NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

FINAL STATEMENT OF BASIS CORRECTIVE MEASURES SELECTION

LIRR Morris Park Repair

Richmond Hill, Queens County

DEC Site No. 241130

EPA ID No. NYD980641625

March 2015

PREPARED BY

DIVISION OF ENVIRONMENTAL REMEDIATION

DECLARATION STATEMENT – STATEMENT OF BASIS
FINAL CORRECTIVE MEASURES SELECTION

LIRR Morris Park Repair & Richmond Hills Yards
Richmond Hill, Queens County
DEC Site No. 241130
USEPA ID No. NYD980641625
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Statement of Purpose and Basis

This document presents the final corrective measures for the Long Island Railroad (LIRR) Morris Park Repair and Richmond Hill Yards which is owned by the Metropolitan Transportation Authority (MTA). The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 373.

The proposed Statement of Basis (SB) was made available for public comment between January 15, 2015 and March 1, 2015. Comments were received on the corrective measures proposed in the Statement of Basis (SB). A Responsiveness Summary that includes responses to those comments was prepared and is included in Appendix A of this final Statement of Basis.

This decision is based on the Administrative Record for the New York State Department of Environmental Conservation (the Department) for the LIRR Morris Park Repair and Richmond Hill Yards and is included in Appendix B of the this final Statement of Basis.

Description of Final Corrective Measures

The elements of the final corrective measures are the following required actions.

1. ***Cover System***

A site cover currently exists and will be maintained to allow for industrial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer in

any green areas. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

2. ***Institutional Control***

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

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

b. allows the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

c. restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

d. requires compliance with the Department approved Site Management Plan.

3. ***Site Management Plan***

A Site Management Plan (SMP) that includes the following.

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

   i. Institutional Controls: The Environmental Easement discussed in Paragraph 2 above.
   ii. Engineering Controls: The site cover discussed in Paragraph 1 above.
   iii. The SMP includes, but may not be limited to:
      (a) descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
      (b) an Excavation Plan which details the provisions for management of future excavation activities;
      (c) provisions for the management and inspection of the identified engineering controls;
      (d) maintaining site access controls and Department notification; and
      (e) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
      (f) a provision for the evaluation and implementation of actions necessary to address exposures related to soil vapor intrusion for any on-site buildings in the event that the current use changes or occupants are no longer subject to LIRR health and safety provisions and for any buildings constructed at the site.

(g) implementation of the remedy and evaluation of the potential impacts of remedy implementation with groundwater supply well reactivation will be closely coordinated with New York State Department of Health (NYSDOH) and New York City Department of Environmental Protection (DEP) moving forward.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

i. a schedule of monitoring and frequency of submittals to the Department; and

ii. monitoring for vapor intrusion for any buildings re-occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

i. maintaining site access controls and Department notification; and

ii. providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The final corrective measures are protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 30, 2015
Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

FINAL STATEMENT OF BASIS

CORRECTIVE MEASURES SELECTION AND RESPONSIVENESS SUMMARY

LIRR Morris Park Repair & Richmond Hills Yards
Richmond Hill, Queens County
Site No. 241130
USEPA ID No. NYD980641625
March 2015

SECTION 1: INTRODUCTION

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Statement of Basis (SB) identifies the selected remedy and discusses the reasons for selecting the remedy.

The New York State Hazardous Waste Management Program (also known as the RCRA Program) requires corrective action for releases of hazardous waste and hazardous constituents to the environment. This facility is subject to this regulatory program. The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Parts 373 (RCRA). This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Queens Library at Richmond Hill
118-14 Hillside Avenue
Richmond Hill, NY 11418
Phone: 718-849-7150

NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233
Call 518-402-9767 for Appointment

Receive Site Citizen Participation Information by Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html.

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Long Island Railroad (LIRR) Morris Park Yard and Richmond Hill Yard (the site) are located in an urban area at 121st street and Atlantic Ave in the Richmond Hill section of Queens, New York. 91st and 92nd Avenues bound the site to the north, Atlantic Avenue to the south, 121st Street to the west, and the Van Wyck Expressway to the east. A site location map is attached as Figure 1 and a site layout map is attached as Figure 2.

Site Features: The site encompasses approximately 21 acres and is comprised of two operating rail yards. Currently, Morris Park Yard consists of a roundhouse, turntable, and a separate shed with four car bays. Some areas are paved with asphalt and other areas are exposed soil. Richmond Hill Yard consists of the Sheridan Shop, locomotive shop, storage yard, McGurl Building, train wash, receiving yard, and the Advance Yard. Richmond Hill Yard has a few office spaces in the locomotive shop that are used by supervisory personnel. The McGurl Building has an area used by employees for breaks. At Morris Park Yard, there are a few office spaces used by supervisory personnel; these spaces are in buildings used for storage and warehouse space. The site is 55 feet above mean sea level. The closest body of water is Willow Lake in Meadow Park, two miles to the north. Jamaica Bay is about three miles southwest of the site. There are several schools and a hospital within one half mile of the site.

Current Zoning and Land Use: The site was placed into service in the 1890's and has been used as rail yard since that time. The site is zoned industrial/manufacturing (designation M1-1). Surrounding land uses include mixed residential, light industrial and commercial.

Historic Use(s): Historic Sanborn Maps from 1901 to 1996 indicate that the site was utilized as a railroad yard for over 100 years. As a rail yard it was primarily used to overhaul and repair diesel locomotives and electric coach cars, and to rebuild major mechanical and electrical components of equipment transported to the site from other LIRR facilities. Historic rail yard uses also included periodic and routine maintenance and fueling of diesel locomotives. Many of these operations ceased in the early 1990s and only routine maintenance and fueling of diesel locomotives are currently performed at the site. Morris Park Yard originally consisted of machine and maintenance shops, paint and air-conditioning shops, electric car/truck shops, a component shop, a boiler house, a welfare facility, a warehouse, a storehouse, an oil house, and a main office. At Richmond Hill Yard, past uses included inspection, maintenance, fueling, and storage of diesel train locomotives. Current operations consist of coach servicing, locomotive repair, storage and fueling, train wash and an employee facility.

Site Geology and Hydrogeology: The geology of Queens consists of unconsolidated glacial deposits overlying crystalline bedrock. The upper glacial deposits at the site consist of outwash gravels, sands and silty sands extending from land surface to the Gardiners Clay. The Gardiners Clay underlying the unconsolidated upper aquifer consists of greenish-gray clay and silts, with some interbedded sands, and represents a confining layer. Groundwater in the unconsolidated glacial deposits is encountered at approximately 40 feet below ground surface (bgs). Groundwater flow direction is to the southwest towards Jamaica Bay. The site, and most of Queens, receives water from public reservoirs in Upstate New York. The confined aquifers below the unconsolidated aquifer, such as the Magothy or Raritan, are used to provide drinking water to parts of Queens. Two public water supply wells (No. 31 and 45), screened in the upper unconsolidated aquifer, are located within one mile of the site. Well No. 31, which is inactive and upgradient, is located adjacent to and northeast of the site. Well No. 45, which is 158 feet deep, is approximately 2200 feet southwest and downgradient of the site. Well No. 45 is currently active although it did not operate in 2007.

SECTION 4: LAND USE

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for commercial use of the site was selected.

SECTION 5: ENFORCEMENT STATUS

6NYCRR Part 373 Hazardous Waste Management Permits include RCRA Corrective Action. This requires owners and/or operators of hazardous waste treatment, storage and disposal facilities to investigate and, when appropriate, remediate releases of hazardous wastes and/or constituents to the environment. In relation to this facility, the Department issued an Order No. C2-1625-91-04) to Long Island Railroad (LIRR) on May 8, 1992. After final corrective measures have been selected, the Department will have LIRR implement the remedy.

SECTION 6: ENVIRONMENTAL ASSESSMENT

Nature and extent of contamination prior to the Interim Corrective Measures (ICMs): ICMs are conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Statement of Basis. Based on previous investigations of soil and groundwater for VOCs, SVOCs, metals, and PCB/pesticides, and soil vapor for VOCs, the primary contaminants of concern included:

- chlorinated VOCs (primarily TCE and PCE);
- various chlorofluorocarbons (CFCs), including trichlorofluromethane (TCFM) or Freon 11; chlorodifluoromethane (CDFM) or Freon 22; dichlorofluoromethane (DCFM) or Freon 21; dichlorodifluoromethane (DCDFM) or Freon 12;
- petroleum related VOCs (primarily benzene, toluene, ethylene and xylenes);
- SVOCs (naphthalene and PAHs); and
- metals (arsenic, cadmium, chromium, lead).

Soil investigations conducted at the site resulted in the following findings.

- In 2005, results for soil samples collected from both yards were all below the industrial SCOs for VOCs and SVOCs.

- In 2007, at the McGurl Building and vicinity (Richmond Hill Yard), benzo(a)pyrene in soil ranged from 0.089 to 2.1 part per million (ppm) (industrial SCO is 1.1 ppm);.
- In 2009, at Morris Park yard, arsenic exceeded the industrial SCO of 16ppm, primarily in the upper 4 feet of soil. Arsenic ranged from 17 ppm to 34 ppm. PAHs also exceeded the industrial SCOs. Benzo(a)pyrene ranged from 1.4 ppm to 13 ppm; Benzo(b)fluoranthene ranged from 15 ppm to 18 ppm (industrial SCO is 11 ppm); and Dibenz(a,h)anthracene ranged from 1.4 ppm to 3.1 ppm (industrial SCO is 1.1 ppm). The tables below show the concentrations of arsenic and PAHs in the upper one foot of soil. See Figure 3 for locations.

TABLE 1

ARSENIC IN SOIL				
Part 375 Unrestricted SCO (ppm)	**Part 375 Industrial SCO (ppm)**	**Location(s)**	**Depth (ft)**	**Maximum Concentration (ppm)**
13	16	BE-01D (Area B)	0.5	26
		BE-04S (Area B)	0.5	25
		BE-07S (Area B)	0.5	17
		BE-08D (Area B)	0.5	17
		BE-09S (Area B)	0.5	17
		BE-15S (Area B)	0.5	25

PAHs IN SOIL					
	Part 375 Unrestricted SCO (ppm)	**Part 375 Industrial SCO (ppm)**	**Location(s)**	**Depth (ft)**	**Maximum Concentration (ppm)**
Benzo(a)pyrene	1	11	BE-11S (Area B)	0.5	2.2
			BE-15S (Area B)	0.5	2.9

- Also in 2009, several metals were identified below industrial SCOs: barium (720 ppm; industrial SCO is 10,000 ppm), cadmium (6 ppm; industrial SCO is 60 ppm), chromium (170 ppm; industrial SCO is 6,800 ppm) and lead (1500 ppm; industrial SCO is 3900 ppm).
- In 2013, the potential contamination underneath the former Paint Stripping Building slab was sampled. Results showed that all soil concentrations for metals and VOCs were well below industrial SCOs. No soil contamination was identified off-site.

Groundwater investigations conducted for VOCs, SVOCs, metals, and PCB/pesticides on-site and off-site resulted in the following: (Reference Figure 4 for summary of results.)

- In 1997, PCE and CFCs exceeded the groundwater standards. PCE ranged from 9 to 27 parts per billion (ppb; standard is 5 ppb). At shallow wells, TCFM (2600 ppb), CDFM

(2800 ppb), and DCFM (1400 ppb) were present (standard is 5 ppb for each). In deep wells the same CFCs were present at slightly higher concentrations.

- In 1999, groundwater sampling was conducted within the Container Storage Area. PCE concentrations were less than 10 ppb. Maximum concentration of TCFM was 490 ppb at a well near the 121st street entrance; and 680 ppb at downgradient, off-site well. The highest concentrations of TCE (1810 ppb; standard is 5 ppb) and PCE (198 ppb) were at upgradient, off-site deep wells. Chromium was detected at 59 ppb; standard is 50 ppb.
- In 2003, groundwater sampling was conducted at the former Paint Stripping Building area. Lead was detected at 364 ppb (standard is 25 ppb) and chromium was 897 ppb. (In 2013, groundwater was analyzed for metals, as discussed in second to last bullet below.)
- In 2007, groundwater sampling showed petroleum related VOCs and SVOCs at southeast area of the site and in vicinity of McGurl Building. The following were detected: 1,3,5-Trimethylbenzene (20 ppb; standard is 5 ppb); 1,2,4-Trimethylbenzene (52 ppb; standard is 5 ppb); naphthalene (96 ppb; guidance value (GV) is 10 ppb); acenaphthene (300 ppb; GV is 20 ppb); phenanthrene (170 ppb; GV is 50 ppb); anthracene (250 ppb; GV is 50 ppb). LNAPL was also detected in a monitoring well near McGurl Building. (Discussion of LNAPL in groundwater continues below.)
- In 2006 and 2008, groundwater sampling was conducted at Morris Park Yard and, overall, concentrations decreased. TCFM ranged from 10 ppb to 51 ppb at shallow wells; concentrations ranged from 14 ppb to 69 ppb at deep wells. DCFM ranged from 16 ppb to 85 ppb at shallow wells; and 6.8 ppb to 63 ppb at deep wells. CDFM ranged from 6.6 ppb to 180 ppb at deep wells and was non-detect at shallow wells. DCDFM ranged from 5 ppb to 24 ppb at deep wells and was non-detect at shallow wells. TCE ranged from 27 ppb to 1400 ppb at deep wells and was non-detect at shallow wells. PCE was also non-detect at shallow wells and ranged from 5.7 ppb to 20 ppb at deep wells. Napthalene was detected at maximum concentration of 68 ppb.
- From 2006 to 2013, LIRR completed quarterly groundwater sampling of existing wells located on-site and off-site. Groundwater samples were analyzed for TCL VOCs and TCL SVOCs. Based on the latest round of sampling completed in September 2013, several VOCs and SVOCs were slightly above the NYS groundwater standards. There was one sample slightly exceeding the groundwater standard for PCE at an off-site location in close proximity to a former dry cleaner; no on-site wells exceeded the PCE standard. Additionally, VOC and SVOC concentrations have decreased significantly over time and have not rebounded in the last two years.

Soil Vapor sampling was conducted on-site and off-site, with the following findings. (Reference Figure 5 for summary of results.)

- In 1996, a soil gas survey was completed on-site. TCFM concentrations ranged from 0.25 to 840 µg/m3.
- In 2006, shallow soil vapor probes to a depth of 7 feet bgs were installed on-site and off-site. CDFM and TCFM were detected at maximum concentrations of 2000 and 3000 µg/m3, respectively, at the south central part of the site. At off-site and downgradient locations, maximum TCE and PCE concentrations were 28 µg/m3 and 2700 µg/m3, respectively. At on-site locations, maximum TCE and PCE concentrations were 23 ug/m3 and 340 ug/m3, respectively. Vinyl chloride (220 µg/m3) was detected in one shallow probe on the northwest site boundary (it was not detected in any of the other on-site and off-site samples).

- In 2008, shallow soil vapor probes were installed on-site and off-site. Also, one deep probe to a depth of 27 feet bgs was installed on-site (along western boundary) and one off-site (southwest of the site). At the off-site locations, the maximum TCE and PCE concentrations were detected at the deep probe; 17 ug/m3 and 910 ug/m3, respectively. Maximum TCE and PCE concentrations at the off-site, shallow probes were 5.1 ug/m3 and 99 ug/m3, respectively (both upgradient of the site). At the on-site locations, the maximum TCE and PCE concentrations were also at the deep probe, 77 ug/m3 and 3,600 ug/m3, respectively; at this deep probe TCFM and DCFM were 1200 µg/m3 and 420 µg/m3, respectively. This on-site deep probe is located along the western boundary of the site and in close proximity to a former ink manufacturer (not associated with the site). Maximum TCE and PCE concentrations at the on-site, shallow probes were 26 ug/m3 and 340 ug/m3, respectively, at a location just northeast of the deep probe discussed above.
- In 2010, two samples were collected from two shallow probes located at the center of the site near railroad tracks. At one location, PCE was 620 µg/m3 and TCE was 330 µg/m3. At the second location, PCE was 4700 µg/m3 and TCE was 110 µg/m3. (In groundwater the highest concentrations of TCE and PCE are seen in the deep wells in this area, and at deep wells upgradient and downgradient of the site.) Information obtained from regulatory agency databases and Historic Sanborn Maps reveal the potential use of chlorinated solvents at locations north and northeast of the site, including the VCP site Uniforms for Industry where chlorinated solvents were identified as contaminants.
- Based on the use of and limited access to on-site buildings as part of the railroad maintenance yard, soil vapor intrusion testing was not necessary.

Interim Corrective Measures (ICMs): ICMs completed at the site have successfully addressed a significant percentage of soil and groundwater contamination at the site, as discussed below. At a minimum, industrial SCOs were achieved for all contaminants in soils. (Reference Figure 2)

- From 1997 to 2000, ICMs were undertaken which resulted in completion of the following actions at the site. During this period, the majority of the buildings on the site were in use.
    1. Excavation of leaching pool sediment/soil impacted by SVOCs and metals at the north end of Morris Park Yard; confirmation sampling at 14 feet bgs indicated SVOCs and metals met unrestricted use SCOs; excavation was backfilled with clean sand to prevent collapse of the pool.
    2. Removal of container storage pad and underlying soil resulting in the closure of this SWMU;
    3. Removal of an asphalt lot, concrete and underlying soil;
    4. Removal of UST and underlying soil contaminated with lead and SVOCs;
    5. Power washing and scarification of concrete floor at Paint Stripping Building, followed by sampling of underlying soil resulting in the closure of this SWMU;
    6. Decontamination and closing in place of UST at the container storage unit; recent groundwater sampling did not detect any metals.
- From 1995 through 2006, a total of 7,830 tons of petroleum impacted soils from the area located near the McGurl building, to the southeast of the former fueling yard, were excavated and disposed off-site.
- From 2008 to 2013, the LNAPL recovery, bioamendment and bioventing program was implemented to address VOC and SVOC impacts from various spills located to the south of the turntable area. The LNAPL recovery system, designed to recover LNAPL from the water table at five recovery wells, had operated continuously from 2008 until 2013.

Approximately 50 gallons of LNAPL was recovered. The bioventing system also began operating in 2008. Soil vapor was extracted from fifteen bioventing wells. It was then treated via vapor phase granular activated carbon before discharge to the atmosphere. Bioamendment injections began in early 2009 and ended in September 2011. The remediation system stopped operating in September 2013 when it was determined that concentrations of petroleum-related compounds in groundwater samples collected from these wells had reached asymptotic levels. Results of analyses of groundwater samples collected from off-site monitoring wells indicated that petroleum-related compounds were not migrating off-site. Continued operation of the remediation systems would not likely further reduce dissolved phase concentrations of petroleum related compounds in groundwater since asymptotic levels had been achieved.

Nature and extent of contamination after the Interim Corrective Measures (ICMs):

- Since June 2009, LNAPL has only been detected in one monitoring well just south of the McGurl Building. 0.01 feet of LNAPL was detected during the June 2013 groundwater sampling event. LNAPL was not detected at this well during subsequent LNAPL gauging events. LNAPL has never been detected in monitoring wells downgradient of this well.
- In 2013, groundwater was sampled for VOCs and metals in the vicinity of the former Paint Stripping building. There was an exceedance of chromium at one on-site well (73 ppb). However, chromium was not detected at downgradient and nearby wells during the same and subsequent sampling events. Mercury was detected at one off-site, downgradient well (0.83 ppb), slightly above the groundwater standard of 0.7 ppb. Mercury was not detected in any other on-site wells during the same and subsequent sampling events.
- Also in 2013, a groundwater investigation determined that residual LNAPL was present in the form of small droplets below the water table, southwest of MW-GF-22. LNAPL was not present in cross gradient and downgradient wells. MW-GF-22 is located in an isolated area of the site and is in close proximity to several railroad tracks, thereby limiting access.
- Groundwater across the site was sampled in 2013 and several VOCs and SVOCs were slightly above the NYS groundwater standards: benzene, sec-butylbenzene, ethylbenzene, isopropylbenzene, n-propylbenzene, tetrachloroethene, trichlorofluoromethane, 1, 2, 4-trimethylbenzene, 1, 3, 5-trimethylbenzene, m, p-xylenes, and naphthalene. (See Figure 6 for locations.)

SECTION 7: SUMMARY OF HUMAN EXPOSURE PATHWAYS

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as exposure. Measures are in place to control the potential for coming in contact with subsurface soil and groundwater contamination remaining at the site. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Actions have been recommended to address the potential for on-site soil vapor intrusion in the event that the current use of the site changes or occupants are no longer subject to LIRR health and safety provisions, or if any buildings are developed on the site. Sampling indicates that off-site soil vapor intrusion as a result of site contamination is not a concern.

SECTION 8: SCOPE AND EVALUATION OF CORRECTIVE MEASURES

The final corrective measure which was evaluated is an institutional control in the form of an environmental easement and a site management plan. Institutional controls are used when contamination remains at a site, after site remediation is complete, at levels that do not allow for unrestricted use. Institutional controls are non-engineering controls placed on a site to minimize the potential for human exposure to the remaining contamination at the site. The environmental easement is the required legal instrument for enforcing the institutional controls. The Site Management Plan is a comprehensive collection of documents that serves as the basis for maintaining the protection of public health and the environment. This is accomplished through continued operation and maintenance of the completed remedial actions and engineering controls, as well as the maintenance and enforcement of institutional controls.

REMEDATION OBJECTIVES

The remedial objectives and actions to attain them are found in the following table:

TABLE 2

Remedial Objectives	Remedial Action
1. Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards	➢ Will be achieved through an environmental easement and implementation of a Site Management Plan that will prohibit groundwater use at the Site.
2. Prevent contact with, or inhalation of volatiles, from contaminated groundwater	➢ The Site Management Plan will include protocols to safely manage groundwater during potential future excavation activities to protect construction and utility workers. ➢ The Site Management Plan will include a provision for the evaluation and implementation of actions necessary to address exposures related to soil vapor intrusion for any on-site buildings in the event that the current use changes or occupants are no longer subject to LIRR health and safety provisions and for any future buildings constructed on the site.
3. Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.	➢ The LNAPL recovery, bioamendment and bioventing program was successful in significantly reducing VOC and SVOC concentrations at the site. Concentrations have remained stable for the last two years and will continue to naturally decrease over time.
4. Remove the source of groundwater contamination	➢ Source removal (soil excavation) was completed through interim corrective measures at both yards to address hot spots.
5. Prevent ingestion/direct contact with contaminated soil	➢ Overall, on-site soils generally are consistent with industrial soil cleanup objectives. Site access is restricted due to LIRR train yard activities and site use will be restricted to industrial use via an environmental easement. The SMP will include a soil excavation plan to address the disturbance of soils beneath the site cover system.

Remedial Objectives	Remedial Action
	➢ The few areas where shallow soils do not meet industrial soil cleanup objectives (SCOs) are underneath building slabs and concrete cover and are inaccessible. This site cover will be maintained or replaced if disturbed/removed in the future, and an easement will be placed on the property to restrict the use to industrial.
6. Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.	➢ Previous source removal (excavation) of hot spots to levels below industrial soil cleanup objectives. ➢ Site Management Plan will include a provision for the evaluation and implementation of actions necessary to address exposures related to soil vapor intrusion for any on-site buildings in the event that the current use changes or occupants are no longer subject to LIRR health and safety provisions and for any future buildings constructed on the site.
7. Prevent migration of contaminants that would result in off-site groundwater contamination	➢ Previous source removal (soil excavation) of hot spots at both yards to levels below industrial SCOs. ➢ The LNAPL recovery, bioamendment and bioventing program was successful in significantly decreasing on-site VOC and SVOC concentrations, thus preventing off-site migration of contaminated groundwater.
8. Mitigate impacts to human health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.	➢ The Site Management Plan will include a provision for the evaluation and implementation of actions necessary to address exposures related to soil vapor intrusion for any on-site buildings in the event that the current use changes or occupants are no longer subject to LIRR health and safety provisions and for any future buildings constructed on the site.

SECTION 9: FINAL CORRECTIVE MEASURES

The elements of the final corrective measure are the following required actions.

1. *Cover System*

A site cover currently exists and will be maintained to allow for industrial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer in any green areas. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

2. *Institutional Control*

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

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

b. allows the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

c. restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

d. requires compliance with the Department approved Site Management Plan.

3. ***Site Management Plan***

A Site Management Plan (SMP) that includes the following.

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

i. Institutional Controls: The Environmental Easement discussed in Paragraph 2 above.

ii. Engineering Controls: The site cover discussed in Paragraph 1 above.

iii. The SMP includes, but may not be limited to:

(a) descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;

(b) an Excavation Plan which details the provisions for management of future excavation activities;

(c) provisions for the management and inspection of the identified engineering controls;

(d) maintaining site access controls and Department notification; and

(e) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and

(f) a provision for the evaluation and implementation of actions necessary to address exposures related to soil vapor intrusion for any on-site buildings in the event that the current use changes or occupants are no longer subject to LIRR health and safety provisions and for any buildings constructed at the site.

(g) implementation of the remedy and evaluation of the potential impacts of remedy implementation with groundwater supply well reactivation will be closely coordinated with New York State Department of Health (NYSDOH) and New York City Department A Monitoring Plan to

assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

   i. a schedule of monitoring and frequency of submittals to the Department; and

   ii. monitoring for vapor intrusion for any buildings re-occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

   i. maintaining site access controls and Department notification; and

   ii. providing the Department access to the site and O&M records.

Based on the administrative record compiled for this corrective action the Department, in consultation with NYSDOH, has determined that the selected remedy to be ordered at this site is appropriate and will be protective of human health and the environment.

FIGURE 1 – SITE LOCATION

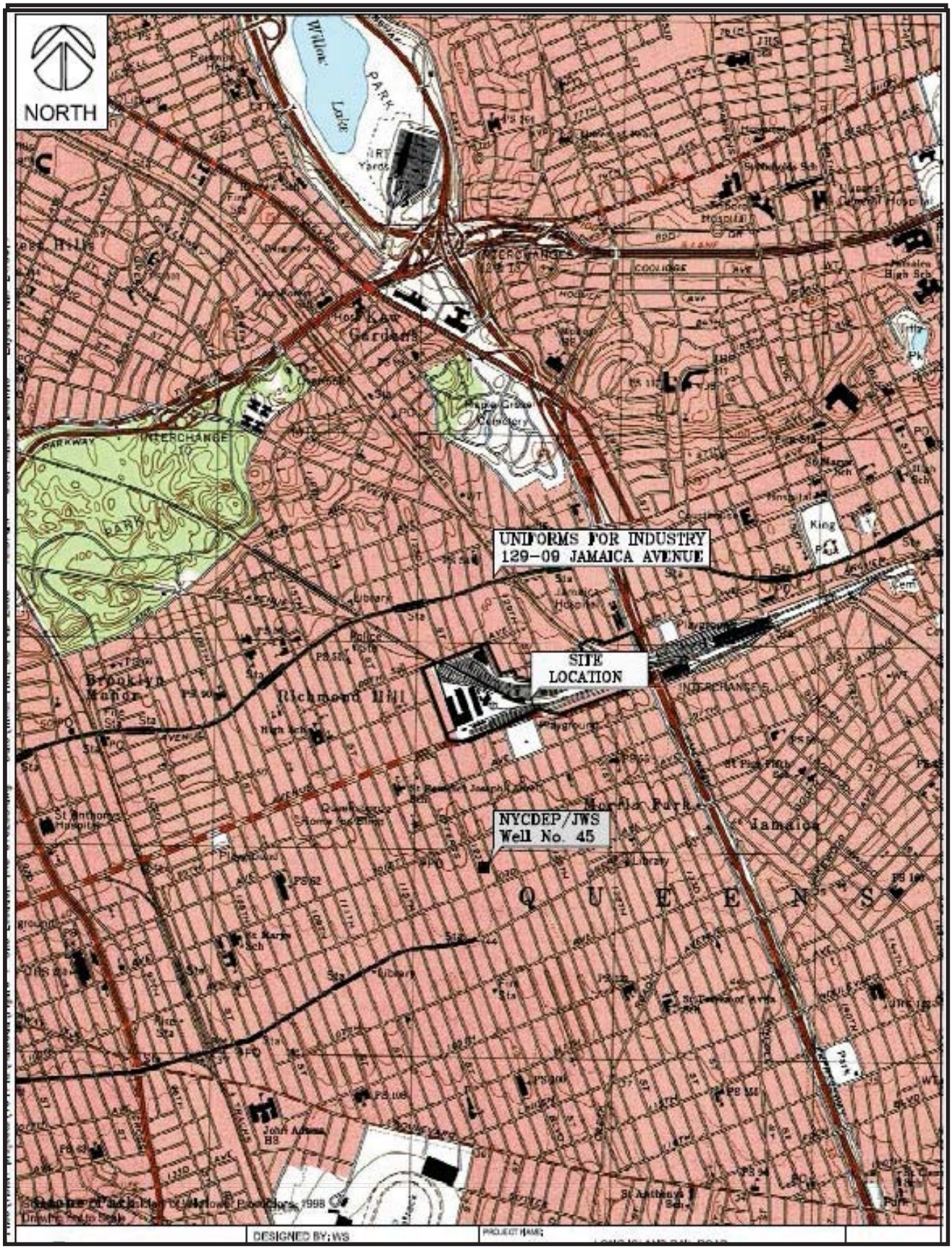


FIGURE 2 – SITE LAYOUT OF YARDS

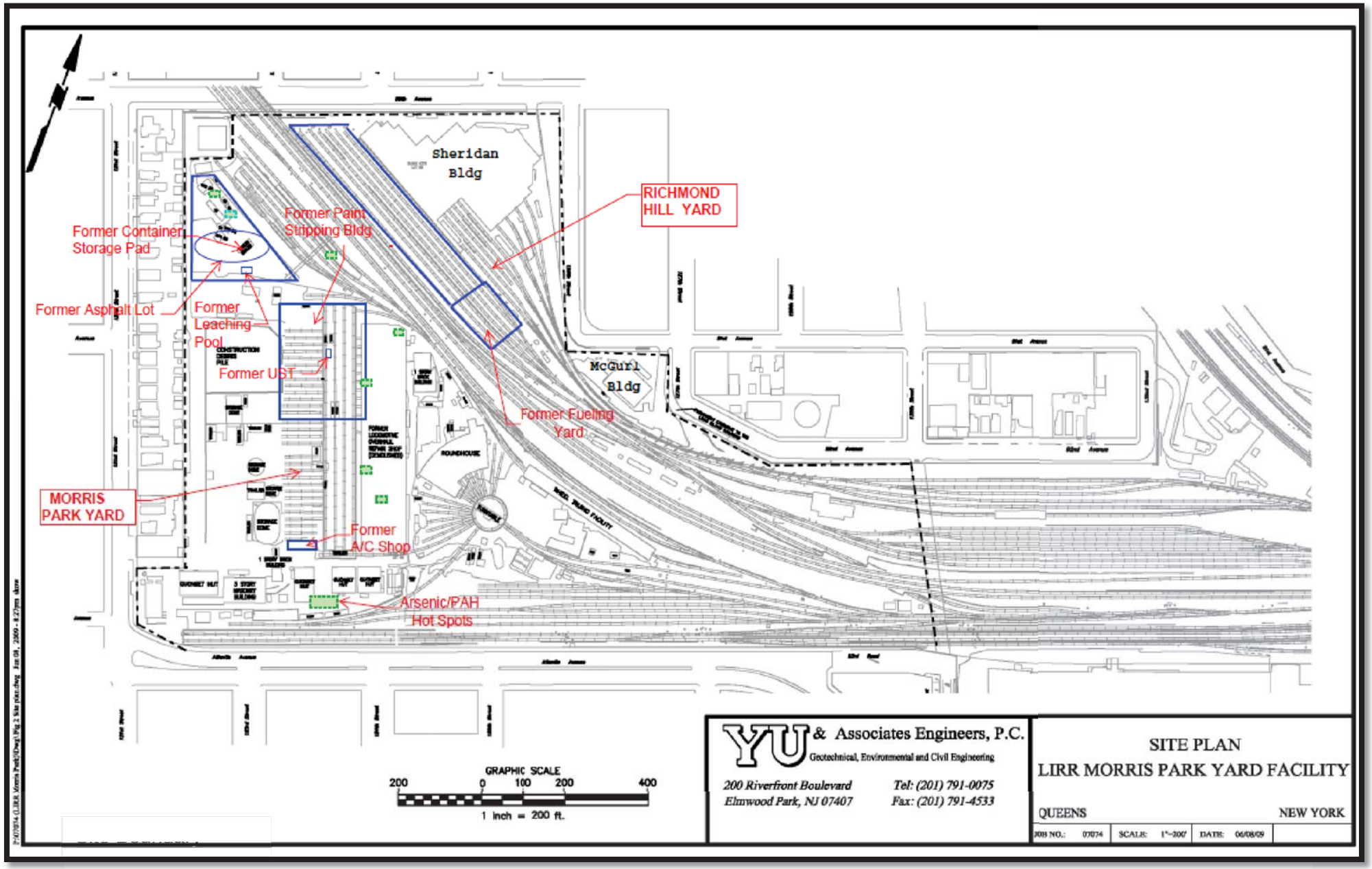


FIGURE 3 – SOIL EXCEEDANCES

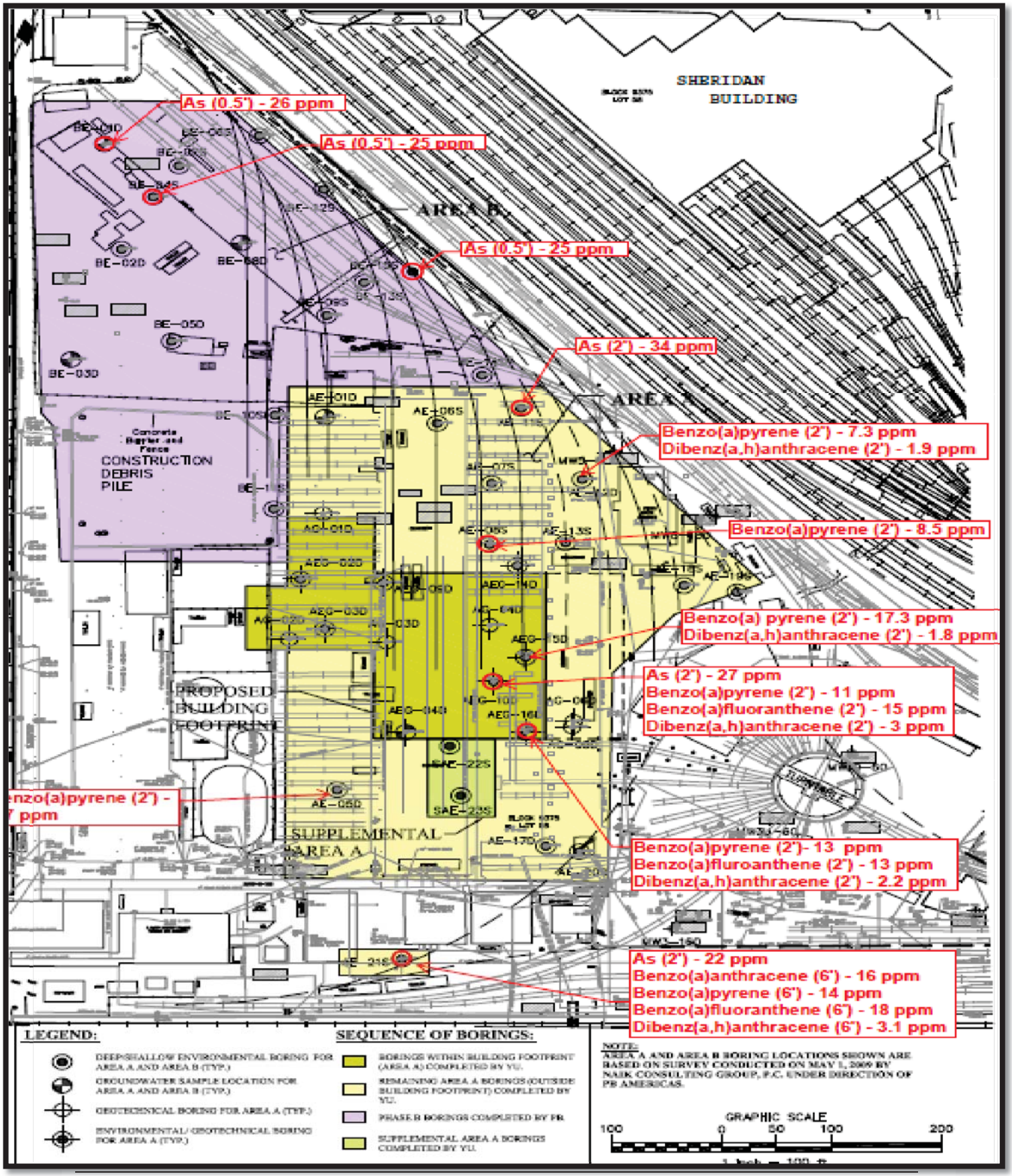


FIGURE 4 – CVOCs IN GROUNDWATER (2006)

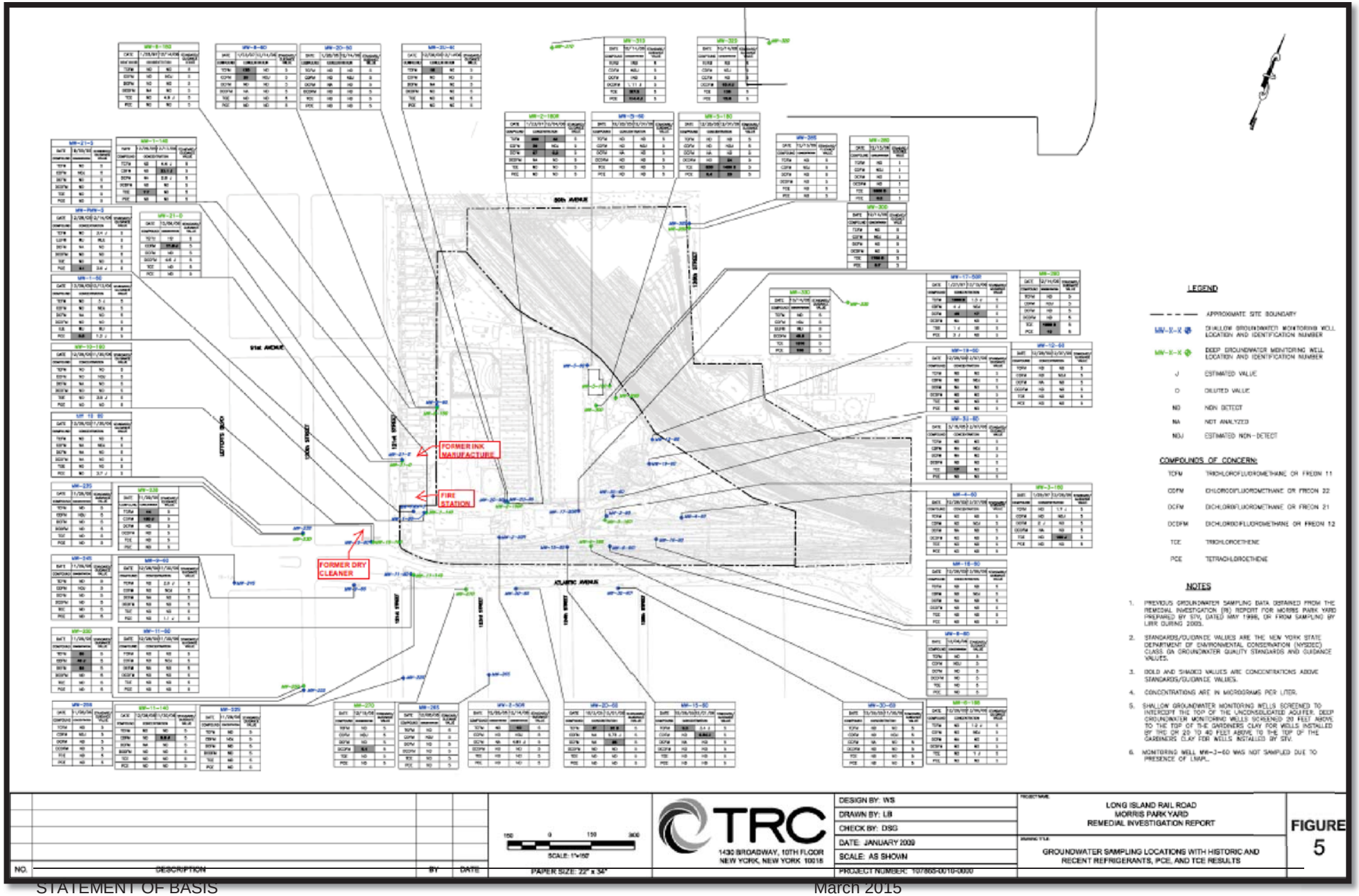


FIGURE 5 – SOIL VAPOR

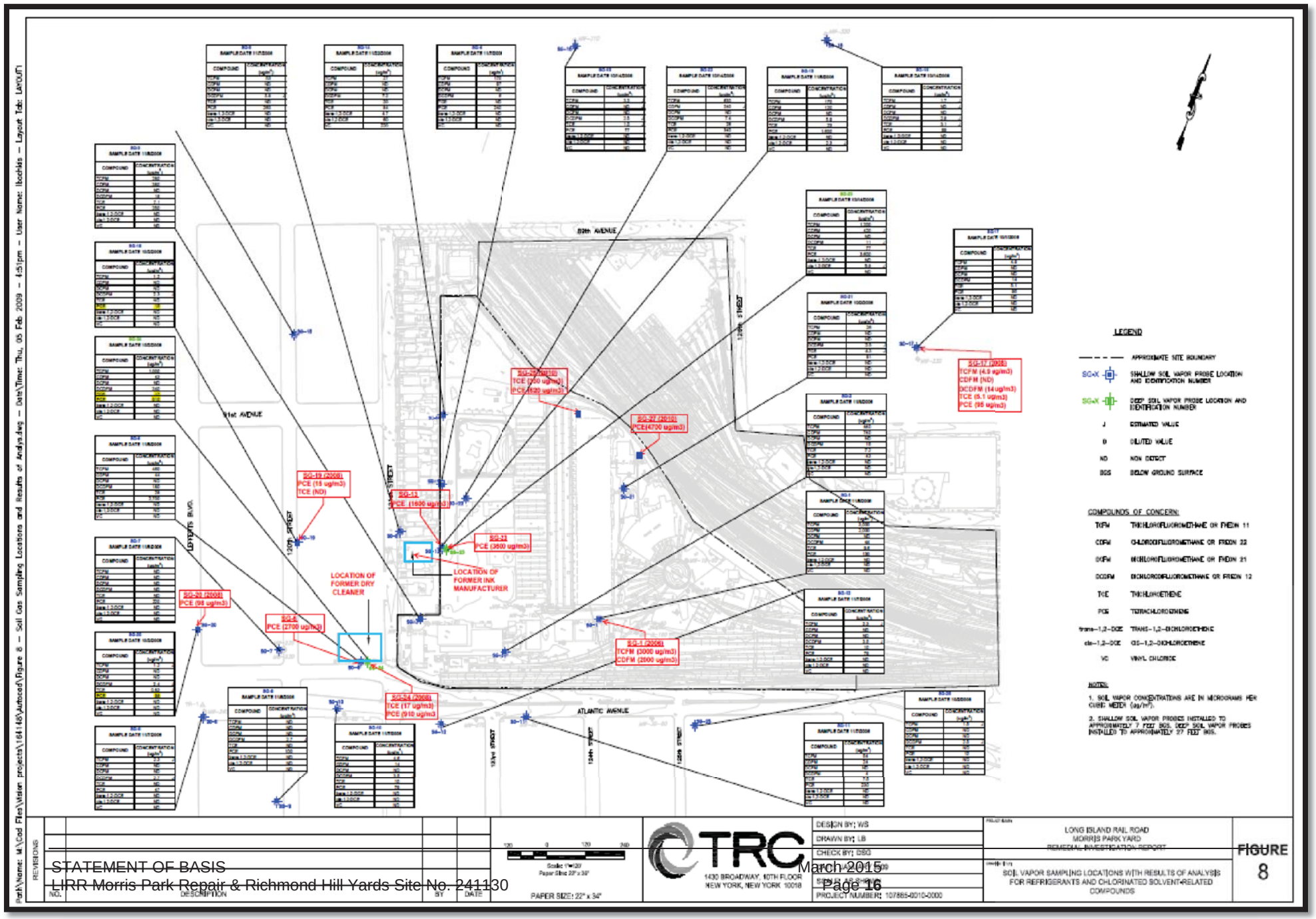
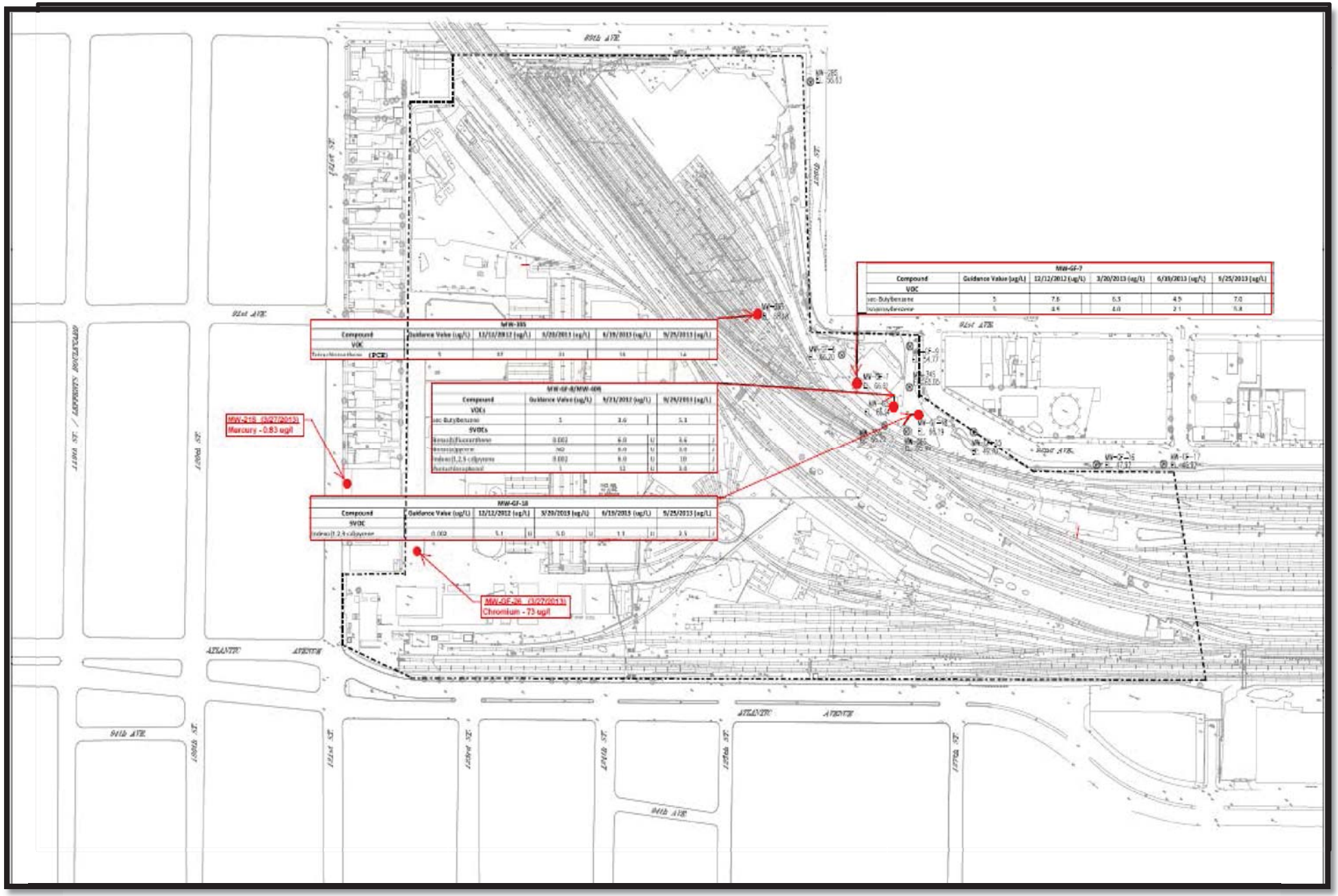


FIGURE 6 – GROUNDWATER EXCEEDANCES (2013)



APPENDIX A

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

LIRR Morris Park Repair &
Richmond Hill Yards
Richmond Hill, Queens County
Site No.241130
USEPA ID No. NYD980641625

The Statement of Basis (SB) for the LIRR Morris Park Facility site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was placed in the document repository by January 15, 2015.

This responsiveness summary responds to all questions and comments related to the Statement of Basis that were raised during the public comment period, which ran from *January 15, 2015 to March 1, 2015*. The following are the written comments received, with the Department's responses:

Gloria Russo, of MTA Long Island Rail Road (LIRR), submitted an email on behalf of LIRR, dated January 15, 2015. The email included the following comments related to the draft Statement of Basis:

Comment 1: The draft Statement of Basis – some corrections are shown in the attachment (I only scanned the first 16 pages of the document). Corrections are on the following pages: 4, 11 and 12. On page 14, Remedial Objectives 3 and 7 are highlighted with a star. The respective Remedial Action for these Remedial Objectives states that "The Site Management Plan will include provisions for periodic groundwater monitoring to monitor effectiveness of LNAPL recovery, bioamendment and bioventing program, with regard to concentrations and groundwater contamination boundaries". The LNAPL recovery, bioamendment and bioventing program were in the Region 2 Spills Program (Spill # 9212990). This spill was closed by Region 2 on 9/27/13. We received the NYSDEC's official closure letter, dated 10/23/14, several weeks later. Please see the third and fourth attachments. I question the Remedial Action requirement for Remedial Objectives three and seven when the official closure letter stated that "all wells associated with this project should be closed …".

Response 1: On page 4, under "Site Features", the approximate size of the site will be changed from 58 acres to 21 acres.

On page 11, second bullet, the dates for LNAPL recovery will be corrected to 2013.

On page 12, third bullet, this discussion specifically refers to groundwater sampling done in 2013. Therefore, this bullet will remain as written. It is acknowledged that quarterly groundwater sampling was conducted at the site from 2006 to 2013. Therefore, a new bullet will be added to Section 6, page 5, under the discussion for groundwater investigations, stated as follows.

> "From 2006 to 2013, LIRR completed quarterly groundwater sampling of existing wells located on-site and off-site. Groundwater samples were analyzed for TCL VOCs and TCL SVOCs. Based on the latest round of sampling completed in September 2013, several VOCs and SVOCs were slightly above the NYS groundwater standards. There was one sample slightly exceeding the groundwater standard for PCE at an off-site location in close proximity to a former dry cleaner; no on-site wells exceeded the PCE standard. Additionally, VOC and SVOC concentrations have decreased significantly over time and have not rebounded in the last two years."

Regarding the remedial objectives on page 14, remedial objectives 3 and 7 will be modified to the following.

> Remedial Objective 3: "The LNAPL recovery, bioamendment and bioventing program was successful in significantly reducing VOC and SVOC concentrations at the site. Concentrations have remained stable for the last two years and will continue to naturally decrease over time."
>
> Remedial Objective 7: "The LNAPL recovery, bioamendment and bioventing program was successful in significantly decreasing on-site VOC and SVOC concentrations, thus preventing off-site migration of contaminated groundwater."

APPENDIX B

ADMINISTRATIVE RECORD

ADMINISTRATIVE RECORD

LIRR Morris Park Repair & Richmond Hill Yards Richmond Hill, Queens County EPA No. NYD980641625 / Site No. 241130 2015

1. Order on Consent, Index No. Case No. C2-1625-91-04, between the Department and LIRR executed on May 8, 1992.
2. "Supplemental Closure Program Container Storage Area and Former Paint Stripping Area, Long Island Rail Road, Morris Park Repair Facility, Richmond Hill, dated November 2000, prepared by Dvirka and Bartilucci Consulting Engineers.
3. "NYSDEC Approval Letter for Supplemental Closure Program Container Storage Area and Former Paint Stripping Area, Long Island Rail Road, Morris Park Repair Facility, Richmond Hill, New York", dated March 30, 2001, prepared by Steve Kaminski, Chief, Eastern Engineering Section.
4. "Bid Document for Petroleum Remediation System Morris Park Yard, Queens, New York", dated October 2006, prepared by TRC Engineers, Inc.
5. "Remedial Investigation Report, Morris Park Yard, Richmond Hill, New York", dated March 2009, prepared by TRC Engineers, Inc.
6. "Phase I Supplemental Investigation of Petroleum Contamination at the Richmond Hill and Morris Park Facilities", dated June 2009, prepared by TRC Engineers, Inc.
7. "Site Investigation Report, LIRR Morris Park Yard Facility, Queens, New York", dated September 2009, prepared by Yu & Associates Engineers, P.C.
8. "Supplemental Investigation Work Plan, Petroleum Spill Nos. 89-08760 and 09-08574, at the MTA LIRR, Richmond Hill Yard, Richmond Hills, Queens, New York", dated March 2011, prepared by TRC Engineers, Inc.
9. "Final Engineering Report, Operations and Maintenance Manual, LIRR, Morris Park Yard, Richmond Hill, Queens, NY", dated March 2011, prepared by LIRR.
10. "RCRA Investigation Report, Former Paint Stripping Building, Morris Park Yard", dated December 2013, prepared by Dvirka and Bartilucci Consulting Engineers.
11. "Spill Progress Reports for Spill Site Nos. 89-08760 and 09-08574," dated from November 2007 to November 2013, prepared by MTA LIRR.

12. January 15, 2015 Email submitted by Gloria Russo, of MTA Long Island Rail Road (LIRR).