the tank appeared to contain a rainwater/petroleum mixture, a vacuum truck was mobilized to the Site.

On April 16, 2010, 307-gallons of a petroleum/water mixture were removed from the tank. The removed liquid was transported by Eastern for disposal at the Clean Waters of

Staten Island, New York waste disposal facility. Immediately following the liquid removal, the tank was exposed, exhumed and placed on polyethylene sheeting for inspection by a CA RICH QEP. Based upon the inspection, this tank appeared intact and no holes or cracks were apparent. The tank was then cut, cleaned, and disposed of at Gershow Recycling in Lindenhurst, NY by Eastern. Based on an inspection of the sludge within the tank, it was determined that the tank formerly contained number two fuel oil. The remaining tank sludge was placed into one 55-gallon drum, which was removed from the Site the same day and transported under non-hazardous waste manifest control to the Clean Waters of Staten Island, New York waste disposal facility. The tank grave was then inspected by a CA RICH and it was determined that the tank did not leak. Therefore, the five requisite endpoint samples were collected. All endpoint samples were submitted to ELAP and CLP certified Accutest Laboratories of Dayton, New Jersey. Endpoint samples from around the 750-gallon UST were analyzed for VOCs via EPA Method 8260, SVOCs via EPA Method 8270, and Lead.

The USTs and all endpoint sample locations are illustrated on Figure 4. Copies of all waste disposal manifests and receipts along with requisite New York City Fire Department (NYCFD) Tank Removal Affidavits and selected Photographs from the tank removal and soil excavation are included in Appendix H.

On April 6, 7, 15 & 19, 2010, 589.05 tons of petroleum contaminated soil from around the two 550-gallon, two 275-gallon USTs, and piston and small tank from the former hydraulic lift were loaded into dump trucks and transported under non-hazardous waste manifest control to the permitted Pure Soil Technologies - Walter Earle Corp. soil disposal facility in Jackson, New Jersey. Copies of all waste disposal manifests are included in Appendix H.

#### **4.3.2 Soil Removal**

To comply with the Track 4 SSSALs, the excavation of soil/fill within three hot-spot areas was performed. Samples were obtained from the three hot spots (designated 1, 2, and 3) at the Site (see Figure 2 for locations). In order to satisfy the Track 4 SSSALs, three rounds of excavation and sampling were performed in hot spot 2. The final excavation depth in hot spot 1 ranged from 2.5 feet to 6 feet; 22 feet in hot spot 3; and 10 feet in hot spot 2. Areas where excavation was performed as well as the final excavation depths are shown in Figure 2.

##### **4.3.2.1 Disposal Details**

During the remedial action, a total of 1,603.27 tons of soil/fill were removed from the Site. A total of 589.05 tons of soil/fill were disposed of at the Pure Soil Technologies – Walter Earle Corp. facility in Jackson, New Jersey and a total of 1,014.22 tons of soil/fill were disposed of at the Bellmawr Waterfront Development Site disposal facility in New Jersey. The volume of construction and demolition debris removed from the Site during demolition/excavation was 1,040 cubic yards. The construction and demolition debris was disposed of at Cardella Waste of North Bergen, N.J. Table 2 shows the total quantities of each category of material removed from the Site and the disposal locations. The analytical data from the samples collected to characterize the waste are included in Appendix M. Letters from Applicants to disposal facility owners and acceptance letters from disposal facility owners are attached in Appendix F. Manifests and bills of lading are included in electronic format in Appendix G.

##### **4.3.2.2 On-Site Reuse and Importation of Soils**

Due to extreme elevation differences at the Site, the redevelopment included cut and fill, and the importation of clean fill, with minimal off-Site disposal of soil/fill materials. Soil/fill from the western portion of the Site was used to bring up the elevation on the eastern portion of the Site. In addition, importation of clean fill was performed to

bring the Site up to grade. The cut/fill thicknesses are illustrated on Figure 7. The quantity of soil imported into the Site for backfill and cover soil is approximately 11,213 cubic yards. The quantity of soil/fill reused/relocated on Site is approximately 5,000 cubic yards. All of the materials reused on the Site were in compliance with Track 4 SSSALs as acceptable to NYSDEC/NYSDOH.

All imported soils were tested to ensure compliance with the lower of the protection of groundwater or the protection of public health SCOs for restricted residential use as outlined in 6 NYCRR Part 375-6.7(d) and table 375-6.8(b). The source of the clean fill used beneath the composite cover system at the Site is the Tilcon facility located in the Bronx, NY. It is noted that the materials imported from the Tilcon facility for use beneath the composite cover system exhibited some exceedances of base neutral organic compounds as compared with the Part 375 criteria. However, a waiver of those exceedances was issued by DEC/DOH for use of the Tilcon soils beneath the composite cover system but not for use as a 2-ft. clean fill buffer (copy of waiver included in Appendix D). The source of the clean fill for the 2-ft. buffer beneath non-impervious areas is Thalle Industries, Elmsford, NY. Documentation identifying the source(s) and location for imported soil, and certifying that the fill complies with 6 NYCRR Part 375-6.7(d) was submitted to NYSDEC for review and approval prior to delivery of the fill to the Site. Documentation included analytical results from a NY State ELAP-certified laboratory of soil samples collected by a Qualified Environmental Professional at the fill source. The samples were collected at a frequency of one per every 250 cubic yards of clean fill to be delivered to the Site. Chemical analysis included VOCs via EPA Method 8260, SVOCs via EPA Method 8270, pesticides, PCBs, and TAL metals. A copy of the analytical results is included in Appendix M.

#### **4.3.3 In-Situ Chemical Oxidation (ISCO)**

Based upon the detection and distribution of groundwater contaminants, in-situ chemical oxidation was performed in the area of the former service station (northwest corner of the Site). On April 1<sup>st</sup> through 9<sup>th</sup>, 2010 Regenox™ and ORC® Advanced (ISCO treatment) was injected into the shallow groundwater and soil/fill in the smear zone. The locations of the injections are illustrated on Figure 8. On April 1<sup>st</sup>, 2<sup>nd</sup>, and 5<sup>th</sup>, ISCO injection was performed at injection points IP-1 through IP-15 from a depth of nine feet up to four feet below grade; at a dosage rate of 115-gallons of Regenox™/ORC® Advanced per point and a water/chemical ratio of one to one. On April 6<sup>th</sup> through 9<sup>th</sup>, ISCO injection was performed at injection points IP-16 through IP-28 from a depth of 25 feet up to 17 feet below grade; at a dosage rate of 184-gallons of Regenox™/ORC® Advanced per point and a water/chemical ratio of one to one. The engineering calculations are included in Appendix R.

### **4.4 REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLING**

#### **4.4.1 Excavation Endpoint Sampling**

On March 23, March 31, and April 7, 2010, a total of 23 soil excavation endpoint samples were collected from the final ‘hot spot’ excavation depths (see Figure 2). In addition, the requisite number of QA/QC samples were collected including: trip and field blanks, matrix spike and matrix spike duplicates, and duplicate samples. The excavation endpoint samples were collected and placed directly into a laboratory issued bottle. The sample containers were properly labeled and immediately placed on ice within a cooler. Sample time and location were recorded on a Chain of Custody. The samples were submitted to an Environmental Laboratory Approval Program (ELAP)-certified laboratory for analysis of VOCs via EPA Method 8260; SVOCs via EPA Method 8270; PCBs; Pesticides; and the target analyte list (TAL) of metals using the EPA Method 6000/7000 series. The laboratory followed the NYSDEC – Analytical Services Protocol (ASP) dated 1995, and compiled and submitted the data package using NYSDEC ASP

Category B deliverables. Data Usability Summary Reports (DUSRs) were prepared for all data generated in this remedial performance evaluation program.

The analytical results of the end-point samples were tabulated and compared to the Track 1 SCOs, per Table 375-6.8(a) of 6 NYCRR, Track 2 Restricted Residential SCOs for the protection of public health per Table 375-6.8b of 6 NYCRR, and the Track 4 SSSALs.

The analytical results from the samples illustrated that the remaining contamination consists of the polycyclic aromatic hydrocarbons benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, and the metal lead in limited areas throughout the Site. Tables 3 to 5 and Figure 2 summarize the results of all soil samples remaining at the Site after completion of Remedial Action that exceed the Track 1 UUSCOs. The DUSRs are included in Appendix L, and associated raw data are provided electronically in Appendix M. All end-point soil sampling results have been provided to NYSDEC in the appropriate Electronic Data Deliverable format.

#### **4.4.2 Post-Remedial Groundwater Sampling**

Four post-remedial groundwater monitoring wells designated MW-6, MW-7, MW-8, & MW-9 were installed, developed and surveyed at the Site in July 2011 and will serve as the groundwater monitoring wells for the post-remedial groundwater monitoring (see Figure 5 for well locations). Monitoring well construction logs are included in Appendix N. Contours of groundwater elevation, illustrating the general direction of groundwater flow for August 25, 2011 are also included on Figure 5.

The first round of quarterly post remedial groundwater monitoring was completed on August 3-4 2011. The four newly-installed monitoring wells were purged and sampled in accordance with EPA's Low-Flow (minimal drawdown) Groundwater Sampling Procedures. QA/QC samples were also collected and analyzed in connection

with the testing as set forth in the QAPP and included one trip blank, one field blank per day of field work, one duplicate, one matrix spike, and one matrix spike duplicate. In addition, the data was validated by a qualified third-party and a DUSR was prepared. Groundwater samples were collected from the wells, submitted to an ELAP and CLP certified laboratory, and analyzed for VOCs via EPA Method 8260, SVOCs via EPA Method 8270, PCBs and dissolved TAL metals (plus hexavalent chromium) with NYSDEC ASP Category B deliverables. Additional ISCO parameters including dissolved oxygen (DO) and oxidation/reduction potential (ORP) were monitored in the field during sampling. The validated analytical results are summarized on Tables 6 through 9. The DUSRs are enclosed as Appendix L and associated raw data are provided electronically in Appendix M. All post-remedial groundwater sampling results have been provided to NYSDEC in the appropriate Electronic Data Deliverable format.

#### **4.5 IMPORTED BACKFILL**

Due to extreme elevation differences at the Site, the redevelopment included cut and fill, and the importation of clean fill, with minimal off-Site disposal of soil/fill materials. Soil/fill from the western portion of the Site was used to bring up the elevation on the eastern portion of the Site. In addition, importation of clean fill was performed to bring the Site up to grade. The cut/fill thicknesses are illustrated on Figure 7. The quantity of soil imported into the Site for backfill and cover soil is approximately 11,213 cubic yards. The quantity of soil/fill reused/relocated on Site is approximately 5,000 cubic yards. All of the materials reused on the Site were in compliance with Track 4 SSSALs as acceptable to NYSDEC/NYSDOH.

All imported soils were tested to ensure compliance with the lower of the protection of groundwater or the protection of public health SCOs for restricted residential use as outlined in 6 NYCRR Part 375-6.7(d) and table 375-6.8(b). The source of the clean fill used beneath the composite cover system at the Site is the Tilcon facility located in the Bronx, NY. It is noted that the materials imported from the Tilcon facility for use beneath the composite cover system exhibited some exceedances of base neutral organic compounds as compared with the Part 375 criteria. However, a waiver of those

exceedances was issued by DEC/DOH for use of the Tilcon soils beneath the composite cover system but not for use as a 2-ft. clean fill buffer (copy of waiver included in Appendix D). The source of the clean fill for the 2-ft. buffer beneath non-impervious areas is Thalle Industries, Elmsford, NY. Documentation identifying the source(s) and location for imported soil, and certifying that the fill complies with 6 NYCRR Part 375-6.7(d) was submitted to NYSDEC for review and approval prior to delivery of the fill to the Site. Documentation included analytical results from a NY State ELAP-certified laboratory of soil samples collected by a Qualified Environmental Professional at the fill source. The samples were collected at a frequency of one per every 250 cubic yards of clean fill to be delivered to the Site. Chemical analysis included VOCs via EPA Method 8260, SVOCs via EPA Method 8270, pesticides, PCBs, and TAL metals.

Sources of imported backfill with quantities for each source is shown on Table 10. Tables summarizing chemical analytical results for backfill, in comparison to allowable levels, are provided in Appendix M. The locations of soil importation are illustrated on Figure 7 (Cut and Fill) including the imported fill beneath the Composite Cover System, and in Figure 3 (Composite Cover System) which includes the locations of the 2-foot clean-fill buffer in non-impervious areas).

## **4.6 CONTAMINATION REMAINING AT THE SITE**

### **4.6.1 Soil**

The analytical results from the soil excavation endpoint samples illustrate that the the heavy metal, lead remains in most areas at concentrations in excess of Part 375 Track 1 Unrestricted Use SCOs. In addition, the polycyclic aromatic hydrocarbons benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene; remain in one specific area above Track 1 Unrestricted Use SCOs. None of the end-point samples contained any compounds or constituents in excess of the Track 4 SSSALs. Tables 3 to 5 and Figure 2 summarize the results of all soil samples remaining at the Site after completion of



Remedial Action that exceed the Track 1 UUSCOs. The DUSRs are included in Appendix N, and associated raw data are provided electronically in Appendix O.

The top elevation of these residual contaminated soils discussed above is approximately 10-15-feet below grade Site-wide and was identified by a land survey, performed by a New York State-licensed surveyor. The top of the residual contaminated zone beneath the newly-constructed on-Site buildings was covered with recycled concrete aggregate followed by a physical demarcation barrier/layer. The physical demarcation layer consists of a Stego™ 15-mil vapor barrier. The remaining portions of the site were covered with orange snow fence as a demarcation layer. This demarcation layer constitutes the top of the ‘Residuals Management Zone’, the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP. Included within this zone are the utilities for the new building as well as the piping for the SSD system. In addition, exposure to residual contaminated soils is being prevented by the composite cover system, which includes the vapor barrier. The elevation of the top of the residual management zone is shown on Figure 6.

#### **4.6.2 Groundwater**

The results from the first round of post-remedial groundwater monitoring include detections of fuel related VOCs in the groundwater beneath the northwest corner of the Site at concentrations in excess of NYSDEC TOGS Class GA groundwater standards. Detected compounds include benzene (and benzene-related compounds), toluene (and toluene-related compounds), as well as naphthalene and xylenes. These detections were generally limited to the sample from well MW-8 (see Figure 5 for well locations). SVOC detections were limited to one compound, naphthalene in MW-8 in excess of TOGS Standards. No PCBs were detected in any of the samples. Metals including iron, magnesium, manganese and sodium were detected generally Site-wide at concentrations above TOGS Standards. In addition, lead was detected in MW-8 at a concentration just slightly above the TOGS Standard. Tables 6-9 summarize the results of the first round of post-remedial groundwater sampling.

#### **4.6.3 Soil Vapor**

As residual VOCs dissolved in the groundwater remain beneath the Site, the potential for off-gassing exists. Exposure to soil vapor is being prevented by the composite cover system, which includes a vapor barrier. In addition, a SSD system was incorporated below the foundation of the building for additional protection.

Since contaminated soil, groundwater, and soil vapor remains beneath the Site after completion of the Remedial Action, IC/ECs are required to protect human health and the environment. These ICs/ECs are described in the following sections. Long-term management of these ICs/EC and residual contamination will be performed under the SMP (Ref. 6) approved by the NYSDEC.

#### **4.7 COMPOSITE COVER SYSTEM**

Exposure to remaining contamination in soil/fill at the site is prevented by a composite cover system placed over the site. This cover system is comprised of: (1) a two-foot clean fill buffer in all landscaped/non-capped areas. The two-foot thick cover consists of clean soil underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the residual soil. The top six inches of soil are of sufficient quality to support vegetation and/or appropriate for the non-impervious surfaces to be installed above (e.g. Crushed stone or aggregate). Clean soil constitutes soil that meets the soil cleanup objectives outlined in 6 NYCRR Part 375-6.7(d); and (2) Non-vegetated areas (concrete building foundations, sidewalks/pathways and asphalt roadways) covered by a paving system or concrete at least 4 inches thick to prevent human exposure to remaining contaminated soil/fill remaining at the site. The composite cover system is illustrated on Figure 3. Figures 9 and 9a show the as-built cross sections for each remedial cover type used on the site. An Excavation Work Plan, which outlines the procedures required in the event the cover system and/or underlying residual contamination are disturbed, is provided in Appendix A of the SMP.

#### **4.8 OTHER ENGINEERING CONTROLS**

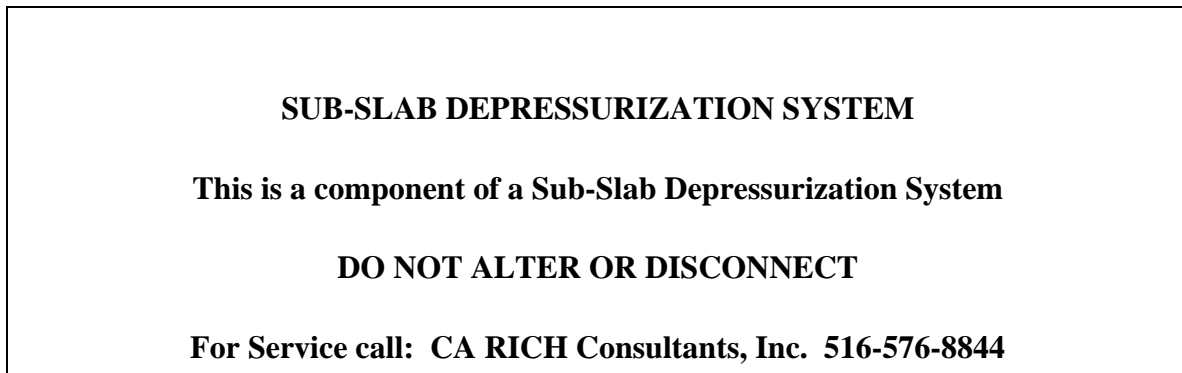
As remaining contaminated soil and groundwater exists beneath the site, Engineering Controls (EC) are required to protect human health and the environment. The site has the following primary Engineering Controls, as described in the following subsections.

##### **4.8.1 Sub-Slab Depressurization (SSD) System**

As an additional measure to prevent vapor-phase VOCs remaining in groundwater and/or soil/fill from entering the new building's interior, installation of an active SSD system was included in the construction of the new buildings' foundation. The sub-slab piping for the SSD system was installed in August and September 2010.

The SSD system maintains a negative pressure underneath the slab while allowing the vapors below the concrete slab to vent without intruding into the building. The SSD system consists of horizontal trenches with four-inch perforated PVC pipe, a filter sock, and gravel. The horizontal pipes are connected to vertical risers that extend seven feet above the roof of the building with in-line active SSD fans mounted above the roof. A Magnehelic<sup>®</sup> gauge was retrofitted to each of the riser pipes above the slab to facilitate collection of vacuum readings. These gauges also serve as warning devices or indicators to ensure that this active system is working properly. Sample ports were also installed in each of the riser pipes to allow for the collection of sub-slab vapor samples, if needed.

In addition, labels were affixed to each riser immediately below the sample ports indicating the following:



The SSD fans are Fantech Model number HP-220 fans. As-built drawings for the SSD system are illustrated on Figure 10. The As-built Vent & Roof Details as well as the sub-slab Detail are illustrated on Figures 11, 11a & 11b.

Procedures for operating and maintaining the SSD system are documented in the Operation and Maintenance Plan (Section 4 of the SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of the SMP). The Monitoring Plan also addresses inspection procedures that must occur after any severe weather condition has taken place that may affect on-site ECs.

#### **4.9 INSTITUTIONAL CONTROLS**

The site remedy requires that an environmental easement be placed on the property to (1) implement, maintain and monitor the Engineering Controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to restricted residential and commercial uses only.

The environmental easement for the site was executed by the Department on December 5, 2011 and filed with the Bronx County Clerk on December 21, 2011. The County Recording Identifier number for this filing is 2011000443269. A copy of the easement and proof of filing is provided in Appendix B.

#### **4.10 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN**

There were three deviations from the approved RAWP during the course of the remedial action as described below:

##### **4.10.1 Change in Post-remedial Monitoring Well Locations**

The locations of the four post-remedial groundwater monitoring wells were included on Figure 14 of the approved RAWP. However, during the course of site development, it was determined that some of the locations would have to be moved to avoid interference with planned construction. Based upon this issue, DEC was contacted via e-mail on March 22, 2011 and a request for altering the locations of the affected wells was submitted along with an updated proposed well location map. DEC subsequently approved the modified location map (see Appendix D for approval). The location of the new wells is discussed in further detail in Section 4.4.2 of this Report. The alteration in location of the wells will have no impact on the post remedial groundwater monitoring program.

##### **4.10.2 Change in Imported Clean Fill Quality Requirements**

Section 5.4.9 of the approved RAWP specified that all clean fill imported to the site meet the lower of Part 375 restricted residential standards or protection of groundwater standards (as set forth in NYCRR Part 375-6.7(d) and Table 375-6.8(b). However, sampling and analysis at the clean fill source (Tilcon), resulted in detections of some PAH compounds in excess of the required guidance. Based upon this exceedance, the results of the sampling were forwarded to DEC with a request for a waiver of the clean soil quality requirement. DEC subsequently approved the use of the Tilcon soils for use as fill beneath the composite cover system, but not for use as a 2-foot clean fill buffer (See Appendix D). As such, a separate source of clean fill for the 2-foot clean fill buffer was secured with soils meeting the soil quality requirements set forth in the approved RAWP. The testing and approval process for clean soils imported to the site is discussed in further detail in Section 4.5 of this Report. The change in fill quality

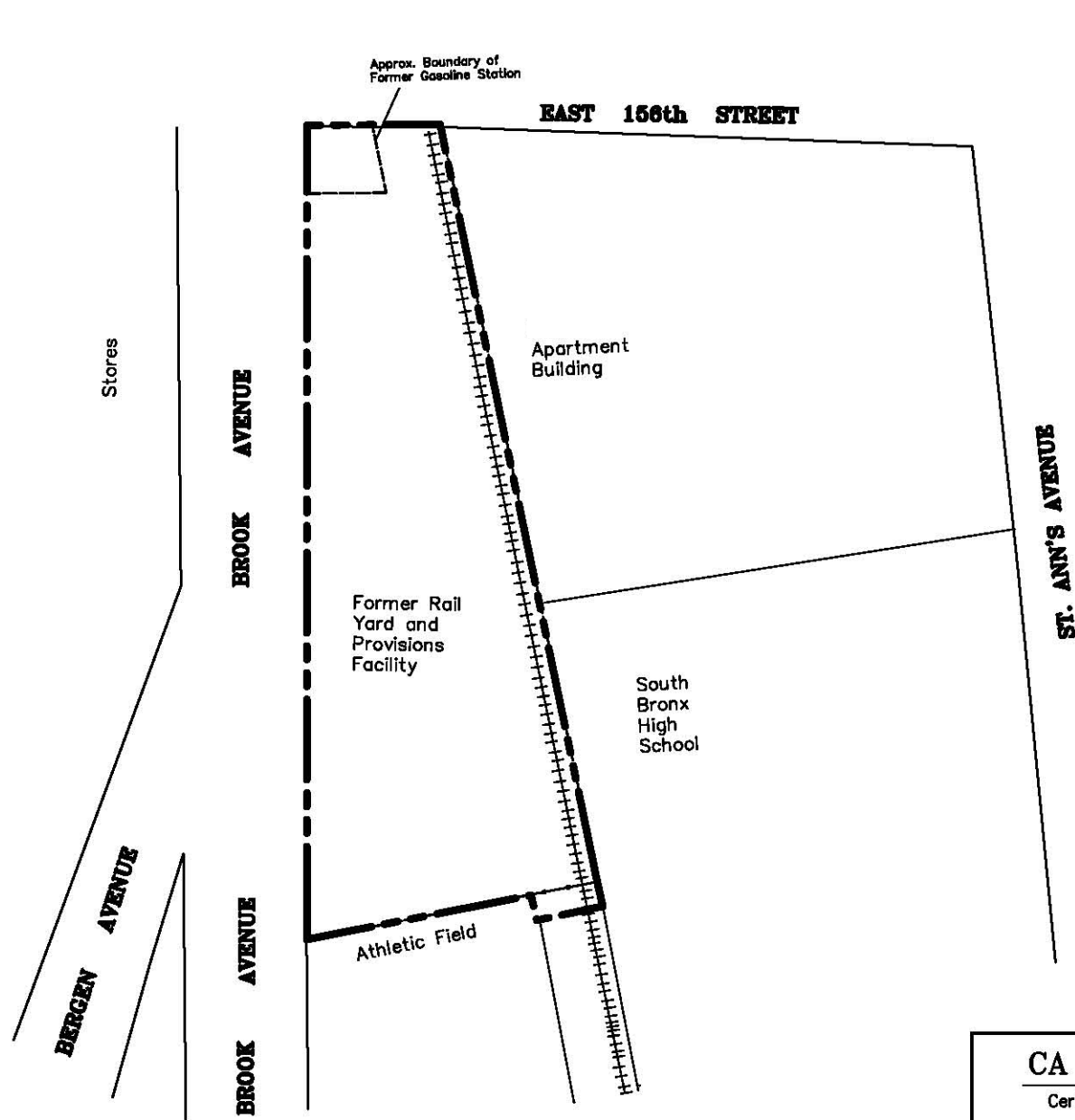
requirement for fill placed beneath the composite cover system will have no impact on the environmental integrity of the Site.

#### **4.10.3 Change in SSD System**

Section 8.0.2 of the approved RAWP included provision for the installation and operation of a sub-slab depressurization (SSD) system. One component of the proposed system was the use of ¾-inch crushed stone as the aggregate material beneath the vapor barrier and surrounding the SSD piping. Based upon recycled-materials requirements for LEED certification, the GC requested that we substitute ¾-inch recycled concrete aggregate for the specified ¾-inch virgin crushed stone. The GC provided the remedial Engineer with a gradation analysis confirming that the recycled concrete aggregate meets or exceeds the requirements for use as SSD filter aggregate (copy attached in Appendix Q). CA RICH contacted DEC on August 2, 2010 and requested approval for the substitution of the recycled concrete aggregate for the crushed stone. DEC replied on August 8, 2010 saying that the materials were acceptable as long as they satisfied the requirements of DER-10 Section 5.4(e)(5) (see Appendix D). The GC subsequently provided CA RICH with a certification from the source (Tilcon) stating that the materials met those requirements (copy attached in Appendix Q). The SSD system is discussed in further detail in Section 4.8.1 of this Report. The substitution of the ¾-inch recycled concrete aggregate for the ¾-inch crushed stone will have no impact on the integrity of the SSD system.

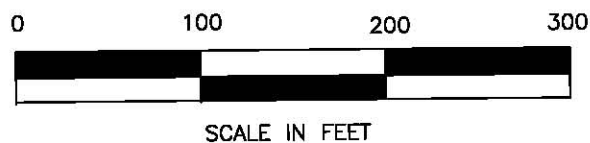
In addition, the approved RAWP called for the SSD fans to be mounted in basements or crawl spaces within the buildings. Based upon building design criteria, it was not possible to mount the fans in this manner. As such, all of the fans have been mounted on the roof, as detailed on Figures 11 and 11a. This configuration is in accordance with DOH guidelines and will have no negative impact on the integrity or operation of the SSD system.

## FIGURES



# LEGEND

- CURRENT PROPERTY BOUNDARY
- +++++ ABANDONED RR SPUR
- ..... FENCE



## NOTES:

1. MAP ADAPTED FROM DDC TOPOGRAPHICAL AND PROPERTY LINE MAP 8-17-06 AND MONTROSE SURVEY DATED 10-8-07

## **CA RICH CONSULTANTS, INC.**

Certified Ground-Water and Environmental Specialists  
17 Dupont Street, Plainview, New York 11803

## **SITE PLAN**

**DATE:**  
12-24-09

**SCALE:**  
AS SHOWN

**DRAWN BY:**  
J.T.C.

**APPR. BY:**  
D.S.

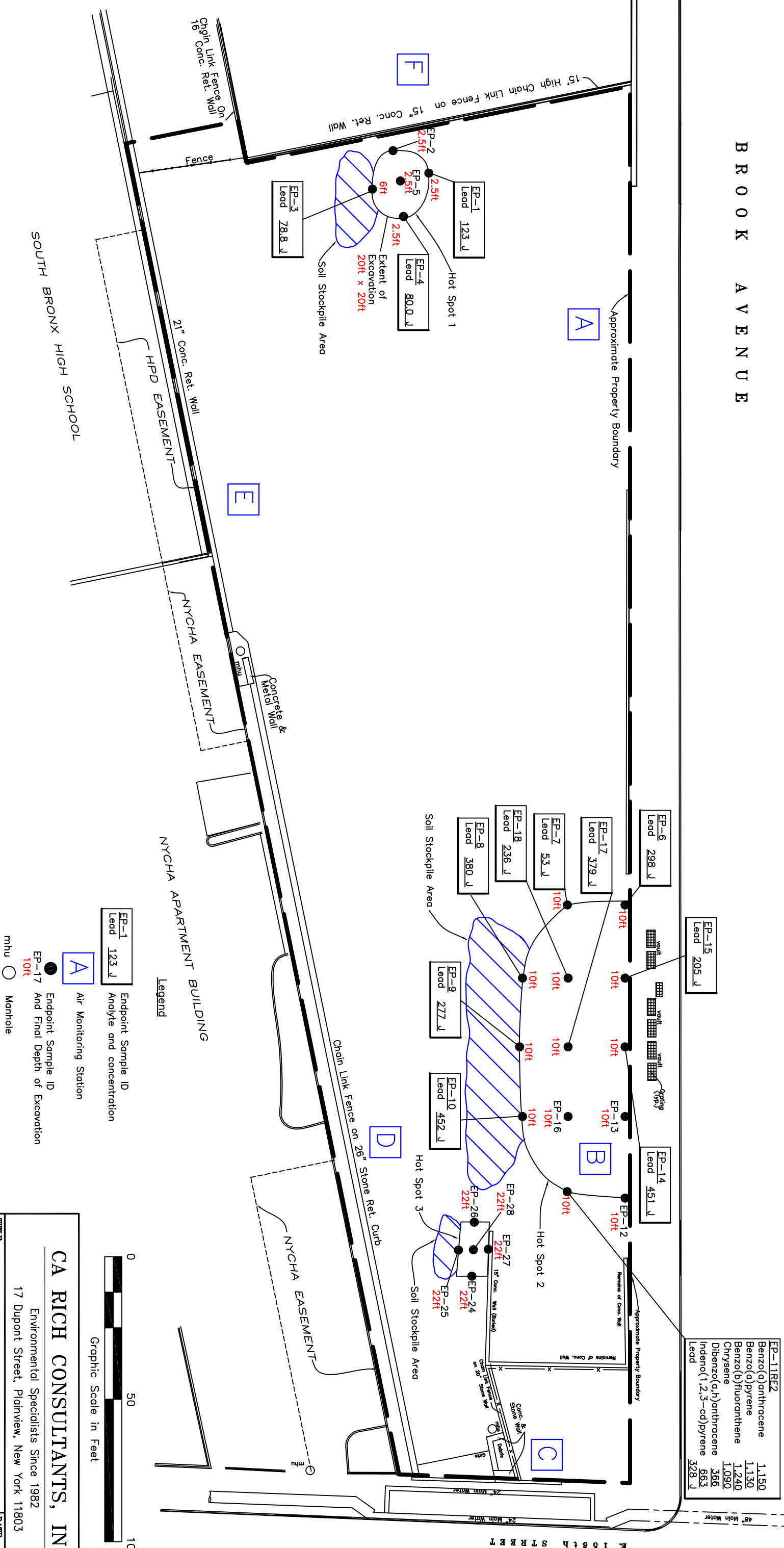
**FIGURE:**  
1

**DRAWING NO:**  
2009-8

**TITLE:**  
VIA VERDE  
NEW HOUSING NEW YORK LEGACY  
700-730 BROOK AVENUE  
BRONX, NEW YORK



## BROOK AVENUE

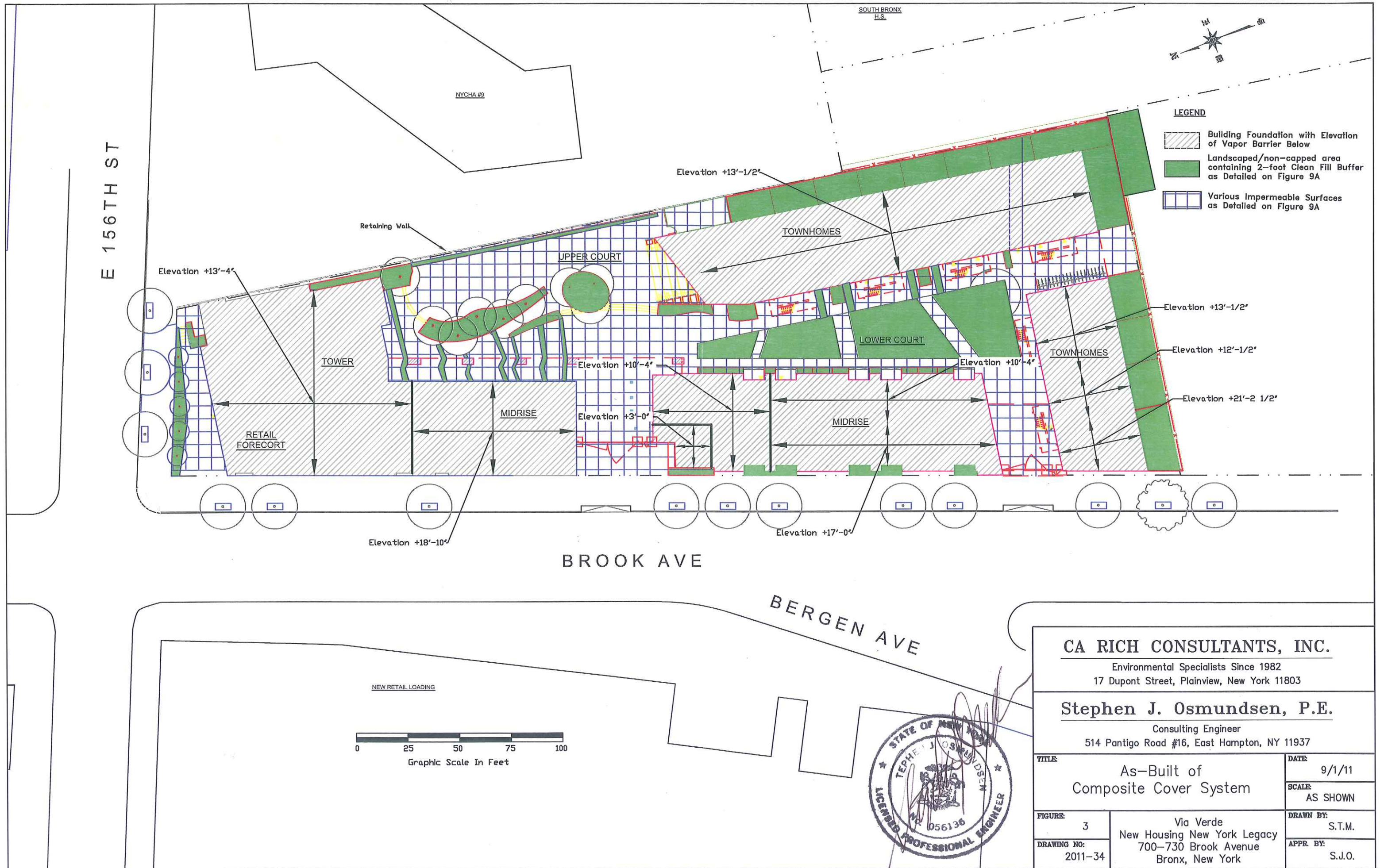


NOTES:

1. DRAWING ADAPTED FROM SURVEY PREPARED BY MONTROSE SURVEYING CO., LLP, DATED DECEMBER 12, 2008

CA RICH CONSULTANTS, INC.	
Environmental Specialists Since 1982	
17 Dupont Street, Plainview, New York 11803	
TITLE:	Hot Spot Excavation Area
FIGURE: 2	VIA VERDE NEW HOUSING NY LEGACY PROJECT 700-730 BROOK AVENUE BRONX, NY 10451
DATE:	11/23/2011
SCALE:	AS SHOWN
DRAWN BY:	J.T.C.
APPR. BY:	R.J.I.





**CA RICH CONSULTANTS, INC.**

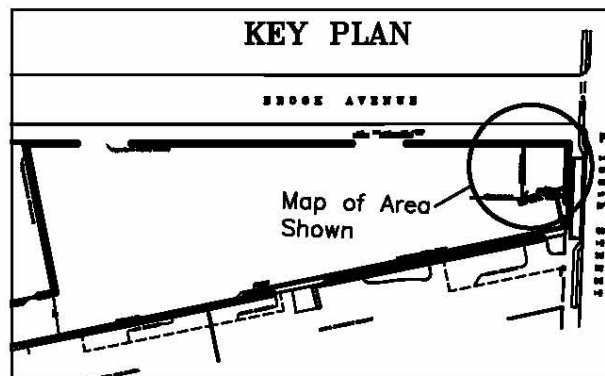
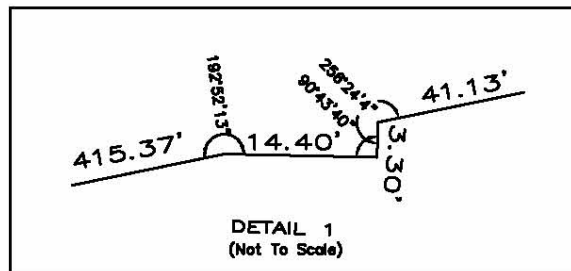
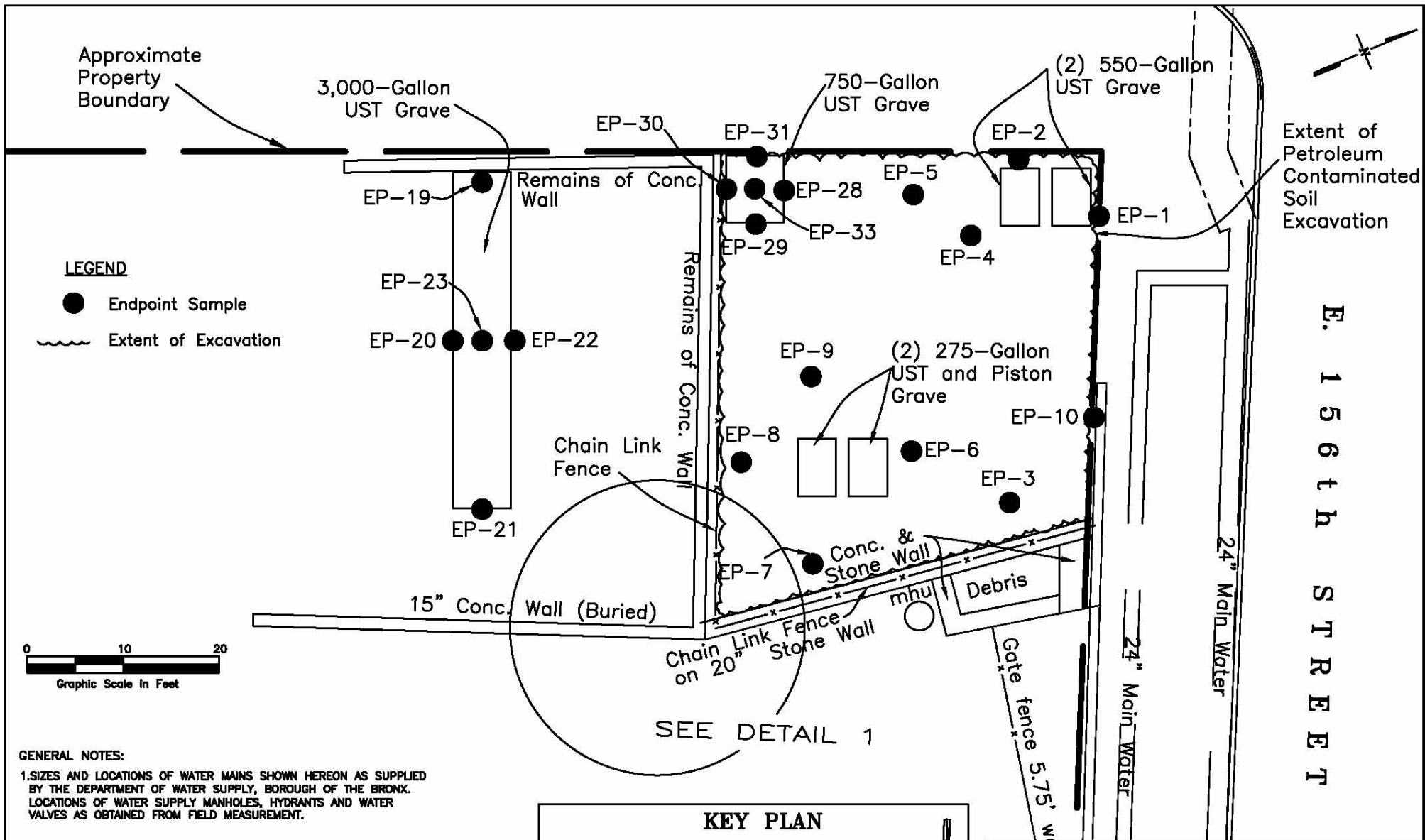
Environmental Specialists Since 1982  
17 Dupont Street, Plainview, New York 11803

**Stephen J. Osmundsen, P.E.**

Consulting Engineer  
514 Pantigo Road #16, East Hampton, NY 11937

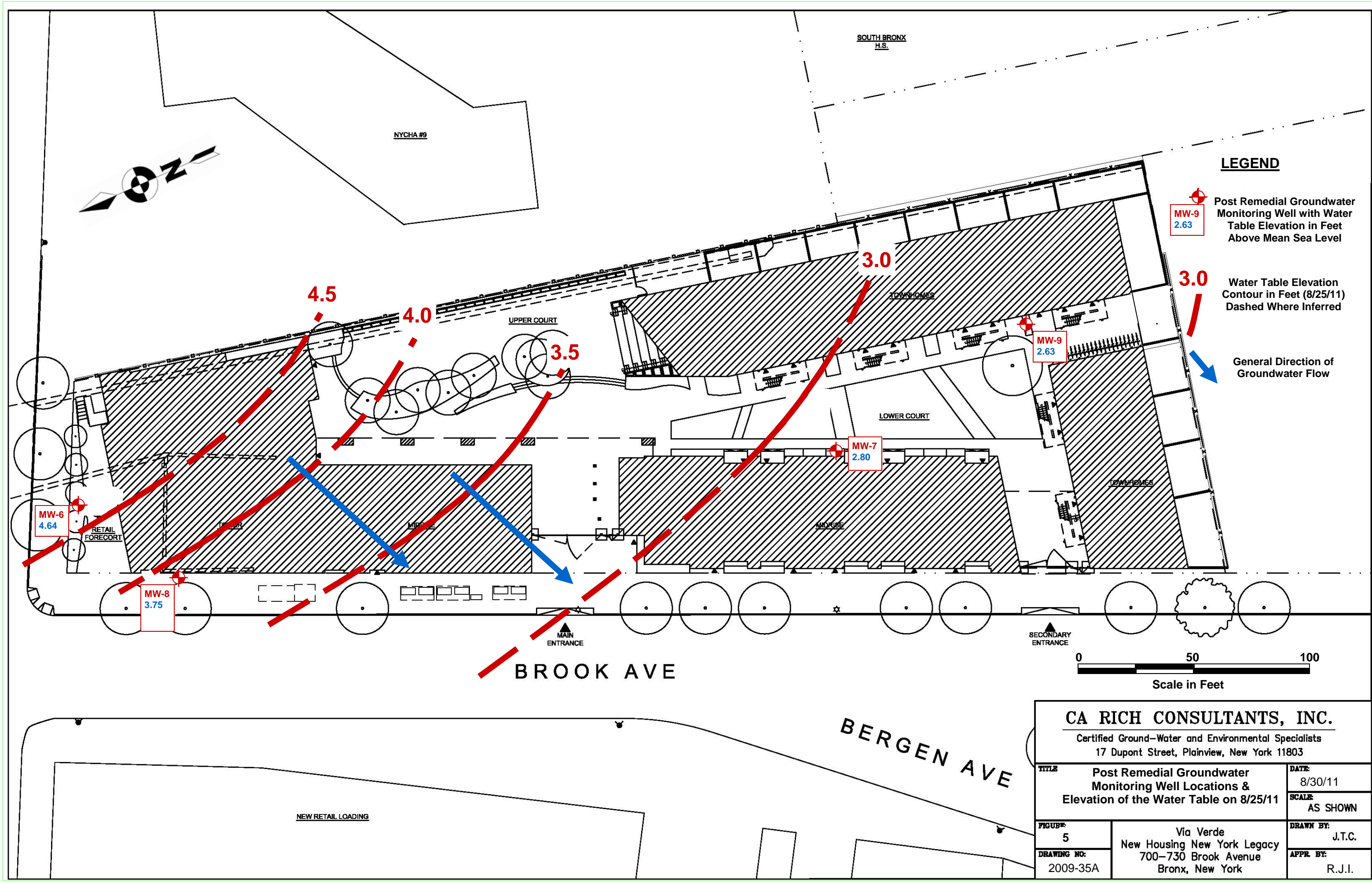
TITLE As-Built of Composite Cover System		DATE 9/1/11
FIGURE 3		SCALE AS SHOWN
DRAWING NO: 2011-34		DRAWN BY: S.T.M.
Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, New York		APPR. BY: S.J.O.








<b>CA RICH CONSULTANTS, INC.</b> Certified Groundwater and Environmental Specialists 17 Dupont Street, Plainview, New York 11803		
<b>TITLE:</b> Underground Storage Tank and Endpoint Sample Location Map		<b>DATE:</b> 5/28/2010
<b>FIGURE:</b> 4		<b>SCALE:</b> As Shown
<b>DRAWING NO.:</b> 2010-20A.4		<b>DRAWN BY:</b> J.T.C. <b>APPR. BY:</b> D.S.
<b>PROJECT:</b> VIA VERDE NEW HOUSING NY LEGACY PROJECT 700-730 BROOK AVENUE BRONX, NY 10451		



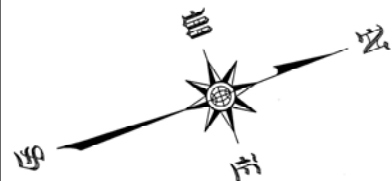


**LEGEND**

-  **MW-9**  
2.63  
Post Remedial Groundwater Monitoring Well with Water Table Elevation in Feet Above Mean Sea Level
-  **3.0**  
Water Table Elevation Contour in Feet (8/25/11) Dashed Where Inferred
-  General Direction of Groundwater Flow

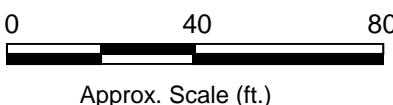
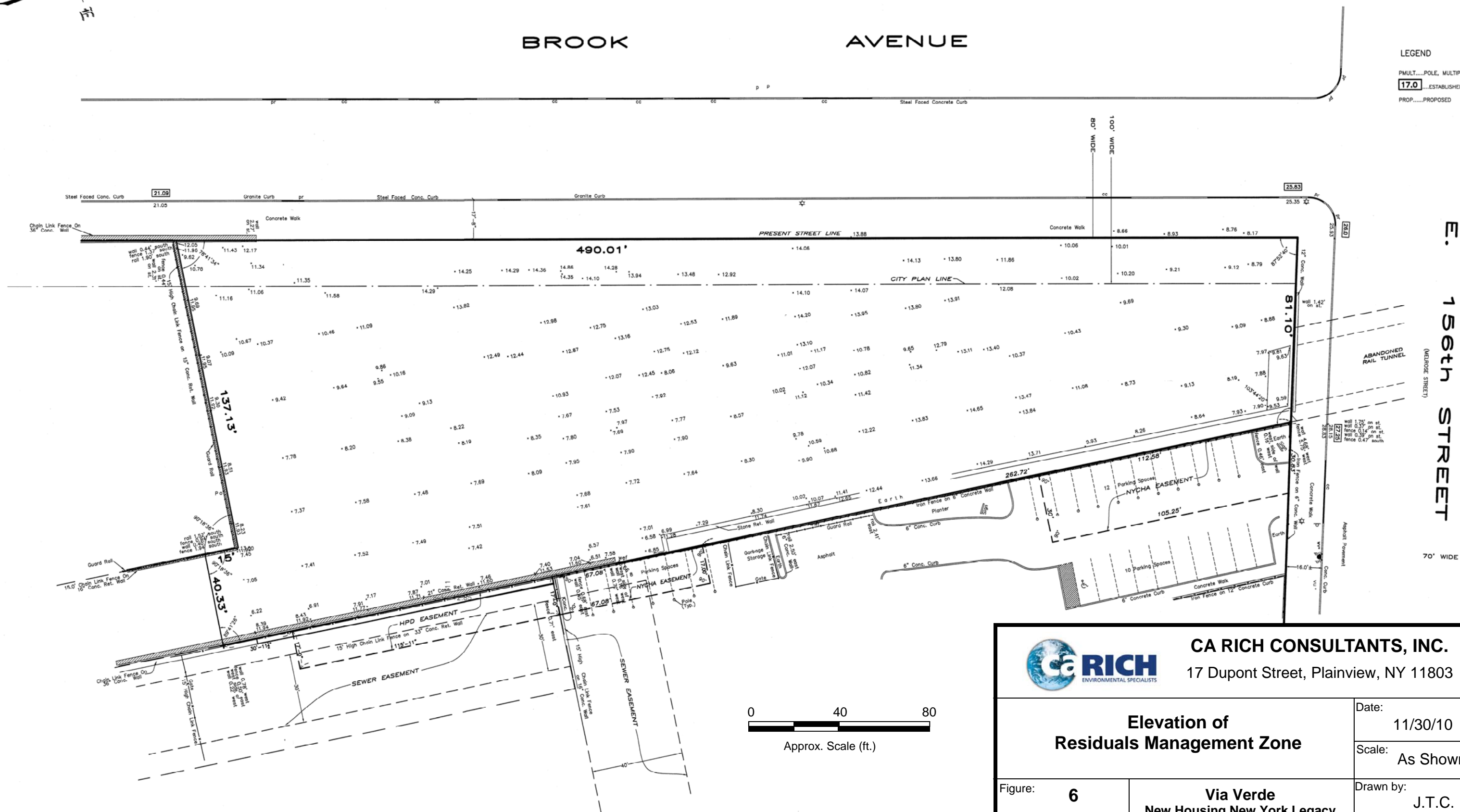
0 50 100  
Scale in Feet

<b>CA RICH CONSULTANTS, INC.</b> Certified Ground-Water and Environmental Specialists 17 Dupont Street, Plainview, New York 11803			
<b>TITLE</b> Post Remedial Groundwater Monitoring Well Locations & Elevation of the Water Table on 8/25/11		<b>DATE:</b> 8/30/11	
		<b>SCALE</b> AS SHOWN	
<b>FIGURE:</b> 5	Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, New York	<b>DRAWN BY:</b> J.T.C.	
<b>DRAWING NO:</b> 2009-35A		<b>APPR. BY:</b> R.J.I.	



BROOK AVENUE

LEGEND  
PMULT.....POLE, MULTIPLE USE  
17.0.....ESTABLISHED GRADE  
PROP.....PROPOSED



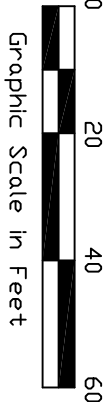
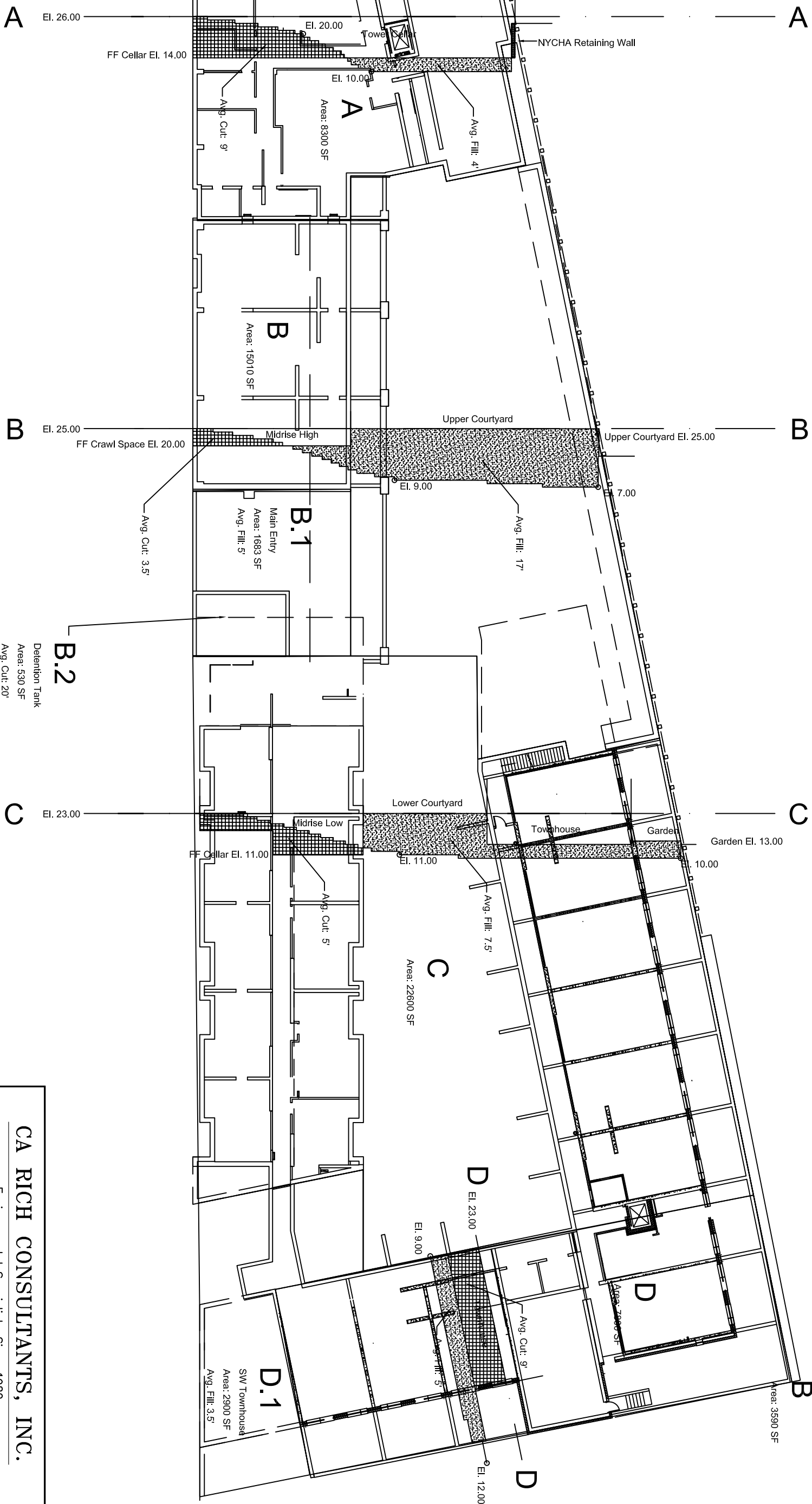
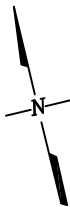
Adapted from Montrose Survey No. 62510-7  
Survey Dates: 4/8/10, 4/19/10, 4/23/10 & 4/30/10



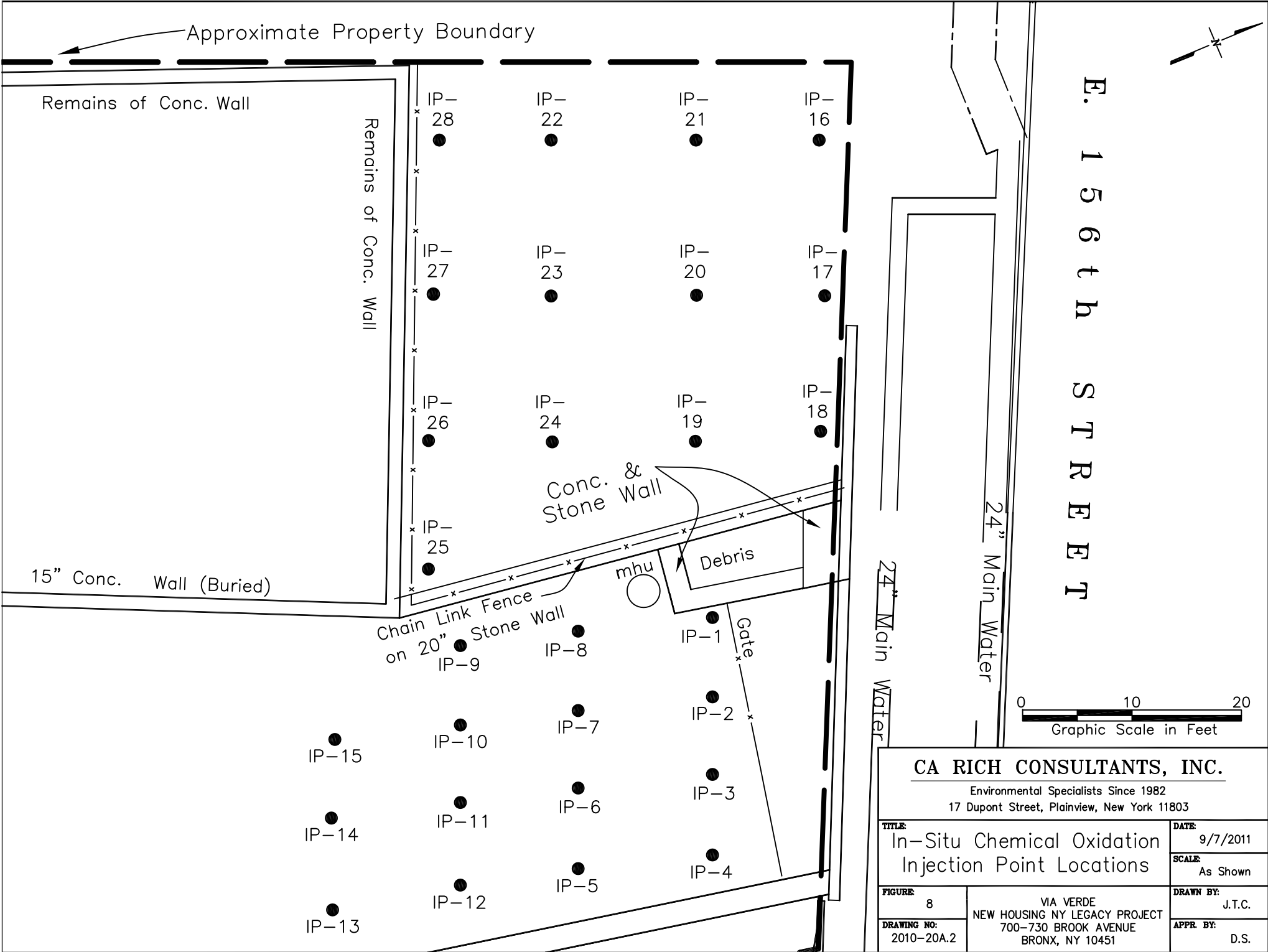
**CA RICH CONSULTANTS, INC.**  
17 Dupont Street, Plainview, NY 11803

<b>Elevation of Residuals Management Zone</b>		Date: 11/30/10
		Scale: As Shown
Figure: <b>6</b>	<b>Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, NY</b>	Drawn by: J.T.C.
Drawing No.: FER 6		Appr. by: R.I.



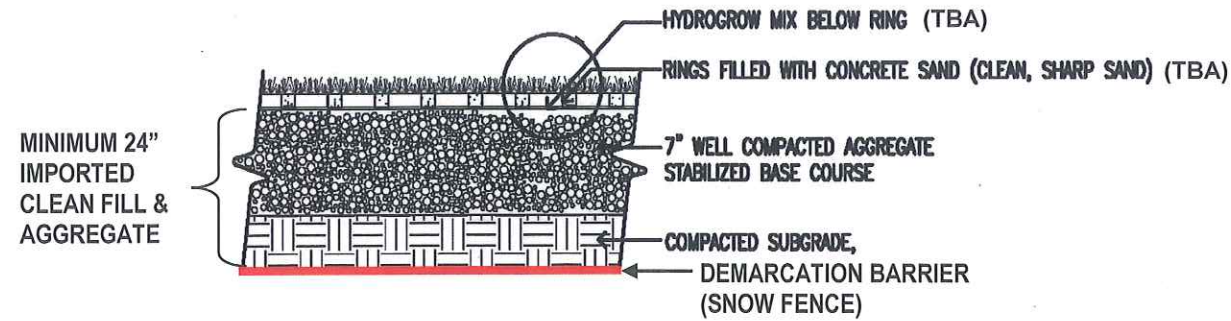


<b>CA RICH CONSULTANTS, INC.</b>			
Environmental Specialists Since 1982			
17 Dupont Street, Plainview, New York 11803			
TITLE:		DATE:	
Cut/Fill Thickness Map		9/7/2011	
FIGURE:		SCALE:	
7		AS SHOWN	
DRAWING NO:		DRAWN BY:	
2009-37A		J.T.C.	
Via Verde		APPR. BY:	
New Housing New York Legacy		D.S.	
700-730 Brook Avenue			
Bronx, New York			

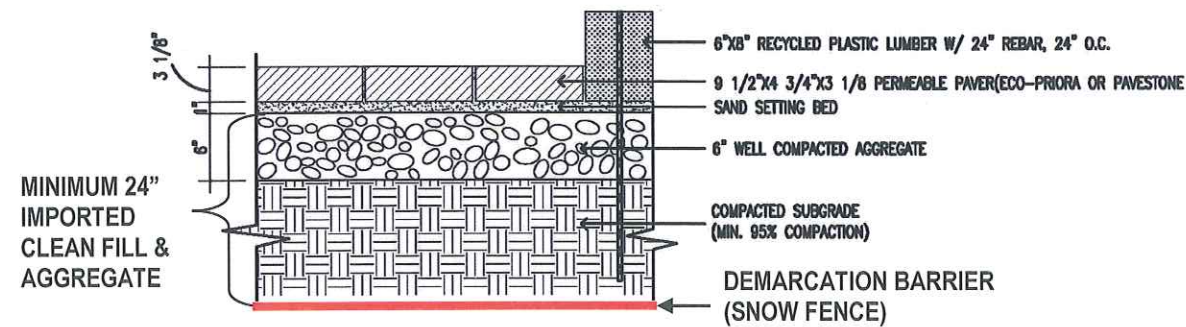


CA RICH CONSULTANTS, INC.			
Environmental Specialists Since 1982 17 Dupont Street, Plainview, New York 11803			
TITLE: In-Situ Chemical Oxidation Injection Point Locations		DATE: 9/7/2011	
FIGURE: 8		SCALE: As Shown	
DRAWING NO: 2010-20A.2		DRAWN BY: J.T.C.	
VIA VERDE NEW HOUSING NY LEGACY PROJECT 700-730 BROOK AVENUE BRONX, NY 10451		APPR. BY: D.S.	

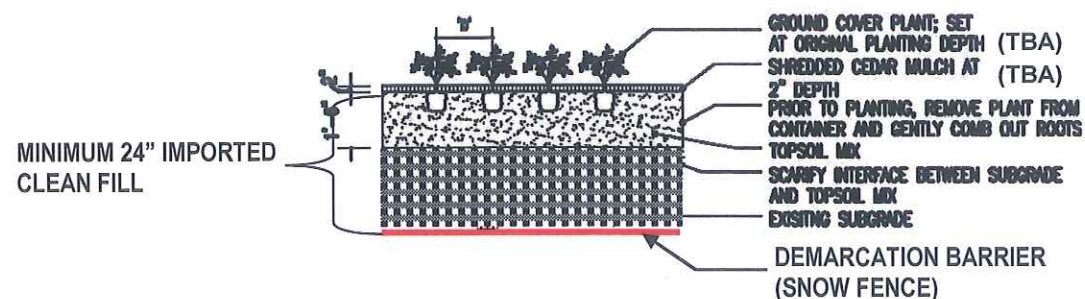
## GRASSPAVE



## PERMEABLE PRECAST PAVEMENT

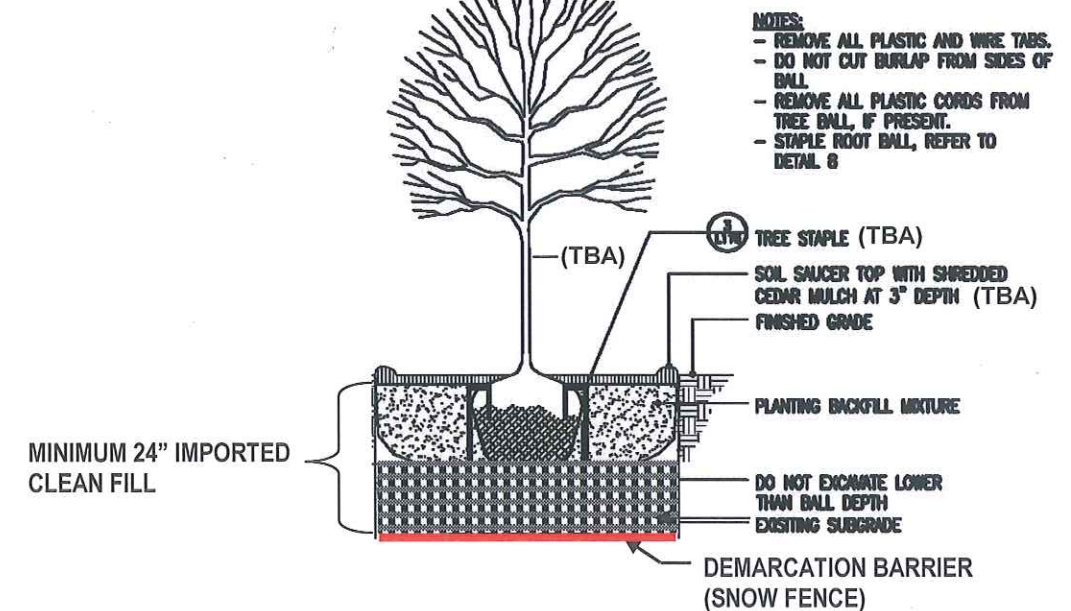


## GRASS / HERBACIOUS / PERENNIAL & GROUND COVER PLANTING



Note: TBA = To be Added

## TREE PLANTING



**Stephen J. Osmundsen, P.E.**  
Consulting Engineer  
514 Pantigo Road #16  
East Hampton, NY 11937

**CA RICH CONSULTANTS, INC.**  
Environmental Specialists Since 1982  
17 Dupont Street,  
Plainview, NY 11803

**TITLE:**

**As-Built Details of Composite Cover System**

*Adapted from Landscape Site Details I (1-300.00 rev. 2 10/21/09)*

**FIGURE:**

**9**

**DRAWING:**

Via Verde  
New Housing New York Legacy  
700-730 Brook Avenue  
Bronx, NY

**DATE:**

**11/7/11**

**SCALE:**

**As shown**

**DRAWN BY:**

**RI**

**APPR BY:**

**SO**



4"X4"X3" GRAY GRANITE PAVER (TBA)

3/8" POLYMER JOINT (TBA)

MORTAR SETTING BED (TBA)

CUSTOM METAL EDGE; SIMILAR TO DETAIL 1.307

WHERE 4" THICK CONCRETE MEETS METAL EDGE PROVIDE 7" THICK CONCRETE FOR 1" MIN WIDTH ALONG LENGTH OF METAL EDGE.

7" WELL COMPACTED AGGREGATE STABILIZED BASE COURSE

95% COMPACTED SUBGRADE

4"X4"X3" GRANITE PAVES  
CUSTOM METAL EDGE ON BOTH SIDES  
3/8" POLYMER JOINT

**NOTES: GRANITE BLOCK PAVERS SHALL BE 4"x4"x3" CLEAN NEW PAVERS, SUPPLIED BY THE CONTRACTOR.**

**RIGID BASE: GRANITE BLOCK PAVERS SHALL BE SET ON A 1" MUD MIX SETTING BED, STEEL EDGE SHALL BE 2" REVEAL ON BOTH SIDES OF THE GRAVEL PAVEMENT**

**AND ADJACENT WITH SURROUNDING PAVEMENT. SPACES BETWEEN THE BLOCKS MAY VARY BETWEEN A MINIMUM OF 1/4" TO A MAXIMUM OF 1/2". CLEAN ANY EXCESS MORTAR RESIDUE FROM FACE OF PAVERS.**

3 1/4" 2" 4" 7"

2'x2'x2" PRECAST PAVER; PAVER SHALL BE EQUAL MIX OF 4 PAVER TYPES (TBA)

1/4" MIN., 1/2" MAX. MORTAR JOINT (TBA)

MORTAR SETTING BED (TBA)

CUSTOM METAL EDGE; SEE MATERIALS PLAN

WHERE 4" THICK CONCRETE MEETS METAL EDGE PROVIDE 7" THICK CONCRETE FOR 1' MIN WIDTH ALONG LENGTH OF METAL EDGE.

7" WELL COMPACTED AGGREGATE STABILIZED BASE COURSE

COMPACTED SUBGRADE (MIN. 95% COMPACTION)

NOTE:

NOTE:  
PAVERS TO INCLUDE AN EQUAL MIX OF WAUSAU GTX 2040, GTX 2010, GTX  
2100 (AGGREGATE SURFACE PRECAST PAVERS) AND GW1 0011 (RECYCLED  
GLASS PAVES - CLEAR/WHITE)  
PAVER SHALL BE LAID SO THAT INDIVIDUAL COLOR/TYPE ARE SPREAD  
EQUALLY THROUGHOUT ENTIRE PAVEMENT AREA AND THAT THERE WILL BE NO  
ONE AREA WITH ONE PREDOMINANT INDIVIDUAL PAVES

A detailed cross-section diagram of a concrete setting bed and its supporting layers. The diagram shows the following layers from top to bottom:

- 1/4" CONTINUOUS STEEL BAR WITH 4" SQ. TABS 18" O.C.;** FASTENED WITH CONCRETE FASTENER TO CONCRETE SETTING BED (TBA)
- 2" PEBBLE-FLEX SAFETY SURFACE (TBA)**
- 2" ASPHALT (TBA)**
- BITUMINOUS TACK COAT (TBA)**
- 4" REINFORCED CONCRETE SETTING BED** W/ EXPANSION JOINTS 20' O.C.
- 6" WELL COMPACTED AGGREGATE STABILIZED BASE COURSE**
- COMPACTED SUBGRADE (MIN. 95% COMPACTION)**

Vertical dimensions on the left side of the diagram indicate the thickness of the layers:

- 4" for the concrete setting bed.
- 2" for the asphalt layer.
- 2" for the pebble-flex safety surface.
- 6" for the aggregate stabilized base course.

1/4" CONTINUOUS S.S. BAR WITH  
 4" SQ. TABS 18" O.C.; FASTENED WITH CONCRETE  
 FASTENER TO CONCRETE SETTING BED (TBA)

1/4" TO 1/2" MORTAR JOINT (TBA)

4" X 4" X 3" GREY GRANITE COBBLE (TBA)

SAFETY SURFACE ON BOTH SIDES (TBA)

1" MORTAR SETTING BED (TBA)

4" REINFORCED CONCRETE SETTING BED

Concrete Slab

Vapor Barrier Stego Wrap 15 mil Overlapped 6" Minimum at Seams sealed with approved tape

Protective Board

3/4-Inch crushed recycled concrete aggregate with a no-less than 1-foot thickness at pipe location

95% Compacted Subgrade

7' AT VEHICULAR USE AREA

1 3/4" CLEAR

4"

6"

SCOFIELD CHROMIX 3987 PORCELAIN GRAY AND C-14 FRENCH GRAY USED INTERCHANGEABLY; SEE MATERIALS PLAN

3/8" EXP. JT. (TYP.) (PROVIDE E.J. AS INDICATED ON PLAN)

6"x6" 8/8 W.W.F.

#6 REBAR 5'-0" O.C. AT EXP. JT.

W/. PVC SLEEVE AROUND ONE HALF

1/4" SAWCUT JOINT, SEE PLAN FOR JOINT SPACING

4" CONCRETE WITH CONTINUOUS 1'-0" WIDE HAUNCH WHERE ADJACENT TO METAL EDGE/PLATE

CUSTOM METAL EDGE; SEE MATERIALS PLAN

WHERE 4" THICK CONCRETE MEETS METAL EDGE PROVIDE 7" THICK CONCRETE FOR 1' MIN WIDTH ALONG LENGTH OF METAL EDGE.

6" WELL COMPACTED AGGREGATE STABILIZED BASE COURSE

COMPACTED SUBGRADE (MIN. 95% COMPACTION)

NOTE:

- PROVIDE EXPANSION JOINTS ALONG BUILDING/STRUCTURAL ADJACENCIES AND WHERE PAVEMENT MEETS STEPS.
- WHERE PAVEMENT IS LOCATED OVER STRUCTURAL SLAB PROVIDE FILTER FABRIC OVER DRAINAGE MAT LAYER BETWEEN CONCRETE AND INSULATION ABOVE SLAB

**NOTE:**  
-PROVIDE EXPANSION JOINTS ALONG BUILDING/STRUCTURAL ADJACENCIES AND WHERE PAVEMENT MEETS STEPS.  
-WHERE PAVEMENT IS LOCATED OVER STRUCTURAL SLAB PROVIDE FILTER FABRIC OVER DRAINAGE MAT LAYER BETWEEN CONCRETE AND INSULATION ABOVE SLAB



**CA RICH CONSULTANTS, INC.**  
Environmental Specialists Since 1982  
17 Dupont Street,  
Plainview, NY 11803

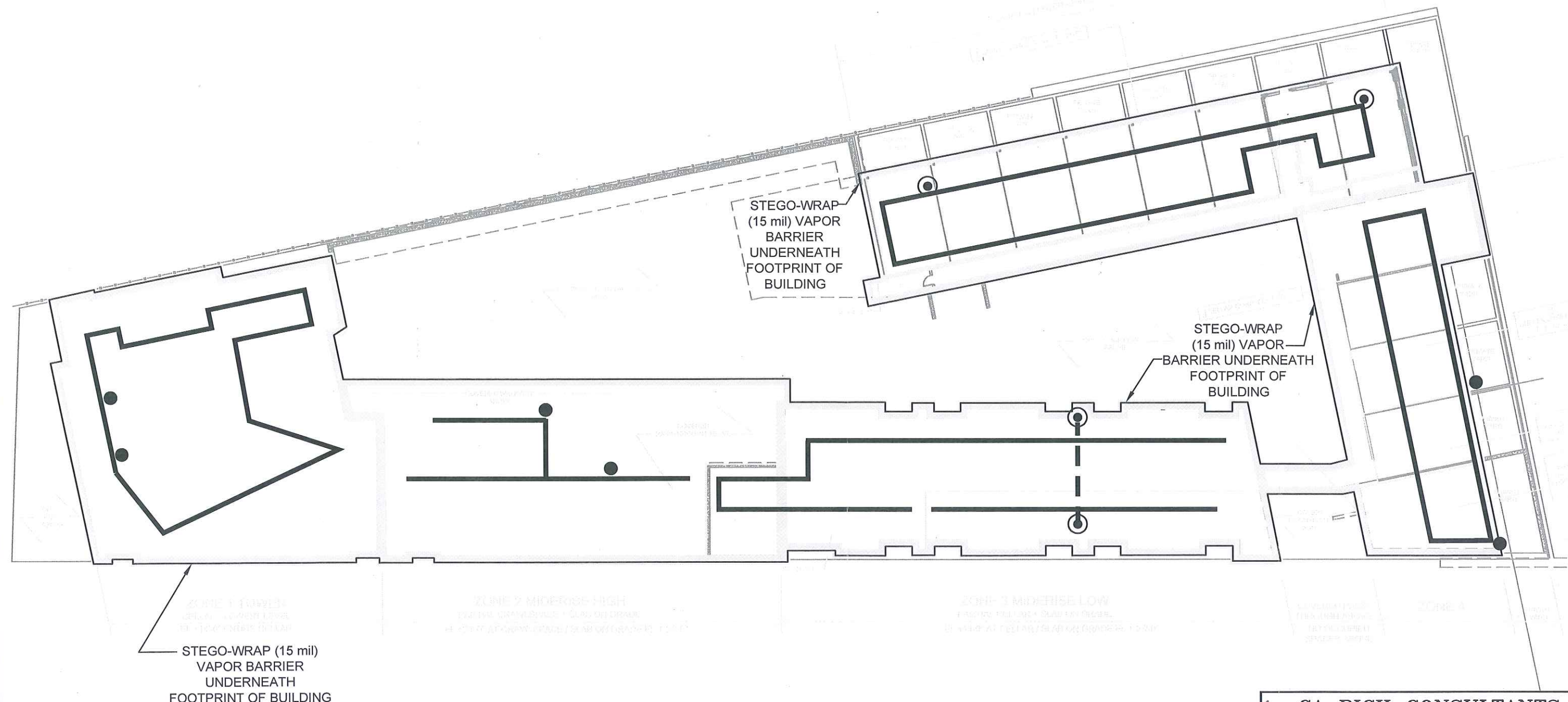
DATE: 11/7/11

SCALE:  
As shown

DRAWN BY: RI

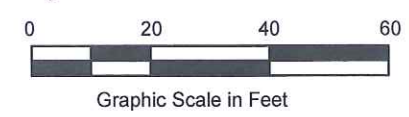
APPR BY: SO





**Legend**

- 4" SSD Riser
- 6" SSD Riser
- SSD Lateral (Typical)
- Above grade cross over connection due to elevation change



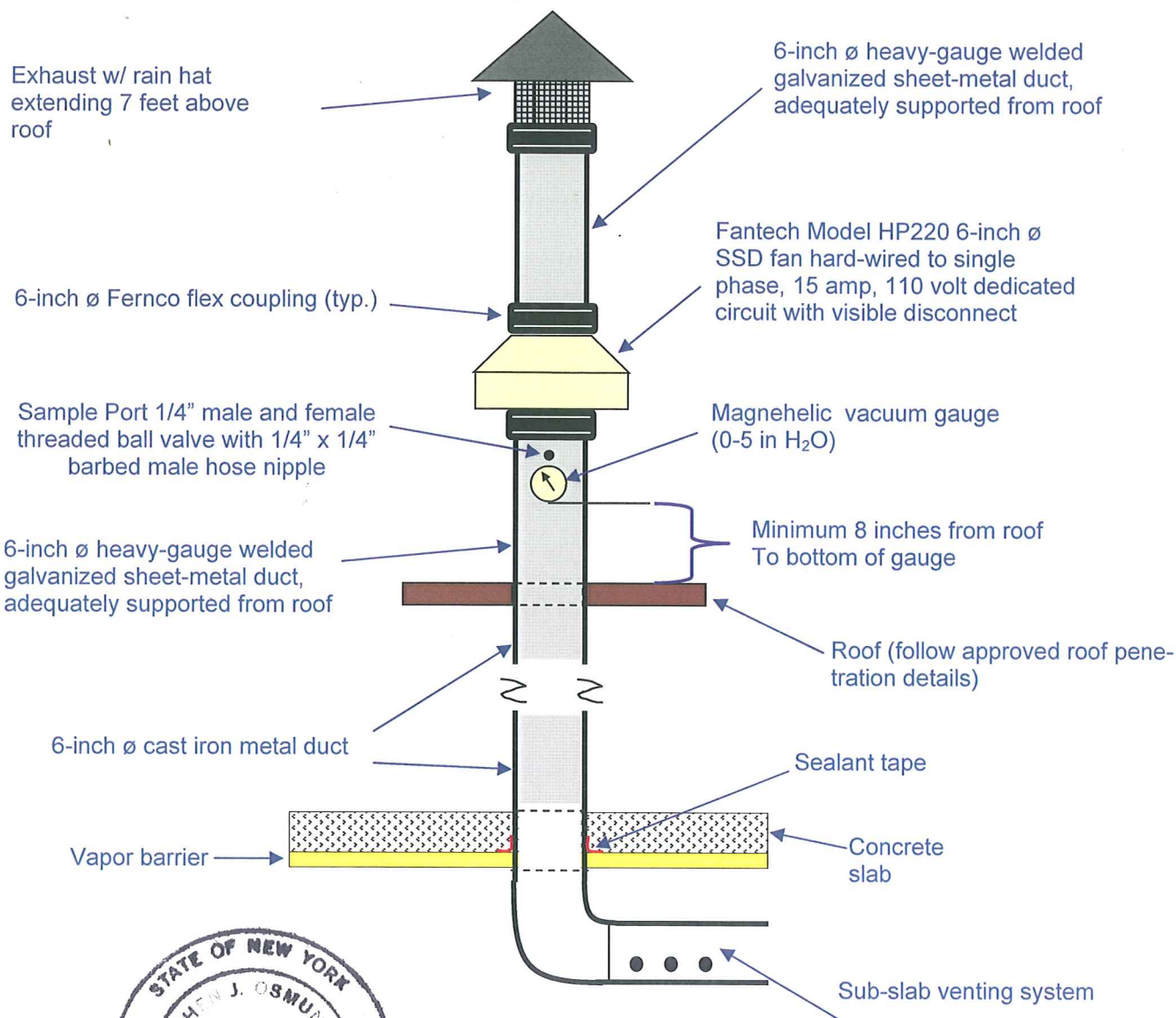
**CA RICH CONSULTANTS, INC.**

Environmental Specialists Since 1982  
17 Dupont Street, Plainview, New York 11803

**Stephen J. Osmundsen, P.E.**

Consulting Engineer  
514 Pantigo Road # 16, East Hampton New York 11937

TITLE: As-Built Sub-Slab Depressurization System		DATE: 9/7/2011
FIGURE: 10		SCALE: As Shown
DRAWING NO: 2009-30		DRAWN BY: J.T.C.
Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, New York		APPR. BY: R.I.

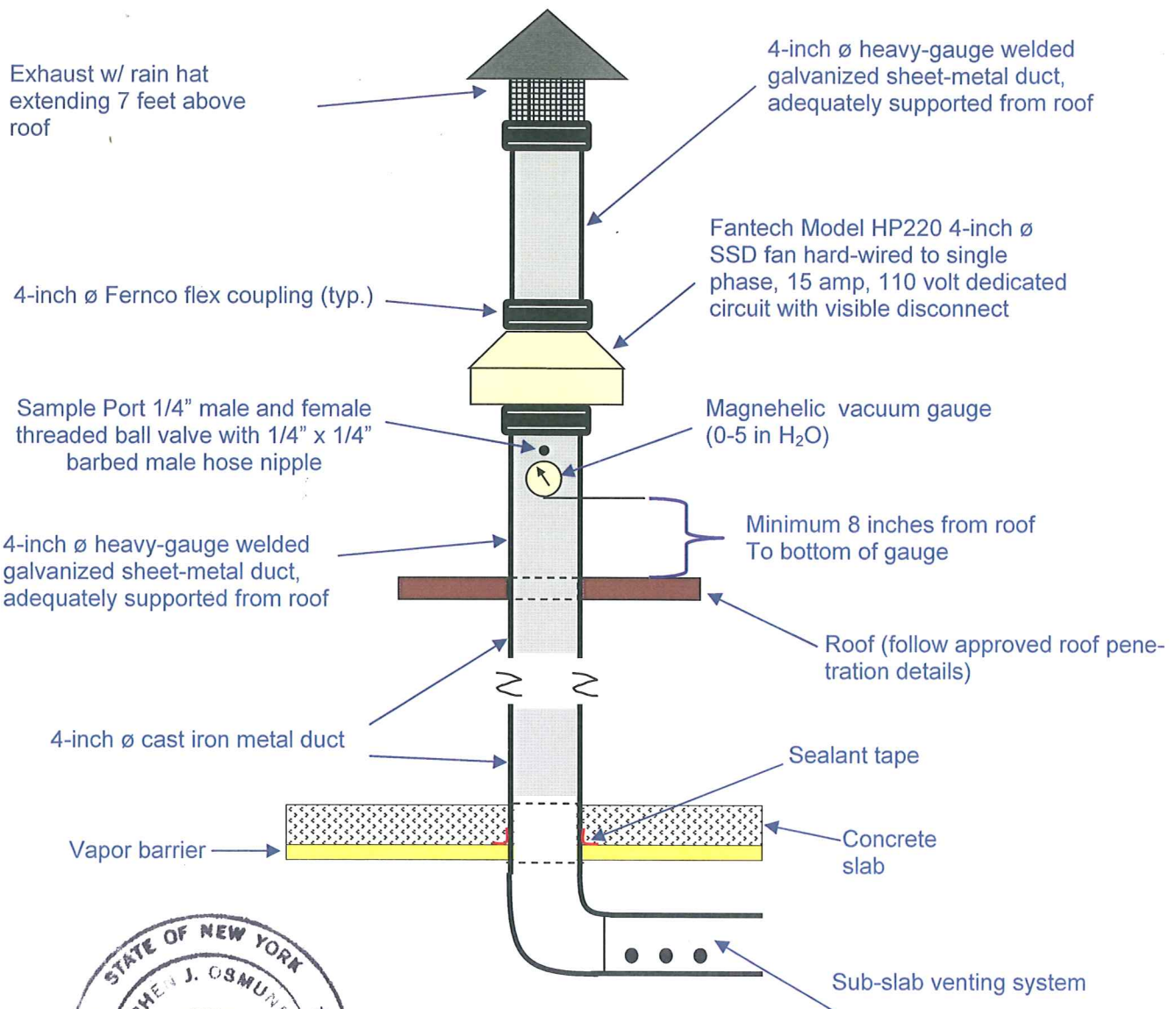


**Stephen J. Osmundsen, P.E.**  
 Consulting Engineer  
 514 Pantigo Road #16  
 East Hampton, NY 11937

**CA RICH CONSULTANTS, INC.**  
 Environmental Specialists Since 1982  
 17 Dupont Street,  
 Plainview, NY 11803

Drawing:	As-Built Piping Details of SSD Fan and Vent with 6-inch Diameter Riser	Figure: <b>11</b>	Drawn by: <b>RJI</b>
Scale: <b>N.T.S.</b>	Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, NY	Date: <b>9/14/11</b>	Approved by: <b>SO</b>

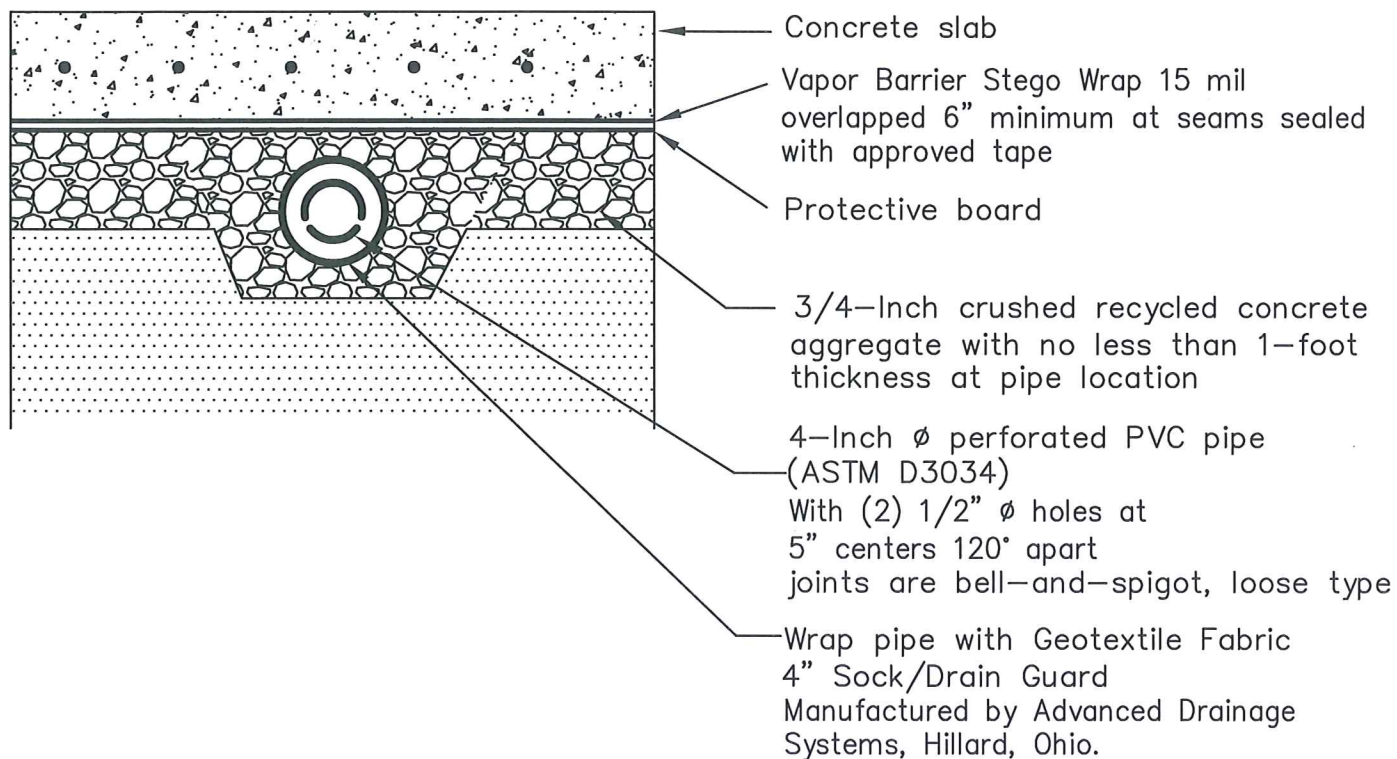




**Stephen J. Osmundsen, P.E.**  
 Consulting Engineer  
 514 Pantigo Road #16  
 East Hampton, NY 11937

**CA RICH CONSULTANTS, INC.**  
 Environmental Specialists Since 1982  
 17 Dupont Street,  
 Plainview, NY 11803

Drawing:	As-Built Piping Details of SSD Fan and Vent with 4-inch Diameter Riser	Figure: <b>11a</b>	Drawn by: <b>RJI</b>
Scale: <b>N.T.S.</b>	Via Verde New Housing New York Legacy 700-730 Brook Avenue Bronx, NY	Date: <b>9/14/11</b>	Approved by: <b>SO</b>



## CA RICH CONSULTANTS, INC.

Environmental Specialists Since 1982  
17 Dupont Street, Plainview, New York 11803

### Stephen J. Osmundsen, P.E.

Consulting Engineer  
514 Pantigo Road #16, East Hampton, New York 11937

**TITLE:** As-Built Vent Pipe  
Cross-Section

**DATE:** 11/3/2011

**SCALE:**  
Not to Scale

**FIGURE:**

11b

**DRAWING NO:**  
2009-28A

Via Verde  
New Housing New York Legacy  
700-730 Brook Avenue  
Bronx, New York

**DRAWN BY:**  
J.T.C.

**APPR. BY:**  
S.J.O.

## **TABLES**

**Table 1**  
**Track 4 Alternative Soil Cleanup Objectives (SCOs)**  
**Via Verde aka New Housing New York Legacy**  
**700-730 Brook Avenue**  
**Bronx, New York**

<u>Compound/Constituent</u>	<u>Track 4 SCOs</u>	<u>Units</u>
Lead	590	mg/kg
Total VOCs	10	mg/kg
Total SVOCs	100	mg/kg

**Notes:**

*mg/kg = milligrams per kilogram*

*VOC = volatile organic compound*

*SVOC = semi-volatile organic compound*

*Track 4 SCOs were developed by CA RICH based upon statistical analysis,  
Part 375 SCOs, and NYSDEC guidance*

***Track 4 land use includes restricted residential and commercial***

**Prepared by CA RICH CONSULTANTS, INC.**

Table 2

**New Housing New York Legacy Project**  
**700-730 Brook Avenue**  
**Bronx, NY**  
**BCP #C203043**

**Summary of Waste Disposal Receipts and Manifests**

**Soil Disposal from BCP Site Excavation**

Item #	Date	Manifest #	Facility Destination	Waste Class.	Weight (TN)	Cumm Qty (TN)
1	04/05/10	23994	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	31.75	31.75
2	04/05/10	23995	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	29.45	61.20
3	04/05/10	23991	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.50	88.70
4	04/05/10	23992	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.75	116.45
5	04/05/10	23993	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.03	144.48
6	04/05/10	23996	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.90	172.38
7	04/05/10	23997	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	26.69	199.07
8	04/05/10	23998	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.65	226.72
9	04/05/10	23999	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.15	253.87
10	04/05/10	24000	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.75	282.62
11	04/05/10	24001	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	33.28	315.90
12	04/05/10	24002	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.25	343.15
13	04/05/10	24003	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.65	370.80
14	04/05/10	24004	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	31.71	402.51
15	04/05/10	24005	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	30.39	432.90
16	04/05/10	24006	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.90	460.80
17	04/05/10	24007	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	33.87	494.67
18	04/05/10	24008	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.18	521.85
19	04/05/10	24009	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.75	549.60
20	04/05/10	24010	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.77	577.37
21	04/06/10	24044	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	34.18	611.55
22	04/06/10	24045	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	34.12	645.67
23	04/06/10	24042	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	46.03	691.70
24	04/06/10	24043	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	29.81	721.51
25	04/06/10	24041	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	29.80	751.31
26	04/06/10	24046	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	49.03	800.34
27	04/06/10	24047	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	31.60	831.94
28	04/06/10	24049	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	26.77	858.71
29	04/06/10	24048	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	31.76	890.47
30	04/06/10	24050	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	34.06	924.53
31	04/07/10	24071	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	36.03	960.56
32	04/08/10	24079	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	34.19	994.75
33	04/08/10	24078	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	29.99	1,024.74
34	04/08/10	24080	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.79	1,053.53
35	04/08/10	24077	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	29.97	1,083.50
36	04/08/10	24099	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.51	1,112.01
37	04/08/10	24098	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.18	1,140.19
38	04/08/10	24081	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.33	1,168.52
39	04/08/10	24097	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.74	1,197.26
40	04/08/10	24096	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	28.16	1,225.42
41	04/08/10	24094	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	30.32	1,255.74
42	04/08/10	24095	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	29.92	1,285.66
43	04/08/10	24093	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	26.94	1,312.60
44	04/08/10	24083	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	30.36	1,342.96
45	04/08/10	24084	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	26.91	1,369.87
46	04/08/10	24082	Bellmawr Waterfront Development, Bellmawr, NJ	Beneficial Reuse (soil)	27.54	1,397.41
47	04/15/10	24839	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	35.32	1,432.73
48	04/15/10	24840	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	32.90	1,465.63
49	04/15/10	24841	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	31.09	1,496.72
50	04/15/10	24843	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	33.64	1,530.36
51	04/15/10	24842	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	32.92	1,563.28
52	04/19/10	3119	Pure Soil Technologies - Walter Earle Corp., Jackson, NJ	Recycling ( petroleum soil	39.99	1,603.27

Bellmawr 1014.22  
Earle 589.05



Table 2

**New Housing New York Legacy Project**  
**700-730 Brook Avenue**  
**Bronx, NY**  
**BCP #C203043**

**Summary of Waste Disposal Receipts and Manifests**

**Construction and Demolition Debris from Demolition**

Item #	Date	Ticket #	Facility Destination	Waste Class.	Volume (CY)	Cumm Qty (CY)
1	04/06/10	82063	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	20.00
2	04/06/10	82064	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	40.00
3	04/06/10	82065	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	60.00
4	04/06/10	82066	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	80.00
5	04/06/10	82067	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	100.00
6	04/06/10	82068	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	120.00
7	04/06/10	82069	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	140.00
8	04/06/10	82070	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	160.00
9	04/07/10	82071	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	180.00
10	04/07/10	82072	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	200.00
11	04/07/10	82073	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	220.00
12	04/07/10	82074	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	240.00
13	04/07/10	82075	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	260.00
14	04/07/10	82076	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	280.00
15	04/07/10	82077	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	300.00
16	04/07/10	82078	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	320.00
17	04/12/10	82079	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	340.00
18	04/12/10	82080	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	360.00
19	04/12/10	82081	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	380.00
20	04/12/10	82082	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	400.00
21	04/12/10	82083	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	420.00
22	04/12/10	82084	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	440.00
23	04/12/10	82085	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	460.00
24	04/12/10	82086	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	480.00
25	04/13/10	82087	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	500.00
26	04/13/10	82088	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	520.00
27	04/13/10	82089	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	540.00
28	04/13/10	82090	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	560.00
29	04/14/10	82091	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	580.00
30	04/14/10	82092	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	600.00
31	04/15/10	82093	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	620.00
32	04/15/10	82094	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	640.00
33	04/15/10	82095	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	660.00
34	04/15/10	82096	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	680.00
35	04/16/10	82097	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	700.00
36	04/16/10	82098	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	720.00
37	04/16/10	82099	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	740.00
38	04/16/10	82100	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	760.00
39	04/16/10	82101	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	780.00
40	04/16/10	82102	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	800.00
41	04/16/10	82103	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	820.00
42	04/16/10	82104	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	840.00
43	04/19/10	82105	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	860.00
44	04/19/10	82106	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	880.00
45	04/19/10	82107	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	900.00
46	04/19/10	82108	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	920.00
47	04/27/10	82109	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	940.00
48	04/27/10	82110	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	960.00
49	04/27/10	82111	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	980.00
50	04/29/10	82112	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	1,000.00
51	04/29/10	82113	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	1,020.00
52	04/29/10	82114	Cardella Waste, North Bergen, NJ	C & D Debris	20.00	1,040.00
Total C&D:			1,040.00	Cubic Yards		

**Table 3**  
**Validated Analytical Results for Volatile Organic Compounds In Soil Excavation Endpoint Samples**  
**Via Verde aka New Housing New York Legacy Project**  
**700-730 Brook Avenue, Bronx, New York**  
**BCP # C203043**

[illegible]

Notes:  
 ug/Kg - micrograms per kilogram or parts per billion  
 ND - Not detected at or above laboratory detection limits  
 NVG - No Value Given  
 J - Estimated Value  
 EP-X is a duplicate of EP-1

*\*\*Track 4 Site Specific Soil Action Levels, Remedial Action Work Plan, June 2009.*

Table 4 (pg. 1 of 2)																																												
Validated Analytical Results for Semi-Volatile Organic Compounds In Soil Excavation Endpoint Samples Via Verde aka New Housing New York Legacy Project 700-730 Brook Avenue Bronx, New York BCP # C203043																																												
Sample ID Matrix Depth (feet) Date Sampled	EP-1 Soil 2.5 3/23/2010	EP-X Soil 2.5 3/23/2010	EP-2 Soil 2.5 3/23/2010	EP-3 Soil 2.5 3/23/2010	EP-3RE Soil 6 3/31/2010	EP-XXX Soil 6 4/1/2010	EP-4 Soil 2.5 3/23/2010	EP-5 Soil 2.5 3/23/2010	EP-6 Soil 2.5 3/23/2010	EP-6RE Soil 6 3/31/2010	EP-6RE2 Soil 10 4/7/2010	EP-7 Soil 2.5 3/23/2010	EP-7RE Soil 5.5 3/31/2010	EP-7RE2 Soil 10 4/7/2010	EP-8 Soil 2.5 3/23/2010	EP-8RE Soil 6 3/31/2010	EP-8RE2 Soil 10 4/7/2010	EP-9 Soil 2.5 3/23/2010	EP-9RE Soil 5.5 3/31/2010	EP-9RE2 Soil 10 4/7/2010	EP-10 Soil 2.5 3/23/2010	EP-10RE Soil 6 3/31/2010	EP-10RE2 Soil 10 4/7/2010	EP-11 Soil 2.5 3/23/2010	EP-11RE Soil 6 3/31/2010	EP-11RE2 Soil 10 4/7/2010	EP-12 Soil 2.5 3/23/2010	EP-12RE Soil 6 3/31/2010	EP-12RE2 Soil 10 4/7/2010	EP-13 Soil 2.5 3/23/2010	EP-13 RE Soil 6 3/31/2010	EP-13RE2 Soil 10 4/7/2010	EP-14 Soil 2.5 3/23/2010	EP-14RE Soil 6 3/31/2010	EP-14RE2 Soil 10 4/7/2010	Part 375 - Track 1 Soil Cleanup Objectives*	Part 375 - Track 2 Soil Cleanup Objectives*	Track 4 Site Specific Soil Action Levels**						
Semi-Volatile Organic Compounds																																												
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
4-Chloro-3-methyl phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4-Dinitrophenol	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
4,6-Dinitro-o-cresol	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3+4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	80.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Acenaphthene	26.8 J	20.3 J	ND	56.8	ND	ND	40.0	ND	3,390	3,090	39.7	14,200	3,500	ND	3,300	9,010 b	18.8 J	308	1,690	ND	183	4,450 a	113	46.1	5,580 a	287	334	4,410	ND	4,140	21,500 a	ND	6,860	5,970 a	ND	20,000	100,000	ND	20,000	100,000	ND	20,000		
Acenaphthylene	ND	67.0	47.6	163	ND	ND	126	ND	314	75.0	ND	429	81.9	ND	346	420	ND	328	416	ND	348	358	15.0 J	537	385	32.1 J	748	453	ND	446	1,350	ND	1,110	327	ND	100,000	100,000	ND	100,000	100,000	ND	100,000		
Acetophenone	136	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Anthracene	168	99.9	61.1	221	ND	ND	188	14.0 J	7,470	6,780 a	85.0	27,100	6,940 a	ND	6,220	17,600 b	53.8	903	3,880 a	ND	633	7,740 a	248	480	9,590 a	569	1,370	10,900 b	ND	10,300	41,100 a	24.5 J	13,000	9,780 a	ND	100,000	100,000	ND	100,000	100,000	ND			
Atrazine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzo(a)anthracene	565	440	364	841	ND	19.2 J	719	82.1	17,200	12,700 a	150	45,700	10,900 a	33.7	15,700	32,200 b	135	2,870	7,730 a	16.2 J	2,030	13,400 a	495	1,420	15,200 a	1,150	4,630	25,900 b	58.4	22,300	66,100 a	54.6	27,300	18,400 a	51.6	1,000	1,000	ND	1,000	1,000	ND			
Benzo(a)pyrene	612	504	468	946	ND	25.8 J	821	98.7	15,600	10,700 a	134	36,100	8,720 a	34.2	14,600	29,500 b	137	3,290	8,020 a	ND	2,180	13,500 a	504	1,660	15,000 a	1,130	4,910	23,900 b	54.1	19,100	52,900 a	61.3	23,300	17,300 a	47.3	1,000	1							

<div>Table 4 (pg. 2 of 2)</div> <div>Validated Analytical Results for Semi-Volatile Organic Compounds In Soil Excavation Endpoint Samples</div> <div>Via Verde aka New Housing New York Legacy Project</div> <div>700-730 Brook Avenue</div> <div>Bronx, New York</div> <div>BCP # C203043</div>																								
Sample ID	EP-15	EP-15RE	EP-15RE2	EP-16	EP-16RE	EP-16RE2	EP-17	EP-17RE	EP-17RE2	EP-18	EP-18RE	EP-18RE2	EP-24	EP-25	EP-26	EP-27	EP-28	Field Blank	Field Blank	Field Blank	Field Blank	Part 375 - Track 1	Part 375 - Track 2	Track 4 Site
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Liquid	Liquid	Liquid	Liquid	Soil Cleanup	Soil Cleanup	Specific Soil
Depth (feet)	2.5	6	10	2.5	6	10	2.5	6	10	2.5	6	10	22	22	22	22	22					Objectives*	Objectives*	Action Levels**
Date Sampled	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2019	4/14/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010	3/23/2010	3/31/2010	4/7/2010	4/14/2010	Objectives*	Objectives*	Action Levels**
Semi-Volatile Organic Compounds																								
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L	µg/L	µg/L	µg/L	µg/kg	µg/kg	µg/kg
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chloro-3-methyl phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dinitrophenol	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND UJ	NVG	NVG	NVG
4,6-Dinitro-o-cresol	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND	NVG	NVG	NVG
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3+4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Nitrophenol	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND	NVG	NVG	NVG
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	800	NVG	NVG
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	330	NVG	NVG
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Acenaphthene	5,350	12,100 b	ND	234	16,000 b	40.2	4,120	5,860	77.0	11,200	1,960	12.6 J	ND	25.6 J	ND	ND	ND	ND	ND	ND	ND	20,000	100,000	NVG
Acenaphthylene	475	377	ND	536	646	ND	475	293	ND	649	405	23.9 J	ND	13.8 J	ND	ND	ND	ND	ND	ND	ND	100,000	100,000	NVG
Acetophenone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Anthracene	10,300	24,000 b	ND	916	32,400 b	73.6	8,980	11,000 b	159	22,500	4,850 a	48.1	ND	82.0	ND	62.2	ND	ND	ND	ND	ND	100,000	100,000	NVG
Atrazine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND UJ	NVG	NVG	NVG
Benzo(a)anthracene	23,600	45,700 b	20.3 J	2,830	55,400 b	162	21,000	20,500 b	235	46,600	10,600 a	209	15.7 J	189	31.3 J	132	55.0	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(a)pyrene	21,100	40,100 b	16.2 J	3,290	49,300 b	164	19,700	18,400 b	234	40,900	10,000 a	235	ND	224	37.3	150	59.5	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(b)fluoranthene	26,400	45,300 b	ND	3,970	55,200 b	190	23,900	22,400 b	245	50,100	11,700 a	264	ND	239	36.4	147	51.8	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(g,h,i)perylene	11,900	18,800 b	18.1 J	2,060	21,900 b	106	11,200	10,500	159	21,700	5,340 a	179	ND	164	29.0 J	112	60.0	ND	ND	ND	ND	100,000	100,000	NVG
Benzo(k)fluoranthene	8,140	17,900 b	ND	1,310	23,200 b	71.1	7,300	7,890	97.2	15,200	3,940	91.6	ND	116	20.7 J	78.5	44.7	ND	ND	ND	ND	800	3,900	NVG
4-Bromophenyl-phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Butyl benzyl phthalate	ND	ND	ND	6,240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
1,1' -Biphenyl	186	426	ND	17.1 J	620	ND	126 J	230	ND	420	74.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Benzaldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Carbazole	5,280	12,500 b	ND	359	14,700 b	37.2 J	4,030	5,860	55.4 J	11,500	2,150	20.3 J	ND	29.6 J	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Caprolactam	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Chrysene	20,900	37,600 b	26.2 J	2,660	46,100 b	175	18,400	17,700 b	244	40,400	8,990 a	235	21.9 J	210	40.1	140.0	63.5	ND	ND	ND	ND	1,000	3,900	NVG
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Chloroisopropyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chlorophenyl-phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Dibenzo(a,h)anthracene	4,860	7,580	ND	668	7,900 b	53.4	4,720	3,730	56.1	7,150	1,600	60.0	ND	44.5	ND	24.1 J	ND	ND	ND	ND	ND	330	330	NVG
Dibenzofuran	1,970	4,560	ND	118	6,620	21.5 J	1,360	2,410	26.9 J	4,810	790	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Di-n-butyl phthalate	ND	ND	ND	192	ND	ND	ND	ND	ND	ND	94.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Diethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Dimethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Ethylhexyl)phthalate	654	ND	ND	497	ND	ND	603	ND	ND	734	322	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Fluoranthene	52,600	94,700 b	31.7	5,460	121,000 b	389	43,400	41,400 b	634	106,000	20,700 a	439	25.7 J	434	65.8	313	113	ND	ND	ND	ND	100,000	100,000	NVG
Fluorene	3,680	8,440	ND	243	12,100 b	29.6 J	2,860	4,360	49.6	8,350	1,490	ND	ND	ND	ND	15.5 J	ND	ND	ND	ND	ND	30,000	100,000	NVG
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Indeno(1,2,3-cd)pyrene	11,400	19,300 b	ND	1,910	22,300 b	89.2	10,900	8,480 b	136	20,800	4,740 a	147	ND	134	20.3 J	75.7	33.7 J	ND	ND	ND	ND	500	500	NVG
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Methylnaphthalene	552	1,400	ND	50.2 J	1,970	ND	351	724	ND	1,290	219	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Naphthalene	1,330	3,780	ND	77.3	5,430	ND	833	1,870	14.9 J	3,430	508	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12,000	100,000	NVG
Nitrobenzene	ND	ND	ND	ND	ND</																			

<div>Table 4 (pg. 2 of 2)</div> <div>Validated Analytical Results for Semi-Volatile Organic Compounds In Soil Excavation Endpoint Samples</div> <div>Via Verde aka New Housing New York Legacy Project</div> <div>700-730 Brook Avenue</div> <div>Bronx, New York</div> <div>BCP # C203043</div>																								
Sample ID	EP-15	EP-15RE	EP-15RE2	EP-16	EP-16RE	EP-16RE2	EP-17	EP-17RE	EP-17RE2	EP-18	EP-18RE	EP-18RE2	EP-24	EP-25	EP-26	EP-27	EP-28	Field Blank	Field Blank	Field Blank	Field Blank	Part 375 - Track 1	Part 375 - Track 2	Track 4 Site
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Liquid	Liquid	Liquid	Liquid	Soil Cleanup	Soil Cleanup	Specific Soil
Depth (feet)	2.5	6	10	2.5	6	10	2.5	6	10	2.5	6	10	22	22	22	22	22					Objectives*	Objectives*	Action Levels**
Date Sampled	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2019	4/14/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010	3/23/2010	3/31/2010	4/7/2010	4/14/2010	Objectives*	Objectives*	Action Levels**
Semi-Volatile Organic Compounds																								
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L	µg/L	µg/L	µg/L	µg/kg	µg/kg	µg/kg
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chloro-3-methyl phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dinitrophenol	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND UJ	NVG	NVG	NVG
4,6-Dinitro-o-cresol	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND	ND UJ	ND	NVG	NVG	NVG
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3+4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Nitrophenol	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND UJ	ND	ND	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND UJ	ND	ND UJ	ND	NVG	NVG	NVG
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	800	NVG	NVG
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	330	NVG	NVG
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Acenaphthene	5,350	12,100 b	ND	234	16,000 b	40.2	4,120	5,860	77.0	11,200	1,960	12.6 J	ND	25.6 J	ND	ND	ND	ND	ND	ND	ND	20,000	100,000	NVG
Acenaphthylene	475	377	ND	536	646	ND	475	293	ND	649	405	23.9 J	ND	13.8 J	ND	ND	ND	ND	ND	ND	ND	100,000	100,000	NVG
Acetophenone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Anthracene	10,300	24,000 b	ND	916	32,400 b	73.6	8,980	11,000 b	159	22,500	4,850 a	48.1	ND	82.0	ND	62.2	ND	ND	ND	ND	ND	100,000	100,000	NVG
Atrazine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND UJ	NVG	NVG	NVG
Benzo(a)anthracene	23,600	45,700 b	20.3 J	2,830	55,400 b	162	21,000	20,500 b	235	46,600	10,600 a	209	15.7 J	189	31.3 J	132	55.0	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(a)pyrene	21,100	40,100 b	16.2 J	3,290	49,300 b	164	19,700	18,400 b	234	40,900	10,000 a	235	ND	224	37.3	150	59.5	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(b)fluoranthene	26,400	45,300 b	ND	3,970	55,200 b	190	23,900	22,400 b	245	50,100	11,700 a	264	ND	239	36.4	147	51.8	ND	ND	ND	ND	1,000	1,000	NVG
Benzo(g,h,i)perylene	11,900	18,800 b	18.1 J	2,060	21,900 b	106	11,200	10,500	159	21,700	5,340 a	179	ND	164	29.0 J	112	60.0	ND	ND	ND	ND	100,000	100,000	NVG
Benzo(k)fluoranthene	8,140	17,900 b	ND	1,310	23,200 b	71.1	7,300	7,890	97.2	15,200	3,940	91.6	ND	116	20.7 J	78.5	44.7	ND	ND	ND	ND	800	3,900	NVG
4-Bromophenyl-phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Butyl benzyl phthalate	ND	ND	ND	6,240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
1,1' -Biphenyl	186	426	ND	17.1 J	620	ND	126 J	230	ND	420	74.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Benzaldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Carbazole	5,280	12,500 b	ND	359	14,700 b	37.2 J	4,030	5,860	55.4 J	11,500	2,150	20.3 J	ND	29.6 J	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Caprolactam	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Chrysene	20,900	37,600 b	26.2 J	2,660	46,100 b	175	18,400	17,700 b	244	40,400	8,990 a	235	21.9 J	210	40.1	140.0	63.5	ND	ND	ND	ND	1,000	3,900	NVG
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Chloroisopropyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Chlorophenyl-phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Dibenzo(a,h)anthracene	4,860	7,580	ND	668	7,900 b	53.4	4,720	3,730	56.1	7,150	1,600	60.0	ND	44.5	ND	24.1 J	ND	ND	ND	ND	ND	330	330	NVG
Dibenzofuran	1,970	4,560	ND	118	6,620	21.5 J	1,360	2,410	26.9 J	4,810	790	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Di-n-butyl phthalate	ND	ND	ND	192	ND	ND	ND	ND	ND	ND	94.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Diethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Dimethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
bis(2-Ethylhexyl)phthalate	654	ND	ND	497	ND	ND	603	ND	ND	734	322	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Fluoranthene	52,600	94,700 b	31.7	5,460	121,000 b	389	43,400	41,400 b	634	106,000	20,700 a	439	25.7 J	434	65.8	313	113	ND	ND	ND	ND	100,000	100,000	NVG
Fluorene	3,680	8,440	ND	243	12,100 b	29.6 J	2,860	4,360	49.6	8,350	1,490	ND	ND	ND	ND	15.5 J	ND	ND	ND	ND	ND	30,000	100,000	NVG
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Indeno(1,2,3-cd)pyrene	11,400	19,300 b	ND	1,910	22,300 b	89.2	10,900	8,480 b	136	20,800	4,740 a	147	ND	134	20.3 J	75.7	33.7 J	ND	ND	ND	ND	500	500	NVG
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Methylnaphthalene	552	1,400	ND	50.2 J	1,970	ND	351	724	ND	1,290	219	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG	NVG
Naphthalene	1,330	3,780	ND	77.3	5,430	ND	833	1,870	14.9 J	3,430	508	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12,000	100,000	NVG
Nitrobenzene	ND	ND	ND	ND	ND</																			

**TABLE 5**  
**Validated Analytical Results for Metals In Soil Excavation Endpoint Samples**  
**Via Verde aka New Housing New York Legacy Project**  
**700-730 Brook Avenue**  
**Bronx, New York**  
**BCP # C203043**

Sample ID	EP-1	EP-X	EP-2	EP-3	EP-4	EP-5	EP-6	EP-7	EP-8	EP-9	EP-10	EP-11	EP-12	EP-12 RE	EP-12RE2	EP-13	EP-13 RE	EP-13RE2	EP-14	EP-15	EP-16	EP-16RE	EP-16RE2	EP-17	EP-18	EP-24	EP-25	EP-26	EP-27	EP-28	Field Blank	Field Blank	Field Blank	Part 375 - Track 1	Part 375 - Track 2	Track 4 Site Specific Soil Action Levels***						
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Liquid	Liquid	Liquid	Soil Cleanup Objectives*	Soil Cleanup Objectives**							
Depth (feet)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	6	10	2.5	6	10	2.5	2.5	2.5	6	10	2.5	2.5	22	22	22	22	22	22	22										
Date Sampled	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/23/2010	3/23/2010	3/31/2010	4/7/2010	3/23/2010	3/23/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010	3/23/2010	4/7/2010	4/14/2010									
Metals																																										
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/L	ug/L	ug/L	mg/kg	mg/kg	mg/kg					
Lead	123 J	115 J	44.2 J	78.8 J	80.0 J	22.6 J	298 J	534 J	380 J	277 J	452 J	328 J	700 J	4,980	39.7 J	625 J	1,360	32.6 J	451 J	205 J	695 J	1,040	36.1 J	379 J	236 J	13.4	51.0	60.8	37.8	5.6	<3.0	<3.0 UJ	<3.0	63	400	590						
Notes:																																										
mg/kg - milligrams per kilogram or parts per million																																	EP-X is a duplicate of EP-1									
ND - Not detected at or above laboratory detection limits																																	*6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6; Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives									
NVG - No Value Given																																	**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6; Table 375-6.8(b): Residential Restricted Use Soil Cleanup Objectives									
UJ - The analyte was not detected above the reported sample quantitation limit.																																	***Track 4 Site Specific Soil Action Levels, Remedial Action Work Plan, June 2009.									
However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.																																										
Bold indicates exceedance of Track 1 Soil Cleanup Objectives																																										
Bold and boxed indicates exceedance of Track 2 Soil Cleanup Objectives										Boxed, bold, and italicized indicates exceedance of Track 4 Site-Specific Soil Action Levels																																

Table 6

## Validated Analytical Results for Volatile Organic Compounds In Groundwater

Via Verde aka New Housing New York Legacy Project

700-730 Brook Avenue, Bronx, New York

BCP # C203043

Sample ID Matrix Date Sampled	MW-6 groundwater 8/3/2011	MW-7 groundwater 8/4/2011	MW-8 groundwater 8/3/2011	MW-9 groundwater 8/4/2011	MW-XX** groundwater 8/3/2011	Field Blank liquid 8/4/2011	Trip Blank liquid 8/3/2011	Trip Blank liquid 8/4/2011	NYSDEC TOGs*
<b>Volatile Organic Compounds</b>									
<b>Units</b>	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	ND	ND	13.5	ND	13.1	ND	ND	ND	50
Benzene	ND	ND	<b>1.3</b>	ND	<b>1.4</b>	ND	ND	ND	1
Bromobenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
Bromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	5
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	50
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	50
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone (MEK)	ND	ND	5.3 J	<b>201</b>	6.3 J	ND	ND	ND	50
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
sec-Butylbenzene	0.79 J	ND	<b>8.8</b>	ND	<b>9.2</b>	ND	ND	ND	5
tert-Butylbenzene	ND	ND	1.3 J	ND	1.4 J	ND	ND	ND	5
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	5
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroform	<b>16.4</b>	ND	ND	ND	ND	ND	ND	ND	7
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	NVG
o-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	5
p-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dibromo-3-Chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	0.04
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	50
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	NVG
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	3
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	3
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	3
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.6
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	5
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	1
1,3-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	5
2,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	0.4
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	0.4
Ethylbenzene	0.41 J	ND	<b>232</b>	ND	<b>239</b>	ND	ND	ND	5
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Isopropylbenzene	0.87 J	ND	<b>43.8</b>	ND	<b>46</b>	ND	ND	ND	5
p-Isopropyltoluene	ND	ND	<b>5.4</b>	ND	<b>5.7</b>	ND	ND	ND	5
Methyl Tert Butyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	10
4-Methyl-2-Pentanone (MIBK)	ND	ND	ND	ND	ND	ND	ND	ND	NVG
Methylene bromide	ND	ND	ND	ND	ND	ND	ND	ND	NVG
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	5
Naphthalene	ND	ND	<b>124</b>	ND	<b>125</b>	ND	ND	ND	10
n-Propylbenzene	1.2 J	ND	<b>101</b>	ND	<b>105</b>	ND	ND	ND	5
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	5
Toluene	ND	ND	<b>9.5</b>	ND	<b>9.5</b>	ND	ND	ND	5
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	1
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	5
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	0.04
1,2,4-Trimethylbenzene	0.35 J	ND	<b>149</b>	ND	<b>160</b>	ND	ND	ND	5
1,3,5-Trimethylbenzene	ND	ND	<b>87.1</b>	ND	<b>93.7</b>	ND	ND	ND	5
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	2
m,p-Xylene	ND	ND	<b>90.2</b>	ND	<b>92.7</b>	ND	ND	ND	5
o-Xylene	ND	ND	<b>9.3</b>	ND	<b>9.9</b>	ND	ND	ND	5
Xylene (total)	ND	ND	<b>99.5</b>	ND	<b>103</b>	ND	ND	ND	5

## Notes:

ug/L - micrograms per liter or parts per billion

ND - Not detected at or above laboratory detection limits

NVG - No Value Given

J - Estimated Value

\*NYSDEC Technical and Operational Guidance Series (1.1.1)

Ambient Water Quality Standards and Guidance Values

and Groundwater Effluent Limitations; June 1998

\*\* MW-XX is a duplicate of MW-8

**Boxed and bold indicates exceedance groundwater standards or guidance values**

**Table 7**  
**Validated Analytical Results for Semi-Volatile Organic Compounds In Groundwater**  
**Via Verde aka New Housing New York Legacy Project**  
**700-730 Brook Avenue, Bronx, New York**  
**BCP # C203043**

Sample ID	MW-6	MW-7	MW-8	MW-9	MW-XX**	Field Blank	NYSDEC TOGS*
Matrix	groundwater	groundwater	groundwater	groundwater	groundwater	liquid	
Date Sampled	8/3/2011	8/4/2011	8/3/2011	8/4/2011	8/3/2011	8/4/2011	
Semi-Volatile Organic Compounds							
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Chlorophenol	ND	ND	ND	ND	ND	ND	NVG
4-Chloro-3-methyl phenol	ND	ND	ND	ND	ND	ND	NVG
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	5
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	50
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	10
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	NVG
2-Methylphenol	ND	ND	ND	ND	ND	ND	1
3+4-Methylphenols	ND	ND	ND	ND	ND	ND	1
2-Nitrophenol	ND	ND	ND	ND	ND	ND	NVG
4-Nitrophenol	ND	ND	ND	ND	ND	ND	NVG
Pentachlorophenol	ND	ND	ND	ND	ND	ND	NVG
Phenol	ND	ND	ND	ND	ND	ND	1
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	NVG
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	NVG
Acenaphthene	ND	ND	2.5	ND	2.4	ND	20
Acenaphthylene	ND	ND	ND	ND	ND	ND	NVG
Acetophenone	ND	ND	ND	ND	ND	ND	NVG
Anthracene	ND	ND	ND	ND	ND	ND	50
Atrazine	ND	ND	ND	ND	ND	ND	7.5
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	0.002
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	0.002
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	NVG
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	0.002
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	NVG
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	50
1,1' -Biphenyl	ND	ND	ND	ND	ND	ND	5
Benzaldehyde	ND	ND	ND	ND	ND	ND	NVG
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	10
4-Chloroaniline	ND	ND	ND	ND	ND	ND	5
Carbazole	ND	ND	ND	ND	ND	ND	NVG
Caprolactam	ND	ND	ND	ND	ND	ND	NVG
Chrysene	ND	ND	ND	ND	ND	ND	0.002
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	5
bis(2-Chloroethyl)ether	ND	ND	ND	ND	ND	ND	1
bis(2-Chloroisopropyl)ether	ND	ND	ND	ND	ND	ND	NVG
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	NVG
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	5
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	5
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	5
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	NVG
Dibenzofuran	ND	ND	1.6 J	ND	1.8 J	ND	NVG
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	50
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	50
Diethylphthalate	ND	ND	ND	ND	ND	ND	50
Dimethylphthalate	ND	ND	ND	ND	ND	ND	50
bis(2-Ethylhexyl)phthalate	ND	1.3 BJ	ND	1.5 J	ND	ND	5
Fluoranthene	ND	ND	0.75 J	ND	0.75 J	ND	50
Fluorene	ND	ND	1.7	ND	1.8	ND	50
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	0.04
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	0.5
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	5
Hexachloroethane	ND	ND	ND	ND	ND	ND	5
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	0.002
Isophorone	ND	ND	ND	ND	ND	ND	50
2-Methylnaphthalene	ND	ND	13.4	ND	20.5	ND	NGV
2-Nitroaniline	ND	ND	ND	ND	ND	ND	5
3-Nitroaniline	ND	ND	ND	ND	ND	ND	5
4-Nitroaniline	ND	ND	ND	ND	ND	ND	5
Naphthalene	ND	ND	24.1	ND	30.4	ND	10
Nitrobenzene	ND	ND	ND	ND	ND	ND	0.4
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	NVG
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	50
Phenanthrene	ND	ND	ND	ND	ND	ND	50
Pvrene	ND	ND	0.51 J	ND	0.57 J	ND	50

Notes:

ug/L - micrograms per liter or parts per billion

ND - Not detected at or above laboratory detection limits

*NVG - No Value Given*

*J* - Estimated Value

*B - Analyte found in associated method blank*

*\*NYSDEC Technical and Operational Guidance Series (1.1.1)  
Ambient Water Quality Standards and Guidance Values  
and Groundwater Effluent Limitations; June 1998*

\*\* MW-XX is a duplicate of MW-8

**Boxed and bold indicates exceedance of groundwater standards or guidance values**



**Table 8**

**Validated Analytical Results for PCBs In Groundwater**  
**Via Verde aka New Housing New York Legacy Project**  
**700-730 Brook Avenue, Bronx, New York**  
**BCP # C203043**

<b>Sample ID Matrix Date Sampled</b>	<b>MW-6 groundwater 8/3/2011</b>	<b>MW-7 groundwater 8/4/2011</b>	<b>MW-8 groundwater 8/3/2011</b>	<b>MW-9 groundwater 8/4/2011</b>	<b>MW-XX** groundwater 8/3/2011</b>	<b>Field Blank liquid 8/4/2011</b>	<b>NYSDEC TOGS*</b>
<b>PCBs</b>							
<b>Units</b>	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aroclor-1016	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1221	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1232	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1242	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1248	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1254	ND	ND	ND	ND	ND	ND	0.09 *
Aroclor-1260	ND	ND	ND	ND	ND	ND	0.09 *

**Notes:**

*ug/L - micrograms per liter or parts per billion*

*ND - Not detected at or above laboratory detection limits*

*\* Applies to the sum of these compounds*

*\*NYSDEC Technical and Operational Guidance Series (1.1.1)  
Ambient Water Quality Standards and Guidance Values  
and Groundwater Effluent Limitations; June 1998*

*\*\* MW-X is a duplicate of MW-8*

**Table 9**  
**Validated Analytical Results for Metals In Groundwater**

Via Verde aka New Housing New York Legacy Project  
700-730 Brook Avenue, Bronx, New York

BCP # C203043

Sample ID Matrix Date Sampled	MW-6 groundwater 8/3/2011	MW-7 groundwater 8/4/2011	MW-8 groundwater 8/3/2011	MW-9 groundwater 8/4/2011	MW-XX** groundwater 8/3/2011	Field Blank liquid 8/4/2011	NYSDEC TOGS*
<b>Total Metals</b>							
<b>Units</b>	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	1,700	358	3,750	2,090	2,980	<200	NVG
Antimony	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3
Arsenic	<3.0	<3.0	6.2	<3.0	6.4	<3.0	25
Barium	<200	<200	<200	<200	<200	<200	1,000
Beryllium	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3
Cadmium	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	5
Calcium	29,100	135,000	119,000	368,000	120,000	<5,000	NVG
Chromium	<10	<10	15.3	137	12.7	<10	50
Cobalt	<50	<50	<50	<50	<50	<50	NVG
Copper	<10	<10	11.5	22.9	<10	<10	200
Iron	<b>2,420</b>	<b>819</b>	<b>8,500</b>	<b>4,070</b>	<b>6,970</b>	<100	300
Lead	<3.0	<3.0	<b>25.4</b>	13.5	20.8	<3.0	25
Magnesium	<5,000	28,400	<b>35,800</b>	13,400	<b>35,600</b>	<5,000	35,000
Manganese	192	101	<b>2,590</b>	<b>337</b>	<b>2,580</b>	<15	300
Mercury	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.7
Nickel	<10	<10	14.7	65.7	11.7	<10	100
Potassium	<10,000	<10,000	<10,000	76,700	<10,000	<10,000	NVG
Selenium	<10	<10	<10	<10	<10	<10	10
Silver	<10	<10	<10	<10	<10	<10	50
Sodium	<b>28,100</b>	<b>62,800</b>	<b>70,900</b>	<b>88,300</b>	<b>71,900</b>	<10,000	20,000
Thallium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Vanadium	<50	<50	<50	<50	<50	<50	NVG
Zinc	<20	<20	25.1	40.2	<20	<20	2,000
Chromium, Hexavalent	<0.010 <sup>a</sup>	<0.010 <sup>a</sup>	<0.010 <sup>a</sup>	<0.010 <sup>a</sup>	<0.010 <sup>a</sup>	<0.010 <sup>a</sup>	50
Chromium, Trivalent	<0.020 <sup>b</sup>	<0.020 <sup>b</sup>	<0.020 <sup>b</sup>	0.14 <sup>b</sup>	<0.020 <sup>b</sup>	<0.020 <sup>b</sup>	50

Notes:

ug/L - micrograms per liter or parts per billion

ND - Not detected at or above laboratory detection limits

NVG - No Value Given

J - Estimated Value

\*NYSDEC Technical and Operational Guidance Series (1.1.1)

Ambient Water Quality Standards and Guidance Values

and Groundwater Effluent Limitations; June 1998

\*\* MW-X is a duplicate of MW-8

**Boxed and bold indicates exceedance of groundwater standards or guidance values**



**Table 10**

**Sources of Clean Fill & Quantities  
New Housing New York Legacy Project  
Bronx, NY**

<b><u>Source Name and Location</u></b>	<b><u>Quantity (cubic yards)</u></b>
Tilcon Facility, Bronx, NY	10,733
Thalle Industries, Elmsford, NY	690