



## **MEMORANDUM**

Date: December 13, 2018

Prepared for: Village of Floral Park

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The Vertex Companies, Inc.

Subject: **Data Summary for Early Works Site Investigation Report, Floral Park Area,  
October 30, 2018**  
LIRR Expansion Project  
Project No. 46408

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This memorandum provides a summary of the data provided in the Early Works Site Investigation Report (SIR) for Floral Park, dated October 30, 2018. Figures showing sample locations, taken from the SIR, are attached to this review memorandum. Samples were collected from the following areas where work is planned:

- Retaining wall Installation along the LIRR ROW (Stations 111+00 to 132+50);
- Floral Park Station Elevators;
- Floral Park Station Surrounding Site Work;
- South Tyson Avenue Viaduct;
- Floral Park Substation; and
- Linden Avenue Underpass Extension.

A total of 36 samples were collected from 14 locations. The attached tables, taken from the SIR, summarize sample location, depth, results, and soil classification for disposal or reuse. The descriptions of the soil classifications taken from the SIR is also attached.

As the tables show, concentrations of contaminants exceed regulatory soil cleanup objectives (SCOs) or soil cleanup levels (SCLs) in 18 of the samples.

- In 17 samples, concentrations of organic or inorganic chemicals exceeded the SCO for Unrestricted Use, which are the most restrictive levels. In VERTEX's opinion, because the locations of soil in the planned work areas are generally under streets or within the railroad right of way (ROW), SCOs for commercial or industrial use, which are usually

much higher, are applicable to soil which will be excavated. SCOs for commercial or industrial use are not exceeded in any sample.

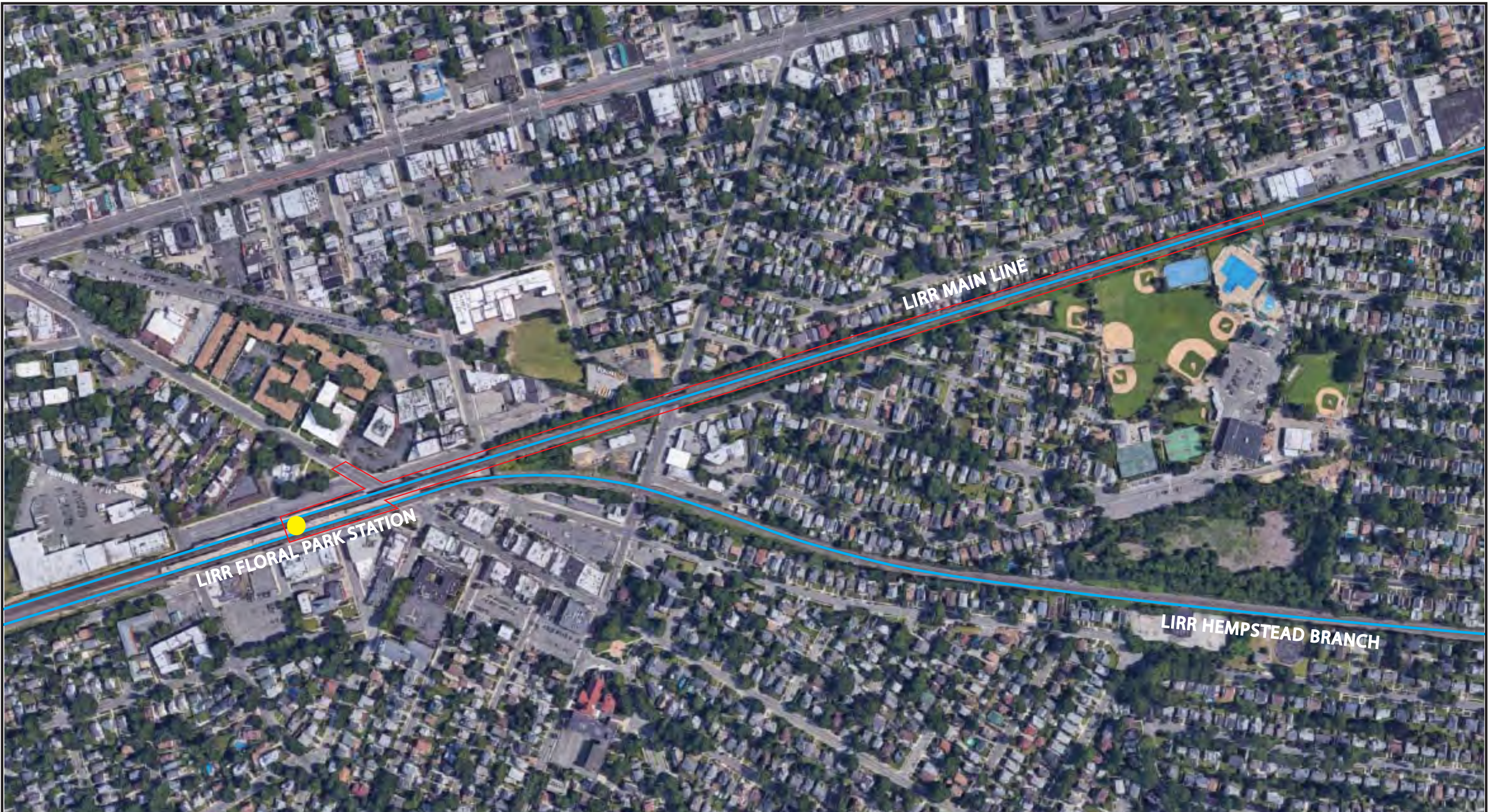
- In 3 of those 17 samples, concentrations of acetone exceeded the SCO for Unrestricted Use for acetone and no other constituent. The SIR interprets these exceedances as resulting from cross-contamination of samples with solvents used for decontamination of sampling equipment. In VERTEX's opinion, this is a reasonable interpretation.
- In 6 samples, concentrations of petroleum constituents exceeded the SCL for Gasoline/Fuel Contaminated Soils. SCLs for petroleum constituents are typically the same as the SCOs for Unrestricted Use.
- In 8 samples, concentrations of pesticides exceeded the SCO for Unrestricted Use for pesticides.
- Dioxins were not detected in any sample.

In addition to laboratory analysis, soil samples were evaluated using field screening methods. The field screening methods included measuring concentrations of organic vapors using a photoionization detector (PID) and observing for odors or visual evidence of impacts (staining). A review of the boring logs from the sampling indicates there were no significant differences between field screening results for samples where laboratory analysis indicates there were exceedances of SCOs and those where there were no exceedances.




In VERTEX's opinion, the concentrations of soil detected in soil samples are consistent with fill material present in urban areas and can be managed effectively through the implementation of proper soil handling methods. For this reason, it is important that the Village require 3TC to follow appropriate procedures for handling contaminated material.


## Figures





**LEGEND**

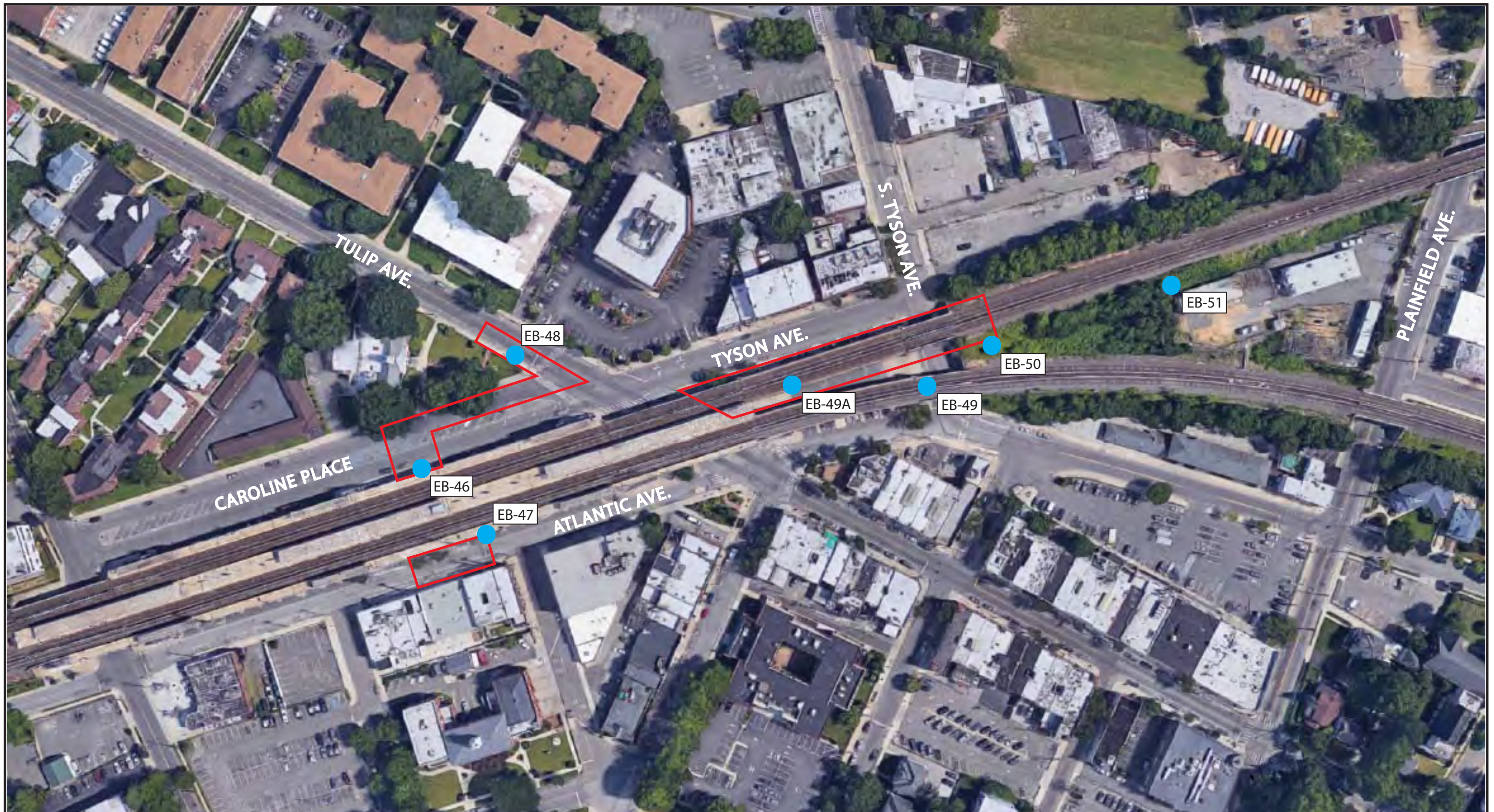
 LIRR RIGHT-OF-WAY      LIRR STATION  
 FLORIAL PARK STATION, SOUTH TYSON VIADUCT AND LIRR ROW WORK SITES

  
 NOT TO SCALE  
 NOT FOR CONSTRUCTION

  
 EnTech Engineering, P.C.  
 17 State Street, 36th Floor  
 New York, NY 10004  
 Tel: 646-722-0000  
[www.entech.nyc](http://www.entech.nyc)


**FIGURE 1: PROJECT LOCATION**  
 LIRR EXPANSION PROJECT  
 FLORIAL PARK STATION, SOUTH TYSON VIADUCT, LIRR ROW  
 SOE AND SURROUNDING SITE WORK





LEGEND

- APPROXIMATE WORK LIMITS
- SOIL BORING LOCATION

  
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**FIGURE 2: BORING LOCATION PLAN**  
  
 LIRR EXPANSION PROJECT  
 FLORAL PARK STATION SURROUNDING SITE WORK,  
 INSTALLATION OF 2 ELEVATORS, SOUTH TYSON VIADUCT,  
 FLORAL PARK SUBSTATION (G-13)





LEGEND

- APPROXIMATE WORK LIMITS
- SOIL BORING LOCATION

  
**N**  
 NOT TO SCALE  
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FIGURE 3: BORING LOCATION PLAN

LIRR EXPANSION PROJECT -- FLORAL PARK  
 SOE IN LIRR ROW (STA. 111+00 TO 136+50),  
 LINDEN AVE. UNDERPASS EXTENSION



## **Analytical Results Summary**

- **Boring EB51:** PID readings were 5.4 ppm of depth EB51-0-2 ft bgs of black to dark brown sand and medium to fine texture. PID readings were 4.7 PPM of depth EB51-2-4 ft bgs of black to dark brown sand with medium to fine texture. PID readings were 4.3 ppm of depth EB51-4-6 ft bgs of black to dark brown sand with medium to fine texture. PID readings were 6.7 ppm of depth EB51-6-8 ft bgs of brown sand with medium to fine texture. PID readings were 3.4 ppm of depth EB51-8-10 ft bgs of brown sand with medium to fine texture. PID readings were 3.4 ppm of depth EB51-10-12 ft bgs of black moist sand to light brown sand with medium to fine texture. No odor was detected.
- **Boring EB52:** PID readings were 0.0 ppm of depth EB52-0-2 ft bgs of sand with gravel of medium to fine texture. PID readings were 0.0 ppm of depth EB52-6-8 ft bgs of sand with pebbles with medium to fine texture. No odor was detected.

Boring logs are presented in Appendix B.

### 3.2 SOIL ANALYTICAL RESULTS

The soil analytical results are presented in Appendix A. Summaries of the results for each sample are provided in Table 2 below:

**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB1	0-2	LIRR 3RD-EB1-073118-0-2	<b>4,4'-DDE and 4,4'-DDT (Pesticides) were above the Unrestricted Use SCO.</b>	<b>Compound: 4,4' - DDE Concentration: 0.0135 mg/kg</b>  <b>Compound: 4,4' DDT Concentration: 0.0153 mg/kg</b>
EB1	6-8	LIRR 3RD-EB1-073118-6-8	All analytical results were below the regulatory thresholds.	N/A
EB1	18-20	LIRR 3RD-EB1-073118-18-20	All analytical results were below the regulatory thresholds.	N/A
EB2	0-2	LIRR 3RD-EB2-080118-0-2	<b>4,4'-DDE and 4,4'-DDT (Pesticides) were above the Unrestricted Use SCO.</b>	<b>Compound: 4,4' - DDE Concentration: 0.00787 mg/kg</b>  <b>Compound: 4,4' DDT Concentration: 0.0104 mg/kg</b>
EB2	6-8	LIRR 3RD-EB2-080118-6-8	<b>Acetone (VOC) was above the Unrestricted Use SCO.</b>	<b>Compound: Acetone Concentration: 3.2 mg/kg</b>



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB2	18-20	LIRR 3RD-EB2-080118-18-20	<b>Acetone (VOC) was above the Unrestricted Use SCO.</b>	<b>Compound:</b> Acetone <b>Concentration:</b> 0.48 mg/kg
EB3	0-2	LIRR 3RD-EB3-080118-0-2	<b>4,4'-DDE and 4,4'-DDT (Pesticides); and Copper and Lead (Metals) were above Unrestricted Use SCO.</b>	<b>Compound:</b> 4,4' - DDE <b>Concentration:</b> 0.0269 mg/kg  <b>Compound:</b> 4,4' DDT <b>Concentration:</b> 0.0408 mg/kg  <b>Compound:</b> Copper <b>Concentration:</b> 74.4 mg/kg  <b>Compound:</b> Lead <b>Concentration:</b> 71.8 mg/kg
EB3	6-8	LIRR 3RD-EB3-080118-6-8	<b>Acetone (VOC) was above the Unrestricted Use SCO.</b>	<b>Compound:</b> Acetone <b>Concentration:</b> 0.051 mg/kg
EB3	18-20	LIRR 3RD-EB3-080118-18-20	<b>4,4'-DDT (Pesticide) was above the Unrestricted Use SCO.</b>	<b>Compound:</b> 4,4'-DDT <b>Concentration:</b> 0.00449 mg/kg
EB4	0-2	LIRR 3RD-EB4-080318-0-2	<b>4,4'- DDE and 4,4'- DDT (Pesticides); and Copper (Metal) were above Unrestricted Use SCO.</b>	<b>Compound:</b> 4,4' - DDE <b>Concentration:</b> 0.00874 mg/kg  <b>Compound:</b> 4,4' DDT <b>Concentration:</b> 0.016 mg/kg  <b>Compound:</b> Copper <b>Concentration:</b> 176 mg/kg
EB4	6-8	LIRR 3RD-EB4-080318-6-8	All analytical results were below the regulatory thresholds.	N/A
EB4	18-20	LIRR 3RD-EB4-080318-18-20	All analytical results were below the regulatory thresholds.	N/A



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB5	0-2	LIRR 3RD-EB5-081618-0-2	Acetone (VOC); and 4,4'-DDD, 4,4'- DDE and 4,4'-DDT (Pesticides) were above the Unrestricted Use SCO.	<p><b>Compound:</b> Acetone  <b>Concentration:</b> 0.26 mg/kg</p> <p><b>Compound:</b> 4,4' - DDD  <b>Concentration:</b> 0.00462 mg/kg</p> <p><b>Compound:</b> 4,4' DDE  <b>Concentration:</b> 0.0288 mg/kg</p> <p><b>Compound:</b> 4,4'-DDT  <b>Concentration:</b> 0.0411 mg/kg</p>
EB5	6-8	LIRR 3RD-EB5-081618-6-8	All analytical results were below the regulatory thresholds.	N/A
EB6	0-2	LIRR 3RD-EB6-080218-0-2	4,4'- DDE and 4,4'- DDT (Pesticides); and Copper (Metal) were above the Unrestricted Use SCO.  Xylene (VOC) was above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.	<p><b>Compound:</b> Xylene  <b>Concentration:</b> 0.33 mg/kg</p> <p><b>Compound:</b> 4,4' - DDE  <b>Concentration:</b> 0.00361 mg/kg</p> <p><b>Compound:</b> 4,4' DDT  <b>Concentration:</b> 0.0117 mg/kg</p> <p><b>Compound:</b> Copper  <b>Concentration:</b> 156 mg/kg</p>
EB6	6-8	LIRR 3RD-EB6-080218-6-8	4,4'-DDT (Pesticide) was above the Unrestricted Use SCO.	<p><b>Compound:</b> 4,4'- DDT  <b>Concentration:</b> 0.00607 mg/kg</p>
EB6	12-14	LIRR 3RD-EB6-080218-12-14	4,4'- DDE and 4,4'- DDT (Pesticides); and Copper (Metal) were above the Unrestricted Use SCO.  Xylene (VOC) was above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.	<p><b>Compound:</b> Xylene  <b>Concentration:</b> 0.41 mg/kg</p> <p><b>Compound:</b> 4,4' - DDE  <b>Concentration:</b> 0.00734 mg/kg</p> <p><b>Compound:</b> 4,4' DDT  <b>Concentration:</b> 0.0137 mg/kg</p> <p><b>Compound:</b> Copper  <b>Concentration:</b> 91.8 mg/kg</p>



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB6	14-16	LIRR 3RD-EB6-080218-14-16	All analytical results were below the regulatory thresholds.	N/A
EB46	0-2	LIRR3RD-EB46-070918-0-2	All analytical results were below the regulatory thresholds.	N/A
EB46	6-8	LIRR3RD-EB46-070918-6-8	All analytical results were below the regulatory thresholds.	N/A
EB47	0-2	LIRR 3RD-072418-EB47-0-2	<p><b>Zinc (Metal) and were above the Unrestricted Use SCO.</b></p> <p><b>Benzo(b)fluoranthene and Indeno(1,2,3-cd)pyrene (SVOC) were above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.</b></p> <p><b>Lead was above the EPA TCLP Regulatory Levels.</b></p>	<p><b>Compound: Benzo(b)fluoranthene</b>  <b>Concentration: 1 mg/kg</b></p> <p><b>Compound:</b>                      Indeno(1,2,3-od)pyrene  <b>Concentration: 0.51 mg/kg</b></p> <p><b>Compound: Zinc</b>  <b>Concentration: 132 mg/kg</b></p> <p><b>Compound: Lead</b>  <b>Concentration: 6.31 mg/l</b></p>
EB47	6-8	LIRR 3RD-072418-EB47-6-8	All analytical results were below the regulatory thresholds.	N/A
EB48	0-2	LIRR 3RD-EB48-071118-0-2	All analytical results were below the regulatory thresholds.	N/A
EB48	6-8	LIRR 3RD-EB48-071118-6-8	All analytical results were below the regulatory thresholds.	N/A
EB49	0-2	LIRR 3RD-EB49-071118-0-2	All analytical results were below the regulatory thresholds.	N/A



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB49	6-8	LIRR 3RD-EB49-071118-6-8	<p><b>Mercury (Metal) and 3-Methylphenol/4-Methylphenol (SVOC) were above the Unrestricted Use SCO.</b></p> <p><b>Chrysene, Benzo(a)pyrene, Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene (SVOCs) were above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.</b></p>	<p><b>Compound:</b> Mercury  <b>Concentration:</b> 0.215 mg/kg</p> <p><b>Compound:</b> Methylphenol/4-Methylphenol  <b>Concentration:</b> 0.038 mg/kg</p> <p><b>Compound:</b> Benzo(a)pyrene  <b>Concentration:</b> 1.1 mg/kg</p> <p><b>Compound:</b> Benzo(a)fluoranthene  <b>Concentration:</b> 2.5 mg/kg</p> <p><b>Compound:</b> Chrysene  <b>Concentration:</b> 1.4 mg/kg</p> <p><b>Compound:</b> Indeno(1,2,3,-cd)pyrene  <b>Concentration:</b> 1.1 mg/kg</p>
EB49A	0-2	LIRR 3RD-EB49A-082018-0-2	All analytical results were below the regulatory thresholds.	N/A
EB50	0-2	LIRR 3RD-EB-50-073018-0-2	All analytical results were below the regulatory thresholds.	N/A



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB50	6-8	LIRR 3RD-EB-50-073018-6-8	<b>Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Benzo(a)anthracene, Benzo(b)fluoranthene, Dilbenzo(a,h)anthracene and Indeno(1,2,3 -cd)pyrene (SVOCs) were above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.</b>	<p><b>Compound:</b> Benzo(a)anthracene  <b>Concentration:</b> 2.3 mg/kg</p> <p><b>Compound:</b> Benzo(a)pyrene  <b>Concentration:</b> 2.2 mg/kg</p> <p><b>Compound:</b> Benzo(b)fluoranthene  <b>Concentration:</b> 3.1 mg/kg</p> <p><b>Compound:</b> Benzo(k)fluoranthene  <b>Concentration:</b> 0.94 mg/kg</p> <p><b>Compound:</b> Chrysene  <b>Concentration:</b> 2 mg/kg</p> <p><b>Compound:</b> Dilbenzo(a,h)anthracene  <b>Concentration:</b> 0.36 mg/kg</p> <p><b>Compound:</b> Indeno(1,2,3-cd)pyrene  <b>Concentration:</b> 1.6 mg/kg</p>
EB50	16-18	LIRR 3RD-EB-50-073018-16-18	All analytical results were below the regulatory thresholds	N/A
EB50	22-24	LIRR 3RD-EB-50-073018-22-24	All analytical results were below the regulatory thresholds	N/A
EB51	0-2	LIRR 3RD-EB51-073118-0-2	All analytical results were below the regulatory thresholds	N/A
EB51	6-8	LIRR 3RD-EB51-073118-6-8	All analytical results were below the regulatory thresholds	N/A
EB51	10-12	LIRR 3RD-EB51-073118-10-12	<b>Mercury (Metal) was above the Unrestricted Use SCO.</b>	<p><b>Compound:</b> Mercury  <b>Concentration:</b> 0.382 mg/kg</p>



**Table 2: Floral Park Soil Sample Analytical Results Summary**

Boring ID	Sample Depth (feet bgs)	Sample ID	Summary of Comparison to Regulatory Thresholds	Detected Concentration of Analytes Exceeding Regulatory Thresholds
EB52	0-2	LIRR 3RD-EB52-081718-0-2	<p><b>4',4'-DDT (Pesticide) was above the Unrestricted Use SCO.</b></p> <p><b>Chrysene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene and Indeno(1,2,3 -cd)pyrene (SVOCs) were above the Gasoline/Fuel Contaminated Soils SCL established in CP-51.</b></p>	<p><b>Compound:</b> 4'4'-DDT  <b>Concentration:</b> 0.011 mg/kg</p> <p><b>Compound:</b> Benzo(a)anthracene  <b>Concentration:</b> 1.2 mg/kg</p> <p><b>Compound:</b> Benzo(a)pyrene  <b>Concentration:</b> 1.2 mg/kg</p> <p><b>Compound:</b> Benzo(b)fluoranthene  <b>Concentration:</b> 1.6 mg/kg</p> <p><b>Compound:</b> Chrysene  <b>Concentration:</b> 1.2 mg/kg</p> <p><b>Compound:</b>                      Indeno(1,2,3,-cd)pyrene  <b>Concentration:</b> 0.86 mg/kg</p>
EB52	6-8	LIRR 3RD-EB52-081718-6-8	All analytical results were below the regulatory thresholds	N/A

**Dioxin**

Fourteen (14) samples were collected from 0'-2' bgs from borings EB1, EB2, EB3, EB4, EB5, EB6, Eb46, EB47, EB48, EB49, EB49A, EB50, EB51 and EB52 and tested for dioxin. The results were compared to the EPA Regional Screening Levels (RSL) for dioxin mixtures. The RSL for residential soils is 0.0001 milligrams per kilogram (mg/kg) (100 picograms per gram [pg/g] of 2,3,7,8-Tetrachlorodibenzodioxin (TCDD). The RSL for industrial soils is 0.00047 mg/kg (470pg/g) of TCDD.



A summary of the dioxin soil sampling results is presented in Table 3.

<b>Table 3: Floral Park Soil Sampling Dioxin Results Summary</b>			
<b>Boring ID</b>	<b>Sample ID</b>	<b>Summary of Comparison to EPA RSL Regulatory Thresholds</b>	<b>Detected Concentration of Dioxin Exceeding EPA RSL Regulatory Thresholds</b>
EB1	LIRR 3rd-EB-1-073118-0-2	TCDD was not detected.	N/A
EB2	LIRR 3rd-EB-2-080118-0-2	TCDD was not detected.	N/A
EB3	LIRR 3rd-EB-3-080118-0-2	TCDD was not detected.	N/A
EB4	LIRR3rd-EB-4-080318-0-2	TCDD was not detected.	N/A
EB5	LIRR3rd-EB-5-081618-0-2	TCDD was not detected.	N/A
EB6	LIRR3rd-EB-6-080218-0-2	TCDD was not detected.	N/A
EB46	LIRR3rd-EB-46-070918-0-2	TCDD was not detected.	N/A
EB47	LIRR3rd-EB-47-072418-0-2	TCDD was not detected.	N/A
EB48	LIRR3rd-EB-48-071118-0-2	TCDD was not detected.	N/A
EB49	LIRR3rd-EB-49-071118-0-2	TCDD was not detected.	N/A
EB49A	LIRR3rd-EB-49A-082018-0-2	TCDD was not detected.	N/A
EB50	LIRR3rd-EB-50-073018-0-2	TCDD was not detected.	N/A
EB51	LIRR3rd-EB-51-073118-0-2	TCDD was not detected.	N/A
EB52	LIRR 3rd-EB-39-080618-0-2	TCDD was not detected.	N/A