

PROGRESS/INSPECTION REPORT NO. 14
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: June 2018

1. Introduction

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during June 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion.

2. Remedial Actions Relative to the Site during this Reporting Period

2.1 Quarterly Monitoring and Long-term Contaminant Rebound Testing

Remedial actions for June 2018 consisted of quarterly on-site groundwater monitoring, annual on-site vapor monitoring, and sampling of the near field off-site groundwater monitoring wells. Groundwater sampling was performed as part of the quarterly monitoring program specified in the Site Management Plan and to conclude the long-term contaminant rebound test (the air sparge and soil vapor extraction (AS/SVE) system has been shut down since February 24, 2018).

The eleventh quarterly groundwater sampling event was conducted on June 27 and 28, 2018. Depth-to-water, total depth, and photoionization detector (PID) measurements were collected at monitoring wells MW-1 through MW-9 and piezometers PZ-1 and PZ-2 (thirteen locations total). Following the collection of field data, groundwater samples were collected from each monitoring well and piezometer for laboratory analysis of Target Compound List (TCL) volatile organic compounds (VOCs). On-site groundwater sampling locations are shown on Figure 2.

The third annual vapor sampling event was conducted on June 27 and 28, 2018. Vapor probes VP-1 through VP-7 were sampled for laboratory analysis of VOCs via United States

Environmental Protection Agency (USEPA) Method TO-15. The vapor probe locations are shown on Figure 2.

The near-field, off-site groundwater monitoring wells were sampled again as part of the long-term contaminant rebound test (they were previously sampled in April 2018 and the next semiannual event would normally be in October 2018) on June 27, 2018. Depth-to-water, total depth, and PID measurements were collected at monitoring wells ML-002 (shallow, middle, and deep), MW-10, and MW-11 (five locations total). Following the collection of field data, groundwater samples were collected from each monitoring well for laboratory analysis of TCL VOCs. The near-field, off-site groundwater monitoring locations are shown on Figure 3.

2.2 AS/SVE System Operation, Maintenance and Monitoring

Langan did not perform operation, maintenance and monitoring (OM&M) during June 2018 because the AS/SVE system was shut down; however, the AS/SVE system was restarted and OM&M activities were performed on July 2, 2018. The AS/SVE system was reactivated to confirm that the AS/SVE system works appropriately, as OM&M on the system had not been conducted since March 2018. Additionally, the AS/SVE system was restarted in the event that the rebound test results are not favorable, or if the rebound test results are favorable, to perform additional remedial polishing.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

Submission of a letter to the NYSDEC documenting the results of the long-term contaminant with recommendations for next steps and continued OM&M of the AS/SVE system.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

Samples were analyzed by Alpha Analytical of Westborough, MA. Alpha is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory.

The groundwater sample results from the eleventh quarter of on-site groundwater sampling exhibited chlorinated VOC (CVOC) concentrations above the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (AWQSGVs) for Class GA Water in 10 of the wells sampled (MW-2, MW-3S, MW-3M, MW-3D, MW-5, MW-6, MW-8, MW-9, PZ-1, and PZ-2). The groundwater results for all of the wells are less than the baseline groundwater sampling results from August 2015; for the shallow-screened wells, total CVOC concentrations reductions ranged from 75% (MW-6) to 99% (MW-1, -2, -3S, -4, and -7). Based on the data collected, CVOC concentrations continue to be stable below TOGS AWQSGVs in the following three wells: MW-1, MW-4, and MW-7. Since October 2016, tetrachloroethene (PCE) concentrations observed at MW-3M (screened 30 to 40 feet below grade surface [bgs]) and

MW-3D (screened 50 to 60 feet bgs) have consistently ranged between 10 and 19 micrograms per liter ($\mu\text{g/L}$) and concentrations of the remaining CVOCs (trichloroethene [TCE], cis-1,2-dichloroethene, and vinyl chloride) have not exceeded the TOGS AWQSGVs; indicating that CVOC concentrations in the middle- and deep-screened on-site wells have stabilized. When compared to last quarter's sampling results, CVOC concentrations have increased in eight of the groundwater wells/piezometers (MW-1, MW-2, MW-5, MW-7, MW-8, MW-9, PZ-1, and PZ-2) and decreased in five of the groundwater wells (MW-3S, MW-3M, MW-3D, MW-4, and MW-6), with reductions ranging from 4% to 59%. The increase in CVOC concentrations since the April 2018 sampling event can be attributed to the four-month deactivation of the AS/SVE. The maximum increase in CVOC concentration was observed in PZ-2 (from 26.1 $\mu\text{g/L}$ to 48.8 $\mu\text{g/L}$).

The groundwater sample results from the near-field, off-site groundwater wells exhibited CVOC concentrations above TOGS AWQSGVs in four of the wells sampled (ML-002M, ML-002D, MW-10, and MW-11). The groundwater results for ML002S and MW10 are 93% and 64% less than the July 2016 baseline groundwater sampling results. Since July 2016, PCE concentrations observed in ML-002M and ML-002D have consistently ranged between 2 to 17 $\mu\text{g/L}$ and, with the exception TCE in ML-002M during the October 2017 sampling event, concentrations of the remaining CVOCs have not exceeded the TOGS AWQSGVs. When compared to April 2018, CVOC concentrations have increased in two of the five off-site groundwater wells (ML-002M and MW-11) and decreased in three of the groundwater wells (ML-002S, ML-002D, and MW10), with reductions ranging from 10% to 90%. This increase of total CVOCs in off-site wells can be attributed to area-wide groundwater quality and the four-month AS/SVE system deactivation. The maximum increase in CVOC concentration was observed in ML-002M (from 5.44 $\mu\text{g/L}$ to 19 $\mu\text{g/L}$).

Soil vapor samples were collected as part of annual vapor sampling. When compared to the baseline vapor sampling results from August 2015, the analytical results for the second annual on-site vapor sampling event show that 99%+ reductions in total CVOC concentrations have been achieved at each vapor sampling location. Since July 2016, CVOC concentrations have decreased between about 12.9% and 93% in all vapor points with the exception of VP-04, which increased from 320 micrograms per cubic meter ($\mu\text{g/m}^3$) to 1,360 $\mu\text{g/m}^3$. This increase in CVOC concentration is primarily due to an increase in TCE (from 280 $\mu\text{g/m}^3$ to 1,330 $\mu\text{g/m}^3$), which is attributed to the four-month AS/SVE system deactivation.

The following tables are attached to this progress report and analytical lab reports are available upon request. The tables summarize the data collected to date and the functionality of the AS/SVE system, including mass of VOCs removed from the subsurface based on photoionization detector (PID) readings and laboratory data, as well as the alarm history.

- Table 1 – AS/SVE System Vapor Sampling Results
- Table 2 – AS/SVE System Mass Removal – PID Data*
- Table 3 – AS/SVE System Mass Removal – Total VOCs*
- Table 4 – AS/SVE System DAR-1 Compliance
- Table 5 – AS/SVE System Alarm History

- Table 6 – Quarterly Groundwater Sampling Results – June 2018
- Table 7 – Quarterly Groundwater Sampling Results Summary
- Table 8 – Semi-annual, Near-Field, Off-site Groundwater Sampling Results – June 2018
- Table 9 – Semi-annual, Near-Field, Off-site Groundwater Sampling Results Summary
- Table 10 – Annual Vapor Sampling Results – June 2018
- Table 11 – Annual Vapor Sampling Results Summary

*Tables are unchanged from the previous progress/inspection report because of the system shut down.

6. Deliverables Submitted During This Reporting Period

None

7. Information Regarding Percentage of Completion

As of March 7, 2018 and since the system was first started, the SVE system operated for 18,967 hours (92% uptime), and the AS system operated for 18,497 hours (90% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

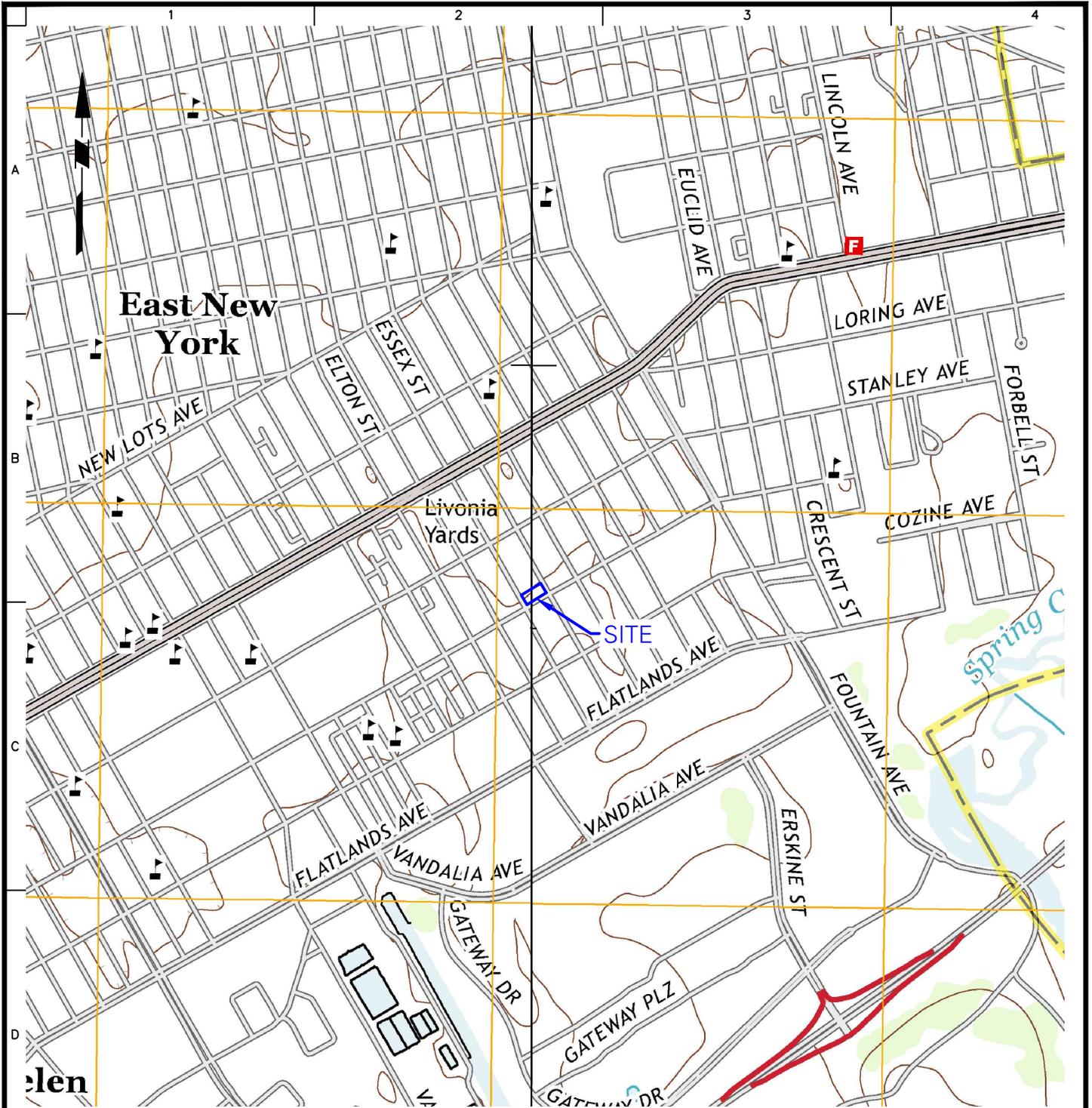
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



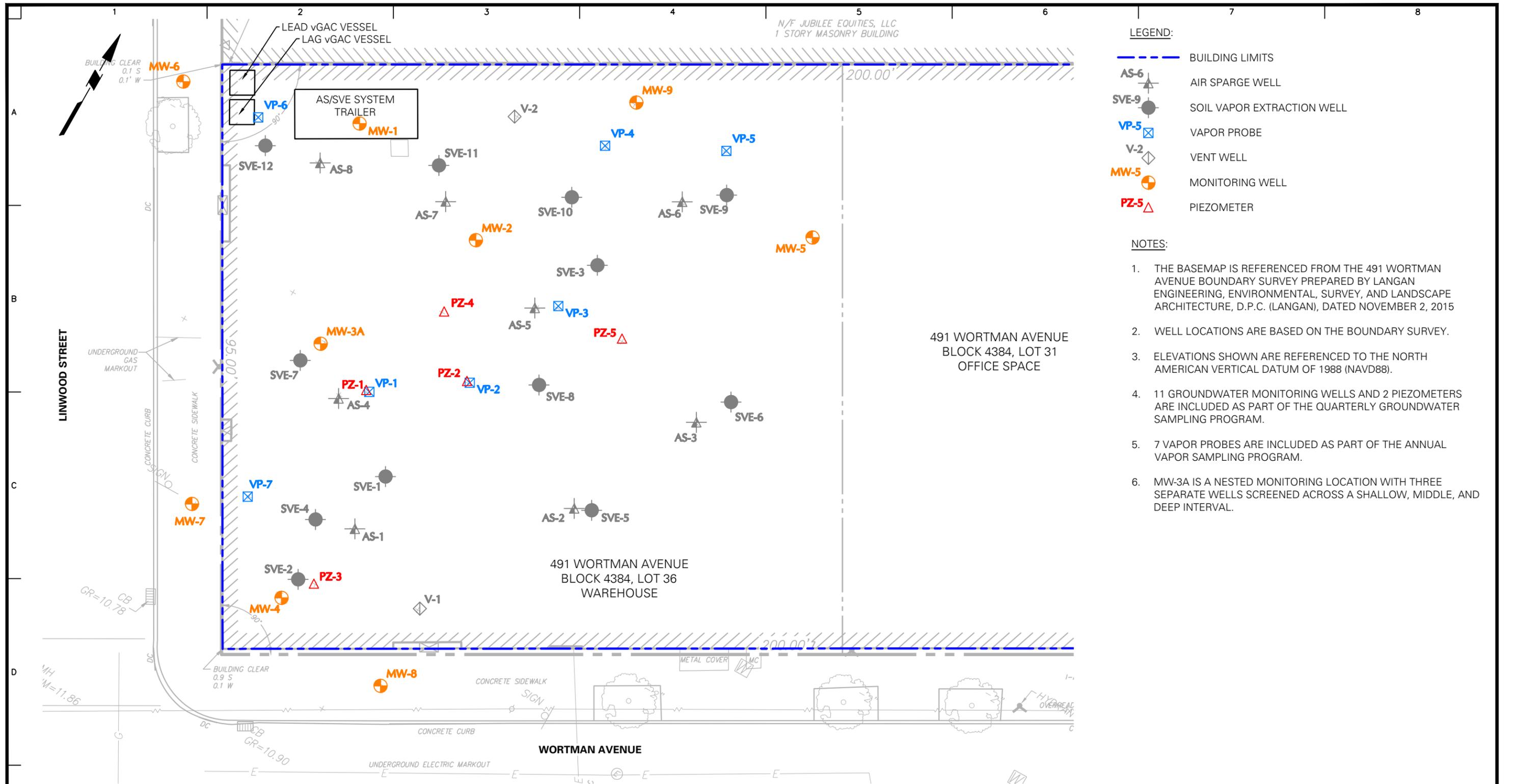
LEGEND:

 APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan	Project	Figure Title	Project No.	Figure
	491 WORTMAN AVENUE	SITE LOCATION MAP	170329301	1
	BLOCK No. 4384, LOT Nos. 31 & 36		Date	
	BROOKLYN		04/18/2015	
	KINGS	NEW YORK		Scale
			N.T.S.	
			Drawn By	Checked By
			MLR	GN
			Submission Date	
				Sheet 1 of 3

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- LEGEND:**
- BUILDING LIMITS
 - ▲ AS-6 AIR SPARGE WELL
 - SVE-9 SOIL VAPOR EXTRACTION WELL
 - ⊠ VP-5 VAPOR PROBE
 - ◇ V-2 VENT WELL
 - ⊕ MW-5 MONITORING WELL
 - △ PZ-5 PIEZOMETER

- NOTES:**
1. THE BASEMAP IS REFERENCED FROM THE 491 WORTMAN AVENUE BOUNDARY SURVEY PREPARED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEY, AND LANDSCAPE ARCHITECTURE, D.P.C. (LANGAN), DATED NOVEMBER 2, 2015
 2. WELL LOCATIONS ARE BASED ON THE BOUNDARY SURVEY.
 3. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 4. 11 GROUNDWATER MONITORING WELLS AND 2 PIEZOMETERS ARE INCLUDED AS PART OF THE QUARTERLY GROUNDWATER SAMPLING PROGRAM.
 5. 7 VAPOR PROBES ARE INCLUDED AS PART OF THE ANNUAL VAPOR SAMPLING PROGRAM.
 6. MW-3A IS A NESTED MONITORING LOCATION WITH THREE SEPARATE WELLS SCREENED ACROSS A SHALLOW, MIDDLE, AND DEEP INTERVAL.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

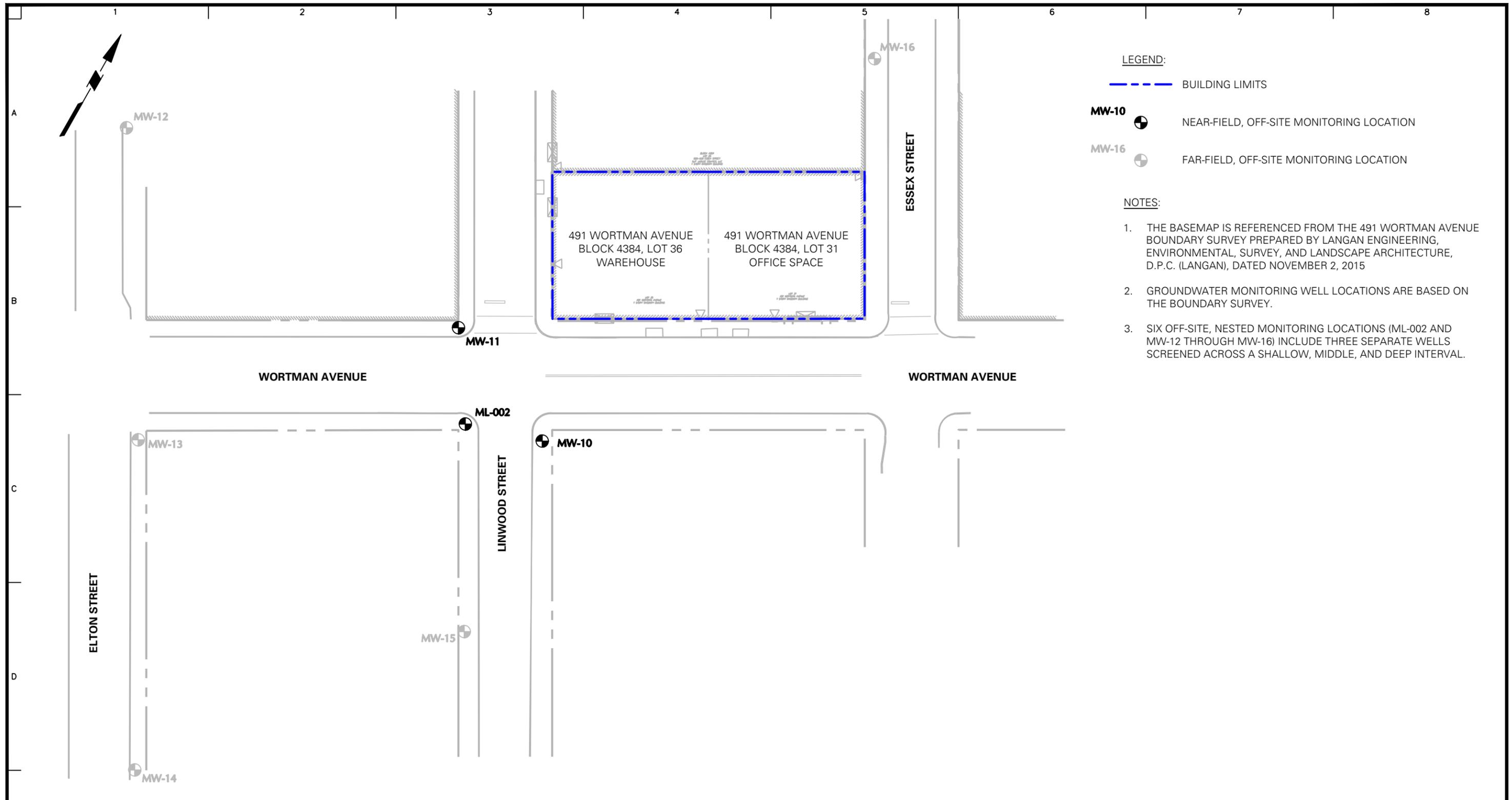


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 Langan International LLC
 Collectively known as Langan

Project
491 WORTMAN AVENUE
BLOCK No. 4384, LOT Nos. 31 & 36
BROOKLYN
KINGS NEW YORK

Figure Title
ON-SITE AND NEAR-FIELD MONITORING LOCATIONS

Project No. 170329301	Figure No.
Date 01/21/2016	2
Scale AS SHOWN	
Drawn By TCS	Checked By GN
Submission Date	Sheet 2 of 3



LEGEND:

- - - - BUILDING LIMITS
- MW-10** NEAR-FIELD, OFF-SITE MONITORING LOCATION
- MW-16** FAR-FIELD, OFF-SITE MONITORING LOCATION

NOTES:

1. THE BASEMAP IS REFERENCED FROM THE 491 WORTMAN AVENUE BOUNDARY SURVEY PREPARED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEY, AND LANDSCAPE ARCHITECTURE, D.P.C. (LANGAN), DATED NOVEMBER 2, 2015
2. GROUNDWATER MONITORING WELL LOCATIONS ARE BASED ON THE BOUNDARY SURVEY.
3. SIX OFF-SITE, NESTED MONITORING LOCATIONS (ML-002 AND MW-12 THROUGH MW-16) INCLUDE THREE SEPARATE WELLS SCREENED ACROSS A SHALLOW, MIDDLE, AND DEEP INTERVAL.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.



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	491 WORTMAN AVENUE	OFF-SITE GROUNDWATER MONITORING WELL LOCATIONS	Date 10/03/2016	3
	BLOCK No. 4384, LOT Nos. 31 & 36 BROOKLYN	KINGS NEW YORK	Scale AS SHOWN	
			Drawn By MLR	
			Submission Date	Sheet 3 of 3

TABLES

TABLE 1: AS/SVE SYSTEM VAPOR SAMPLING RESULTS
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139

LOCATION SAMPLE ID LAB SAMPLE ID SAMPLE DATE	vGAC Influent INFLUENT_070218 L1825168-01 7/2/2018	vGAC Effluent EFFLUENT_070218 L1825168-02 7/2/2018
Volatile Organic Compounds (µg/m3)		
1,1,1-Trichloroethane	30.8	U
1,1,2,2-Tetrachloroethane	38.7	U
1,1,2-Trichloroethane	30.8	U
1,1-Dichloroethane	22.8	U
1,1-Dichloroethene	22.4	U
1,2,4-Trichlorobenzene	41.9	U
1,2,4-Trimethylbenzene	27.7	U
1,2-Dibromoethane	43.3	U
1,2-Dichlorobenzene	33.9	U
1,2-Dichloroethane	22.8	U
1,2-Dichloropropane	41.7	U
1,3,5-Trimethylbenzene	27.7	U
1,3-Butadiene	12.5	U
1,3-Dichlorobenzene	33.9	U
1,4-Dichlorobenzene	33.9	U
1,4-Dioxane	20.3	U
2,2,4-Trimethylpentane	26.3	U
2-Butanone	41.6	U
2-Hexanone	23.1	U
3-Chloropropene	17.7	U
4-Ethyltoluene	27.7	U
4-Methyl-2-pentanone	57.8	U
Acetone	75.3	U
Benzene	18	U
Benzyl chloride	29.2	U
Bromodichloromethane	75	U
Bromoform	58.3	U
Bromomethane	21.9	U
Carbon disulfide	17.6	U
Carbon tetrachloride	35.5	U
Chlorobenzene	26	U
Chloroethane	14.9	U
Chloroform	35.4	U
Chloromethane	11.6	U
cis-1,2-Dichloroethene	22.4	U
cis-1,3-Dichloropropene	25.6	U
Cyclohexane	19.4	U
Dibromochloromethane	48	U
Dichlorodifluoromethane	27.9	U
Ethanol	266	U
Ethyl Acetate	50.8	U
Ethylbenzene	24.5	U
Freon-113	43.2	U
Freon-114	39.4	U
Heptane	23.1	U
Hexachlorobutadiene	60.2	U
Isopropanol	34.7	U
Methyl tert butyl ether	20.3	U
Methylene chloride	49	U
n-Hexane	19.9	U
o-Xylene	24.5	U
p/m-Xylene	49.1	U
Styrene	24	U
Tertiary butyl Alcohol	42.7	U
Tetrachloroethene	201	U
Tetrahydrofuran	41.6	U
Toluene	21.3	U
trans-1,2-Dichloroethene	22.4	U
trans-1,3-Dichloropropene	25.6	U
Trichloroethene	7470	U
Trichlorofluoromethane	31.7	U
Vinyl bromide	24.7	U
Vinyl chloride	14.4	U
Total VOCs	7898.4	102.777

Notes:

1. µg/m3 = micrograms per cubic meter
2. vGAC = vapor-phase granular activated carbon
3. Samples collected at the "vGAC INFLUENT" were collected before the lead vGAC vessel.
4. Samples collected at the "vGAC EFFLUENT" were collected after the lag vGAC vessel.
5. Samples were collected on July 2, 2018.

Qualifiers:

U = The analyte was not detected at or above the level indicated.

**TABLE 2: AS/SVE SYSTEM MASS REMOVAL - PID DATA
FORMER WATERMARK DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139**

DATE	INFLUENT CONCENTRATION (ppmv)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ppmv)	TOTAL OPERATIONAL HOURS	AVERAGE MOLECULAR WEIGHT	MASS REMOVAL RATE (lbs/hr)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	CUMULATIVE MASS REMOVED FROM SUBSURFACE (lbs)
10/21/2015	55.0	688	1.8	30	100	0.57	17.02	17.02
10/26/2015	8.3	650	0.6	150	100	0.08	9.31	26.34
11/6/2015	5.5	560	0.0	383	100	0.05	11.13	37.46
11/30/2015	1.9	593	0.3	958	100	0.01	8.46	45.92
12/28/2015	3.7	570	0.0	1,548	100	0.03	19.29	65.21
1/27/2016	1.2	525	0.5	2,180	100	0.01	3.60	68.81
2/24/2016	2.5	578	0.0	2,854	100	0.02	15.10	83.91
3/30/2016	0.2	550	0.0	3,693	100	0.002	1.43	85.34
4/29/2016	2.0	571	0.0	4,322	100	0.018	11.14	96.48
5/26/2016	0.4	600	0.0	4,972	100	0.004	2.42	98.90
6/29/2016	0.5	600	0.0	5,784	100	0.005	3.78	102.68
7/28/2016	3.0	600	0.0	6,431	100	0.028	18.06	120.73
8/31/2016	2.7	600	0.0	7,110	100	0.025	17.05	137.79
9/29/2016	7.5	760	2.0	7,802	100	0.065	44.85	182.63
10/31/2016	0.0	520	0.0	8,516	100	0.000	0.00	182.63
11/29/2016	0.0	560	0.0	9,211	100	0.000	0.00	182.63
12/28/2016	0.0	520	0.0	9,884	100	0.000	0.00	182.63
1/25/2017	2.8	600	0.0	10,530	100	0.026	16.83	199.46
3/7/2017	0.1	360	0.0	11,186	100	0.001	0.37	199.82
4/27/2017	0.0	600	0.0	12,185	100	0.000	0.00	199.82
5/25/2017	0.8	600	0.0	12,760	100	0.008	4.42	204.24
6/28/2017	0.04	600	0.0	13,575	100	0.000	0.33	204.57
7/21/2017	0.0	600	0.0	14,060	100	0.000	0.00	204.57
8/25/2017	0.0	600	0.0	14,852	100	0.000	0.00	204.57
9/27/2017	0.7	600	0.08	15,641	100	0.006	4.55	209.12
11/1/2017	0.0	640	0.00	16,422	100	0.000	0.00	209.12
11/28/2017	0.0	600	0.00	17,069	100	0.000	0.00	209.12
12/28/2017	0.0	560	0.00	17,618	100	0.000	0.00	209.12
1/31/2018	0.0	600	0.00	18,382	100	0.000	0.00	209.12
3/1/2018	0.0	580	0.00	18,961	100	0.000	0.00	209.12

NOTES:

1. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
2. The influent and effluent concentrations are based on the PID readings.
3. Mass Removal rate (lb/hr) = ((Conc in ppmv)(flowrate scfm)(MW)(60 min/hr)) / ((387)(1,000,000)).
4. PID = photoionization detector
5. ppmv = parts per million volume
6. scfm = standard cubic feet per minute
7. lbs/hr = pounds per hour
8. lbs = pounds
9. SVE = soil vapor extraction

TABLE 3: AS/SVE SYSTEM MASS REMOVAL - LABORATORY DATA (TOTAL VOCs)
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

DATE	INFLUENT CONCENTRATION (ug/m3)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ug/m3)	TOTAL OPERATIONAL HOURS	INFLUENT RATE (mg/min)	EFFLUENT RATE (mg/min)	REMOVAL RATE (mg/min)	MASS REMOVED FROM SUBSURFACE (lbs)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	MASS REMOVED BY CARBON (lbs)	TOTAL MASS REMOVED BY CARBON (lbs)
10/20/2015	114,348	640	9,241	12	2049.12	165.60	1883.52	3.25	3.25	2.99	2.99
10/21/2015	32,758	688	1,129	30	631.05	21.75	609.30	1.50	4.76	1.45	4.44
10/26/2015	7,027	650	383	150	127.89	6.97	120.92	2.03	6.79	1.92	6.36
11/30/2015	3,144	593	426	958	52.20	7.07	45.13	5.58	12.36	4.82	11.18
12/28/2015	3,357	570	230	1,548	53.58	3.67	49.91	4.18	16.55	3.89	15.08
1/27/2016	621	525	183	2,180	9.13	2.69	6.44	0.76	17.31	0.54	15.62
2/24/2016	1,454	578	283	2,854	23.53	4.58	18.94	2.10	19.41	1.69	17.31
3/30/2016	825	550	75	3,693	12.71	1.16	11.55	1.41	20.82	1.28	18.59
4/29/2016	482	571	112	4,322	7.70	1.79	5.91	0.64	21.46	0.49	19.08
5/26/2016	1,169	600	162	4,972	19.64	2.73	16.91	1.69	23.15	1.45	20.53
6/29/2016	1,865	600	190	5,784	31.33	3.19	28.14	3.37	26.51	3.02	23.56
7/28/2016	3,706	600	232	6,431	62.26	3.90	58.36	5.33	31.84	4.99	28.55
8/31/2016	4,798	600	135	7,110	80.61	2.26	78.35	7.24	39.08	7.04	35.59
9/29/2016	1,045	760	179	7,802	22.24	3.81	18.43	2.04	41.12	1.69	37.27
10/31/2016	922	520	91	8,516	13.42	1.32	12.10	1.27	42.38	1.14	38.42
11/29/2016	790	560	167	9,211	12.38	2.62	9.76	1.14	43.52	0.90	39.31
12/28/2016	282	520	123	9,884	4.11	1.79	2.32	0.37	43.89	0.21	39.52
1/25/2017	4.7	600	5.6	10,530	0.08	0.09	-0.02	0.01	43.89	0.00	39.52
3/7/2017	762	360	120	11,186	7.68	1.21	6.47	0.67	44.56	0.56	40.08
4/27/2017	1,008	600	86	12,185	16.93	1.44	15.49	2.24	46.80	2.05	42.13
5/25/2017	771	600	48	12,760	12.95	0.81	12.15	0.99	47.78	0.92	43.05
6/28/2017	754	600	69	13,575	12.66	1.16	11.50	1.36	49.15	1.24	44.29
7/21/2017	2,434	600	235	14,060	40.89	3.95	36.94	2.62	51.77	2.37	46.66
8/25/2017	1,334	600	246	14,852	22.41	4.13	18.28	2.35	54.12	1.91	48.58
9/27/2017	1,059	600	83	15,641	17.79	1.39	16.40	1.86	55.98	1.71	50.29
11/1/2017	1,227	640	85	16,422	21.99	1.52	20.47	2.27	58.25	2.11	52.40
11/28/2017	295	600	64	17,069	4.96	1.08	3.88	0.42	58.67	0.33	52.73
12/28/2017	258	560	29	17,618	4.05	0.45	3.59	0.29	58.97	0.26	53.00
1/31/2018	289	600	13	18,382	4.85	0.23	4.62	0.49	59.46	0.47	53.46
3/1/2018	534	580	68	18,961	8.67	1.11	7.57	0.66	60.12	0.58	54.04

NOTES:

1. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
2. The influent and effluent concentrations are based on the lab analytical data and not the PID readings.
3. ug/m3 = micrograms per cubic meter
4. scfm = standard cubic feet per minute
5. mg/min = milligrams per minute
6. lbs = pounds
7. SVE = soil vapor extraction

**TABLE 4: AS/SVE SYSTEM DAR-1 COMPLIANCE
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139**

SAMPLING DATE: 7/2/2018

CHEMICAL COMPOUND	CARBON EFFLUENT CONCENTRATION MEASURED ($\mu\text{g}/\text{m}^3$)	EMISSION FLOWRATE MEASURED		OUTLET CONCENTRATION (Q_p) (lb/hr)	OUTLET CONCENTRATION (Q_a) (lb/yr)	MAX ANNUAL IMPACT (C_a) ($\mu\text{g}/\text{m}^3$)	MAX POTENTIAL IMPACT (C_p) ($\mu\text{g}/\text{m}^3$)	MAX SHORT-TERM IMPACT (C_{st}) ($\mu\text{g}/\text{m}^3$)	DAR-1 STANDARDS		EMISSION RESTRICTION REQUIRED (if $C_p > \text{AGC}$ and $C_a < \text{AGC}$)	SGC EMISSION EXCEEDANCE (if $C_{st} > \text{SGC}$)	AGC EMISSION EXCEEDANCE (if $C_a > \text{AGC}$)
		(SCFM)	(m^3/min)						SGC ($\mu\text{g}/\text{m}^3$)	AGC ($\mu\text{g}/\text{m}^3$)			
Volatile Organics, USEPA TO-15 Full List ($\mu\text{g}/\text{m}^3$)													
1,2-Dichloroethane	0.866	450	12.74265	1.46E-06	1.28E-02	1.15E-04	1.15E-04	7.45E-03	--	--	No Standard	No Standard	No Standard
1,1,2-Trichloroethane	2.4	450	12.74265	4.04E-06	3.54E-02	3.18E-04	3.18E-04	2.06E-02	--	--	No Standard	No Standard	No Standard
1,2,4-Trimethylbenzene	1.18	450	12.74265	1.98E-06	1.74E-02	1.56E-04	1.56E-04	1.01E-02	--	6	NO	No Standard	NO
2-Butanone	1.95	450	12.74265	3.28E-06	2.87E-02	2.58E-04	2.58E-04	1.68E-02	13000	5000	NO	NO	NO
Acetone	18.5	450	12.74265	3.11E-05	2.73E-01	2.45E-03	2.45E-03	1.59E-01	180,000	30,000	NO	NO	NO
Carbon disulfide	2.46	450	12.74265	4.14E-06	3.62E-02	3.26E-04	3.26E-04	2.12E-02	6,200	700	NO	NO	NO
Chloroform	2.27	450	12.74265	3.82E-06	3.34E-02	3.01E-04	3.00E-04	1.95E-02	150	0.04	NO	NO	NO
Chloromethane	0.607	450	12.74265	1.02E-06	8.94E-03	8.04E-05	8.03E-05	5.22E-03	6,200	700	NO	NO	NO
cis-1,2-Dichloroethylene	7.85	450	12.74265	1.32E-05	1.16E-01	1.04E-03	1.04E-03	6.75E-02	--	63	NO	No Standard	NO
Dichlorodifluoromethane	4.04	450	12.74265	6.80E-06	5.95E-02	5.35E-04	5.35E-04	3.47E-02	--	12,000	NO	No Standard	NO
Ethanol	16.7	450	12.74265	2.81E-05	2.46E-01	2.21E-03	2.21E-03	1.44E-01	--	45,000	NO	No Standard	NO
Isopropanol	1.77	450	12.74265	2.98E-06	2.61E-02	2.34E-04	2.34E-04	1.52E-02	98,000	7,000	NO	NO	NO
Methylene chloride	23	450	12.74265	3.87E-05	3.39E-01	3.05E-03	3.04E-03	1.98E-01	14,000	60	NO	NO	NO
n-Hexane	5.6	450	12.74265	9.42E-06	8.25E-02	7.42E-04	7.41E-04	4.82E-02	--	700	NO	No Standard	NO
Tetrachloroethene	2.22	450	12.74265	3.73E-06	3.27E-02	2.94E-04	2.94E-04	1.91E-02	300	4	NO	NO	NO
Toluene	4.45	450	12.74265	7.49E-06	6.56E-02	5.90E-04	5.89E-04	3.83E-02	37,000	5,000	NO	NO	NO
trans-1,2-Dichloroethene	0.924	450	12.74265	1.55E-06	1.36E-02	1.22E-04	1.22E-04	7.95E-03	--	--	No Standard	No Standard	No Standard
Trichloroethylene	3.38	450	12.74265	5.69E-06	4.98E-02	4.48E-04	4.47E-04	2.91E-02	14,000	0.2	NO	NO	NO
Trichlorofluoromethane	2.61	450	12.74265	4.39E-06	3.85E-02	3.46E-04	3.45E-04	2.24E-02	9,000	5,000	NO	NO	NO

NOTES AND QUALIFIERS:

- Table only displays chemical compounds with detectable concentrations.
- Concentrations below reporting limit (non detect) are assumed to be zero.
- Air samples were analyzed for USEPA TO-15 compounds
- All equations are referenced in NYSDEC, Division of Air Resources, Air Guide 1, Guidelines for the Control of Toxic Ambient Air Contaminants (11/12/97). Standard Point Source Method calculations were used.
- Values in table are compared to DAR-1 Annual Guideline Concentrations (AGC)/Short-Term Guideline Concentrations (SGC) Tables dated February 28, 2014.
- DAR-1 AGC and/or SGC values listed as "--" means there is no AGC or SGC standard for that compound.
- SCFM = standard cubic feet per minute
- Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
- $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
- m^3/min = cubic meter per minute
- lb/hr = pounds per hour
- lb/yr = pounds per year

**TABLE 5: AS/SVE SYSTEM ALARM HISTORY
FORMER WATERMARK DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139**

DATE	ALARM	ALARM DESCRIPTION	REASON	REMEDY
10/23/2015	PAL-2501	Compressor Low Pressure Alarm	Uncertain of the reason. There may be a power fluctuation that trips the low pressure alarm, which shuts the AS system down.	On-site observation confirmed that this was a false alarm and was not caused by compressor failure or a breach in the air sparge manifold. The alarm was manually reset.
10/28/2015	LAH-7301	Storage Tank High Level Alarm	The SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into nine 55-gallon drums, and the SVE system vacuum has been optimized to extract a lesser volume of water.
11/5/2015	PAL-2501	Compressor Low Pressure Alarm	Caused by the air sparge compressor on/off time, which won't allow "OFF" time to be set to zero and therefore, the compressor cannot run continuously.	The air compressor timer has been by-passed and the compressor operation is linked to the SVE system operation. If the SVE system is operational, the compressor will operate unless a different AS system alarm has been triggered.
11/17/2015	PAL-2501	Compressor Low Pressure Alarm	This was an alarm test that was performed to ensure that the update to the Programmable Logic Controller (PLC) was successful.	The PLC update was successful and the air sparge compressor can run continuously. The air compressor timer is no longer being bypassed.
12/23/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
12/25/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/7/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied into eight 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/17/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
2/1/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted at a lower speed. The compressor speed was ramped up incrementally throughout the day until the previous set point was reached. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
4/3/2016	PAL-701	Blower Influent High Pressure Alarm	The alarm was most likely triggered due to power fluctuations caused by high wind conditions.	The alarm was cleared and the SVE system was restarted at a higher frequency. The system was monitored remotely for the remainder of the day.
4/29/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/9/2016	PAH-702	SVE System Effluent High Pressure Alarm	Anomalously high pressures were not noted on the SVE system discharge during the remote or on-site inspections. It is likely that the SVE effluent pressure switch needs to be recalibrated following almost a year's worth of continuous use.	The SVE system was restarted at a lower frequency and monitored on-site for about two hours.
8/26/2016	FAL-701	Blower Low Flow Alarm	The alarm was triggered due to a loose relay switch.	The switch was tightened during the August 31, 2016 monthly inspection and the system was restarted without further issue.
12/27/2016	PAL-2501	Compressor Low Pressure Alarm	The alarm was triggered due to a mechanical failure at the air compressor (i.e., the belts tore).	The air compressor belts were replaced on January 9, 2017 and the system was restarted.
3/7/2017	FAL-401	Transfer Pump Low Flow Alarm	The alarm was likely triggered due to the fluctuating volume of water extracted by the SVE system.	The AS/SVE system was restarted. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
3/8/2017	Low PLC Battery	Low Programmable Logic Controller (PLC) Battery	The alarm was triggered because the PLC battery can no longer hold a charge.	The PLC battery was replaced on March 10, 2017.
3/24/2017	VFDA-701	SVE System Variable Frequency Drive (VFD) Alarm	The alarm was triggered because the SVE system blower was not functioning within the intended parameters.	The blower was visually inspected, a piece of debris caught in the belts was removed, and the system was restarted.
7/4/2017	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/2/2017	FAL-701	Blower Low Flow Alarm	The alarm was likely triggered by a momentary power surge.	The alarm was cleared and the AS/SVE system was restarted. The system was monitored remotely for the remainder of the day.
11/29/2017	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The AS/SVE system was restarted; the relay was replaced during the 12/28/2017 monthly inspection.
2/24/2018	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The alarm was resolved on 3/1/2018 and then retriggered within 7 hours of resolution. A new VFD is required to address this issue. This alarm was resolved on 4/20/2018 when the new VFD was installed.
4/20/2018	LAH-7301 LAHH-7301	Storage Tank High Level Alarm Storage Tank High-High Level Alarm	Following VFD replacement and reactivation of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The alarm was resolved when accumulated water in the SVE tank was drained into 55-gallon drums.
7/10/2018	TAH-701	SVE System discharge high temperature alarm	Ambient temp inside trailer was high so SVE discharge temp exceeded 150°F	The set point was changed to 175°F and the system restarted.

TABLE 6: QUARTERLY GROUNDWATER SAMPLING RESULTS - JUNE 2018
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C244139

Sample ID Laboratory ID Sampling Date	NYSDEC TOGS Standards and Guidance Values	MW-1_062818 L1824775-01 6/28/2018	MW-2_062718 L1824506-12 6/27/2018	MW-3S_062818 L1824775-04 6/28/2018	MW-3M_062818 L1824775-07 6/28/2018	MW-3D_062818 L1824775-08 6/28/2018	MW-4_062818 L1824775-05 6/28/2018	MW-5_062818 L1824775-03 6/28/2018
Volatile Organic Compounds (µg/L)								
1,1-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.39 J
1,2-Dichloroethene, Total	~	2.5 U	0.78 J	2.5 U	2.5 U	2.5 U	2.5 U	1.4 J
1,2-Dichloropropane	1	0.18 J	0.16 J	1 U	1 U	1 U	0.49 J	0.39 J
Acetone	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	5	2.5 U	0.78 J	2.5 U	2.5 U	2.5 U	2.5 U	1.4 J
Tetrachloroethene	5	4.5 U	21	5.6	13	18	1.2 U	15
trans-1,2-Dichloroethene	5	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Trichloroethene	5	4	6.1	3.5	2.2	0.74	1.1	3.7

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA water.
- Only detected compounds are shown.
- Results equal to or exceeding the NYSDEC TOGS SGVs are shaded and bolded.
- Reporting Limits (RL) above NYSDEC TOGS SGVs are italicized.
- µg/L = micrograms per liter
- ~ = regulatory criteria have not been established for this compound
- Eleven monitoring wells and two piezometers associated with the air sparge and soil vapor extraction system (AS/SVE) system were sampled as part of the eleventh round of quarterly groundwater sampling.

Qualifiers:

J = Analyte detected at or above the MDL (Method Detection Limit) but below the RL - data is estimated.
U = Analyte not detected at or above the level indicated.

TABLE 6: QUARTERLY GROUNDWATER SAMPLING RESULTS - JUNE 2018
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C244139

Sample ID Laboratory ID Sampling Date	NYSDEC TOGS Standards and Guidance Values	MW-6_062718 L1824506-05 6/27/2018	MW-7_062718 L1824506-08 6/27/2018	MW-8_062718 L1824506-09 6/27/2018	MW-9_062818 L1824775-02 6/28/2018	PZ-1_062718 L1824506-10 6/27/2018	PZ-2_062818 L1824775-06 6/28/2018	
Volatile Organic Compounds (µg/L)								
1,1-Dichloroethene	5	0.36 J	0.5 U					
1,2-Dichloroethene, Total	~	17 J	2.5 U	2.9 U	1.6 J	2 J	7.3 U	
1,2-Dichloropropane	1	2 U	0.28 J	0.18 J	1 U	1 U	0.24 J	
Acetone	50	10 U	5 U	2 J	5 U	5 U	5 U	
cis-1,2-Dichloroethene	5	14	2.5 U	2.9 U	1.6 J	2 J	7.3	
Tetrachloroethene	5	200	4.3 U	5.3	9.5	19	32	
trans-1,2-Dichloroethene	5	3.3 J	2.5 U					
Trichloroethene	5	95	2.3 U	4.8 U	3.3 U	6.5	9.5	

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA
- Only detected compounds are shown.
- Results equal to or exceeding the NYSDEC TOGS SGVs are shaded and bolded.
- Reporting Limits (RL) above NYSDEC TOGS SGVs are italicized.
- µg/L = micrograms per liter
- ~ = regulatory criteria have not been established for this compound
- Eleven monitoring wells and two piezometers associated with the air sparge and soil vapor extraction system (AS/SVE) system were sampled as part of the eleventh round of quarterly groundwater sampling.

Qualifiers:

- J = Analyte detected at or above the MDL (Method Detection Limit) but below the RL - data is estimated.
U = Analyte not detected at or above the level indicated.

TABLE 7: QUARTERLY GROUNDWATER SAMPLING RESULTS SUMMARY
FORMER WATERMARK DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

Compound	NYSDEC TOGS STANDARDS AND GUIDANCE VALUES	Sampling Location												
		MW-1	MW-2	MW-3S	MW-3M	MW-3D	MW-4	MW-5	MW-6*	MW-7*	MW-8*	MW-9	PZ-1	PZ-2
Baseline Sampling Results Summary (µg/L) - August 2015														
CVOCs	~	1274.9	2314	873.3	23.4	27.8	653	175	1236.3	1272	458	602	903.6	438.2
PCE	5	750	480	380	14	8.3	79	110	710	460	180	400	310	230
TCE	5	500	1800	480	5.9	16	540	55	500	780	240	190	580	200
cis-1,2- DCE	5	19	14	8.3	2.5	2.5	29	9	22	27	36	10	8.6	6.2
vinyl chloride	2	5.9	20	5	1	1	5	1	4.3	5	2	2	5	2
First Quarter Sampling Results Summary (µg/L) - January 2016														
CVOCs	~	12.8	2.14	7.6	23.4	16.13	14.8	1.87	676	11.41	184.56	5.8	10	2.6
PCE	5	6	1	2	20	14	3	1	240	2	15	4	3	1
TCE	5	5.3	0.74	5.2	3	1.7	11	0.37	400	9	130	1.4	5.4	1.2
cis-1,2- DCE	5	1.3	0.2	0.2	0.2	0.23	0.6	0.3	35	0.21	39	0.2	1.4	0.2
vinyl chloride	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1	0.2	0.56	0.2	0.2	0.2
Q1 Percent CVOC Reduction		99%	99.9%	99%	0%	42%	98%	99%	45%	99%	60%	99%	99%	99%
Second Quarter Sampling Results Summary (µg/L) - April 2016														
CVOCs	~	3.8	1.99	4.3	18.5	9.3	3.28	1.64	401	2.46	71.96	0.91	1.45	1.79
PCE	5	1.7	0.87	1.2	16	7.6	0.48	0.67	160	0.26	5.7	0.31	0.3	0.61
TCE	5	1.7	0.72	2.7	2.1	1.3	2.4	0.38	220	1.8	43	0.2	0.75	0.78
cis-1,2- DCE	5	0.2	0.2	0.2	0.2	0.2	0.2	0.39	19	0.2	23	0.2	0.2	0.2
vinyl chloride	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2	0.26	0.2	0.2	0.2
Q2 Percent CVOC Reduction from Last Quarter (Q1)		70%	7%	43%	21%	42%	78%	12%	41%	78%	61%	84%	86%	31%
Q2 Percent CVOC Reduction from Baseline		99.7%	99.9%	99.5%	21%	67%	99.5%	99%	68%	99.8%	84%	99.8%	99.8%	99.6%
Third Quarter Sampling Results Summary (µg/L) - July 2016														
CVOCs	~	1.65	4.26	7.69	24.5	14.01	6.26	3.48	1249.5	4.21	53.5	1.49	1.97	4.15
PCE	5	0.68	2.2	3	22	12	2.2	1.6	570	0.71	5.3	0.76	0.47	2
TCE	5	0.57	1.6	4.2	2.1	1.6	3.5	0.76	640	3.1	27	0.33	1.1	1.6
cis-1,2- DCE	5	0.2	0.26	0.29	0.2	0.21	0.36	0.92	39	0.2	21	0.2	0.2	0.35
vinyl chloride	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.2	0.2
Q3 Percent CVOC Reduction from Last Quarter (Q2)		57%	Increased	26%	Increased	Increased	Increased							
Q3 Percent CVOC Reduction from Baseline		99.9%	99.8%	99.1%	Increased	50%	99%	98%	Increased	99.7%	88%	99.8%	99.8%	99.1%

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA water.
- Results equal to or exceeding the NYSDEC TOGS standards and guidance values are shaded.
- PCE = tetrachloroethylene
- TCE = trichloroethylene
- cis-1,2-DCE = cis-1,2-Dichloroethylene

- µg/L = microgram per liter
- CVOC = chlorinated volatile organic compounds
- * = Monitoring well is located in the sidewalk adjacent to the warehouse.
- ND = Non detect

TABLE 7: QUARTERLY GROUNDWATER SAMPLING RESULTS SUMMARY
FORMER WATERMARK DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

Compound	NYSDEC TOGS STANDARDS AND GUIDANCE VALUES	Sampling Location												
		MW-1	MW-2	MW-3S	MW-3M	MW-3D	MW-4	MW-5	MW-6*	MW-7*	MW-8*	MW-9	PZ-1	PZ-2
Fourth Quarter Sampling Results Summary (µg/L) - October 2016														
CVOCs	~	0.91	8.39	18.59	18.1	11.36	3.38	0.84	158.4	1.1	33.9	0.99	0.81	1.57
PCE	5	0.22	4.6	8.8	16	10	0.98	0.24	67	0.2	2.7	0.39	0.2	0.54
TCE	5	0.29	3.2	9	1.7	0.96	2	0.2	87	0.5	19	0.2	0.21	0.63
cis-1,2- DCE	5	0.2	0.39	0.59	0.2	0.2	0.2	0.2	4.2	0.2	12	0.2	0.2	0.2
vinyl chloride	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Q4 Percent CVOC Reduction from Last Quarter (Q3)		45%	Increased	Increased	26%	19%	46%	76%	87%	74%	37%	34%	59%	62%
Q4 Percent CVOC Reduction from Baseline		99.9%	100%	98%	23%	59%	99%	100%	87%	99.9%	93%	99.8%	99.9%	99.6%
Fifth Quarter Sampling Results Summary (µg/L) - January 2017														
CVOCs	~	0.8	1.32	20.71	21.1	14.21	1.89	1.02	812.7	0.9	42.4	7.9	0.8	1.49
PCE	5	0.2	0.56	10	19	13	0.52	0.42	380	0.2	3.2	5.5	0.2	0.66
TCE	5	0.2	0.36	10	1.7	0.81	0.97	0.2	410	0.3	20	2	0.2	0.43
cis-1,2- DCE	5	0.2	0.2	0.51	0.2	0.2	0.2	0.2	22	0.2	19	0.2	0.2	0.2
vinyl chloride	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7	0.2	0.2	0.2	0.2	0.2
Q5 Percent CVOC Reduction from Last Quarter (Q4)		12%	84%	Increased	Increased	Increased	44%	Increased	Increased	18%	Increased	Increased	1%	5%
Q5 Percent CVOC Reduction from Baseline		99.9%	100%	98%	10%	49%	100%	99%	34%	99.9%	91%	98.7%	99.9%	99.7%
Sixth Quarter Sampling Results Summary (µg/L) - April 2017														
CVOCs	~	4.5	11.6	6.4	24.4	16.35	6.8	4.5	57.3	4.4	17.5	4.15	4.5	4.09
PCE	5	0.5	5.5	1.2	19	12	1.5	0.5	26	0.5	2.1	0.4	0.5	0.26
TCE	5	0.5	2.6	1.7	1.9	0.85	1.8	0.5	28	0.4	5.5	0.25	0.5	0.33
cis-1,2- DCE	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.3	2.5	8.9	2.5	2.5	2.5
vinyl chloride	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Q6 Percent CVOC Reduction from Last Quarter (Q5)		Increased	Increased	69%	Increased	Increased	Increased	Increased	93%	Increased	59%	47%	Increased	Increased
Q6 Percent CVOC Reduction from Baseline		99.6%	99%	99%	Increased	41%	99%	97%	95%	99.7%	96%	99.3%	99.5%	99.1%
Seventh Quarter Sampling Results Summary (µg/L) - July 2017														
CVOCs	~	4.5	4.61	3.98	16	18.24	4.21	4.5	758	4.32	17.2	4.23	15.1	4.36
PCE	5	0.5	0.67	0.22	11	14	0.33	0.5	490	0.5	1.2	0.23	10	0.54
TCE	5	0.5	0.44	0.26	1.5	0.74	0.38	0.5	240	0.32	5.8	0.5	1.6	0.32
cis-1,2- DCE	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	26	2.5	9.2	2.5	2.5	2.5
vinyl chloride	2	1	1	1	1	1	1	1	2	1	1	1	1	1
Q7 Percent CVOC Reduction from Last Quarter (Q6)		None	60%	38%	34%	Increased	38%	None	Increased	2%	2%	Increased	Increased	Increased
Q7 Percent CVOC Reduction from Baseline		99.6%	100%	100%	32%	34%	99.4%	97%	39%	100%	96%	99.3%	98%	99%

Notes:

1. Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA water.
2. Results equal to or exceeding the NYSDEC TOGS standards and guidance values are shaded.
3. PCE = tetrachloroethylene
4. TCE = trichloroethylene
5. cis-1,2-DCE = cis-1,2-Dichloroethylene

6. µg/L = microgram per liter
7. CVOC = chlorinated volatile organic compounds
8. * = Monitoring well is located in the sidewalk adjacent to the warehouse.
9. ND = Non detect

TABLE 7: QUARTERLY GROUNDWATER SAMPLING RESULTS SUMMARY
FORMER WATERMARK DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

Compound	NYSDEC TOGS STANDARDS AND GUIDANCE VALUES	Sampling Location												
		MW-1	MW-2	MW-3S	MW-3M	MW-3D	MW-4	MW-5	MW-6*	MW-7*	MW-8*	MW-9	PZ-1	PZ-2
Eighth Quarter Sampling Results Summary (µg/L) - October 2017														
CVOCs	~	4.5	4.39	4.5	20.3	19.31	4.27	4.08	276	4.5	10.08	6.18	4.5	4.5
PCE	5	0.5	0.42	0.5	15	15	0.5	0.36	160	0.5	0.78	1.8	0.5	0.5
TCE	5	0.5	0.47	0.5	1.8	0.81	0.27	0.22	93	0.5	3.3	0.88	0.5	0.5
cis-1,2- DCE	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	21	2.5	5	2.5	2.5	2.5
vinyl chloride	2	1	1	1	1	1	1	1	2	1	1	1	1	1
Q8 Percent CVOC Reduction from Last Quarter (Q7)		<i>None</i>	<i>5%</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>9%</i>	<i>64%</i>	<i>Increased</i>	<i>41%</i>	<i>Increased</i>	<i>70%</i>	<i>Increased</i>
Q8 Percent CVOC Reduction from Baseline		<i>100%</i>	<i>100%</i>	<i>99%</i>	<i>13%</i>	<i>31%</i>	<i>99%</i>	<i>98%</i>	<i>78%</i>	<i>100%</i>	<i>98%</i>	<i>99.0%</i>	<i>100%</i>	<i>99%</i>
Ninth Quarter Sampling Results Summary (µg/L) - January 2018														
CVOCs	~	4.08	4.49	4.5	20.1	18.7	4.32	4.24	623.71	4.5	10.99	6.9	5.86	4.5
PCE	5	0.26	0.63	0.5	15	14	0.2	0.48	430	0.5	0.99	2	1.7	0.5
TCE	5	0.32	0.36	0.5	1.6	1.2	0.62	0.26	180	0.5	3.5	1.4	0.66	0.5
cis-1,2- DCE	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	13	2.5	5.5	2.5	2.5	2.5
vinyl chloride	2	1	1	1	1	1	1	1	0.71	1	1	1	1	1
Q9 Percent CVOC Reduction from Last Quarter (Q8)		<i>9%</i>	<i>Increased</i>	<i>0%</i>	<i>1%</i>	<i>3%</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>0%</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>0%</i>
Q9 Percent CVOC Reduction from Baseline		<i>100%</i>	<i>100%</i>	<i>99%</i>	<i>14%</i>	<i>33%</i>	<i>99%</i>	<i>98%</i>	<i>50%</i>	<i>100%</i>	<i>98%</i>	<i>99%</i>	<i>99%</i>	<i>99%</i>
Tenth Quarter Sampling Results Summary (µg/L) - April 2018														
CVOCs	~	6.1	15	10	20.6	19.5	5.62	19.3	357.5	5.72	12	8.6	11.6	26.1
PCE	5	1.4	9.1	4	15	15	1.2	14	240	1.4	3.9	3.8	5.7	14
TCE	5	1.2	2.4	2.5	2.1	1	0.92	3	100	0.82	3.6	1.3	2.6	4.4
cis-1,2- DCE	5	2.5	2.5	2.5	2.5	2.5	2.5	1.3	15	2.5	3.5	2.5	2.3	6.7
vinyl chloride	2	1	1	1	1	1	1	1	2.5	1	1	1	1	1
Q10 Percent CVOC Reduction from Last Quarter (Q9)		<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>43%</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>
Q10 Percent CVOC Reduction from Baseline		<i>99.5%</i>	<i>99%</i>	<i>99%</i>	<i>12%</i>	<i>30%</i>	<i>99%</i>	<i>89%</i>	<i>71%</i>	<i>100%</i>	<i>97%</i>	<i>99%</i>	<i>99%</i>	<i>94%</i>
Eleventh Quarter Sampling Results Summary (µg/L) - June 2018														
CVOCs	~	8.5	27.88	9.1	15.2	18.74	2.3	20.1	309	6.6	13	14.4	27.5	48.8
PCE	5	4.5	21	5.6	13	18	1.2	15	200	4.3	5.3	9.5	19	32
TCE	5	4	6.1	3.5	2.2	0.74	1.1	3.7	95	2.3	4.8	3.3	6.5	9.5
cis-1,2- DCE	5	ND	0.78	ND	ND	ND	ND	1.4	14	ND	2.9	1.6	2	7.3
vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Q11 Percent CVOC Reduction from Last Quarter (Q10)		<i>Increased</i>	<i>Increased</i>	<i>9%</i>	<i>26%</i>	<i>4%</i>	<i>59%</i>	<i>Increased</i>	<i>14%</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>
Q11 Percent CVOC Reduction from Baseline		<i>99%</i>	<i>99%</i>	<i>99%</i>	<i>35%</i>	<i>33%</i>	<i>100%</i>	<i>89%</i>	<i>75%</i>	<i>99%</i>	<i>97%</i>	<i>98%</i>	<i>97%</i>	<i>89%</i>

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA water.
- Results equal to or exceeding the NYSDEC TOGS standards and guidance values are shaded.
- PCE = tetrachloroethylene
- TCE = trichloroethylene
- cis-1,2-DCE = cis-1,2-Dichloroethylene

- µg/L = microgram per liter
- CVOC = chlorinated volatile organic compounds
- * = Monitoring well is located in the sidewalk adjacent to the warehouse.
- ND = Non detect

TABLE 8: SEMI-ANNUAL, NEAR-FIELD, OFF-SITE GROUNDWATER SAMPLING RESULTS - JUNE 2018
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C244139

Sample ID Laboratory ID Sampling Date	NYSDEC TOGS Standards and Guidance Values	ML-002S_062718 L1824506-02 6/27/2018	ML-002M_062718 L1824506-04 6/27/2018	ML-002D_062718 L1824506-03 6/27/2018	MW-10_062718 L1824506-06 6/27/2018	MW-11_062718 L1824506-07 6/27/2018
Volatile Organic Compounds (µg/L)						
1,1-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.46 J	0.5 U
1,2-Dichloroethene, Total	~	2.5 U	2.5 U	2.5 U	14	2.5 U
1,2-Dichloropropane	1	1 U	1 U	1 U	0.71 J	1 U
Acetone	50	5 U	1.6 J	5 U	5 U	1.8 J
Bromodichloromethane	50	0.54	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	7	9.9	2.5 U	2.5 U	4.3	1.3 J
cis-1,2-Dichloroethene	5	2.5 U	2.5 U	2.5 U	14	2.5 U
Tetrachloroethene	5	2	16	13	36	12
Trichloroethene	5	0.83	3	0.9	18	8.2

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA water.
- Only detected compounds are shown.
- Results equal to or exceeding the NYSDEC TOGS SGVs are shaded and bolded.
- µg/L = micrograms per liter
- ~ = regulatory criteria have not been established for this compound
- Five monitoring wells were sampled as part of the fourth round of semi-annual, near-field, off-site groundwater sampling.

Qualifiers:

J = Analyte detected at or above the MDL (Method Detection Limit) but below the RL - data is estimated.
U = Analyte not detected at or above the level indicated.

**TABLE 9: SEMI-ANNUAL, NEAR-FIELD, OFF-SITE GROUNDWATER SAMPLING RESULTS SUMMARY
FORMER WATERMARKS DESIGN FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139**

Compound	NYSDEC TOGS STANDARDS AND GUIDANCE VALUES	Sampling Location				
		ML002S	ML002M	ML002D	MW10	MW11
NYSDEC-Requested Sample Results Summary (µg/L) - July 2016 (Baseline)						
CVOCs	~	38.17	16.54	--	188.2	2.9
PCE	5	17	14	NS	120	1.50
TCE	5	20	2.10	NS	57	1
cis-1,2- DCE	5	0.97	0.24	NS	11	0.20
vinyl chloride	2	0.20	0.20	NS	0.20	0.20
Round 1 Sampling Results Summary (µg/L) - April 2017						
CVOCs	~	5.49	19.9	14.1	12.23	4.58
PCE	5	1.4	14	9.5	5.6	0.56
TCE	5	0.59	2.4	1.1	4.7	0.52
cis-1,2- DCE	5	2.5	2.5	2.5	0.93	2.5
vinyl chloride	2	1	1	1	1	1
Round 1 Percent CVOC Reduction		86%	<i>Increased</i>	--	94%	<i>Increased</i>
Round 2 Sampling Results Summary (µg/L) - October 2017						
CVOCs	~	4.91	26.1	14.5	14.93	10.7
PCE	5	1.1	17	10	8.8	5.6
TCE	5	0.31	5.6	1	4.2	1.6
cis-1,2- DCE	5	2.5	2.5	2.5	0.93	2.5
vinyl chloride	2	1	1	1	1	1
Round 2 Percent CVOC Reduction from Round 1		11%	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>	<i>Increased</i>
Round 2 Percent CVOC Reduction from Baseline		87%	<i>Increased</i>	--	92%	<i>Increased</i>
Round 3 Sampling Results Summary (µg/L) - April 2018						
CVOCs	~	27.1	5.44	15.5	93	10
PCE	5	20	1.5	11	44	4.7
TCE	5	3.6	0.44	1	22	1.8
cis-1,2- DCE	5	2.5	2.5	2.5	26	2.5
vinyl chloride	2	1	1	1	1	1
Round 3 Percent CVOC Reduction from Round 2		<i>Increased</i>	79%	<i>Increased</i>	<i>Increased</i>	7%
Round 3 Percent CVOC Reduction from Baseline		29%	67%	--	51%	<i>Increased</i>
Round 4 Sampling Results Summary (µg/L) - June 2018						
CVOCs	~	2.83	19	13.9	68	20.2
PCE	5	2	16	13	36	12
TCE	5	0.83	3	0.9	18	8.2
cis-1,2- DCE	5	ND	ND	ND	14	ND
vinyl chloride	2	ND	ND	ND	ND	ND
Round 4 Percent CVOC Reduction from Round 3		90%	<i>Increased</i>	10%	27%	<i>Increased</i>
Round 4 Percent CVOC Reduction from Baseline		93%	<i>Increased</i>	--	64%	<i>Increased</i>

Notes:

- Groundwater sample analytical results are compared to New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA water.
- Results exceeding the NYSDEC TOGS standards and guidance values are shaded.
- PCE = tetrachloroethylene
- TCE = trichloroethylene
- cis-1,2-DCE = cis-1,2-Dichloroethylene
- µg/L = microgram per liter
- CVOC = chlorinated volatile organic compounds
- NS = not sampled
- ND = not detected

TABLE 10: ANNUAL VAPOR SAMPLING RESULTS – JUNE 2018
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139

Sample ID	VP-1_062718	VP-2_062818	VP-3_062718	VP-4_062818	VP-5_062718	VP-6_062818	VP-7_062818
Laboratory ID	L1824493-01	L1824790-04	L1824493-02	L1824790-01	L1824493-03	L1824790-02	L1824790-03
Sampling Date	6/27/2018	6/28/2018	6/27/2018	6/28/2018	6/27/2018	6/28/2018	6/28/2018
Volatile Organic Compounds (µg/m³)							
1,1,1-Trichloroethane	10.9 U	6.06	13.2	29.6	34.9	5.21	11.2
1,1-Dichloroethane	8.09 U	1.62	5.06	4.78	2.74	0.809 U	1.62 U
1,2,4-Trimethylbenzene	9.83 U	3.91	3.24	3.28 U	3.79	3.64	1.97 U
1,2-Dichloropropane	28.4	46.2	34	33	24.3	49	41.5
1,4-Dioxane	7.21 U	0.721 U	1.44 U	2.4 U	0.814	0.721 U	1.44 U
2,2,4-Trimethylpentane	9.34 U	0.934 U	1.87 U	4.42	0.934 U	0.934 U	1.87 U
2-Butanone	56.3	7.93	31.6	69.9	124	56.6	34.5
Acetone	44.2	18.1	35.2	25.9	32.3	73.2	24.5
Benzene	6.39 U	0.639 U	1.28 U	2.13 U	0.639 U	1.28	1.28 U
Carbon disulfide	6.23 U	0.719 U	1.25 U	2.08 U	1.61	2.51	1.25 U
Chloroethane	5.28 U	0.528 U	1.06 U	1.76 U	0.528 U	8	1.06 U
Chloroform	9.77 U	6.74	20.1	5.32	4.04	2.05	11.5
Chloromethane	4.13 U	0.762	0.826 U	1.38 U	0.448	3.24	0.826 U
cis-1,2-Dichloroethene	7.93 U	1.81	2.74	2.64 U	0.793 U	0.793 U	1.59 U
Cyclohexane	6.88 U	0.688 U	1.38 U	2.3 U	0.688 U	1.12	1.38 U
Dichlorodifluoromethane	9.89 U	2.3	2.24	3.3 U	2.31	2.09	2
Ethanol	118	49	176	31.5 U	56.2	81.2	41.1
Ethyl Acetate	28.8	6.23	50.5	6.02 U	23.2	3.93	3.86
Ethylbenzene	8.69 U	4.19	4.69	2.95	5.47	4.23	2.68
Heptane	8.2 U	1.43	1.64 U	2.73 U	1.07	1.84	1.64 U
Isopropanol	12.3 U	2.88	5.73	4.1 U	2.29	8.21	2.46 U
Methylene chloride	17.4 U	3.29	10.9	5.8 U	10.9	9.41	3.47 U
n-Hexane	7.05 U	0.705 U	4.16	2.35 U	3.24	9.02	1.41 U
o-Xylene	8.69 U	8.38	9.69	5.39	10.9	8.3	5.26
p/m-Xylene	17.4 U	17.4	20.9	11.3	23.4	17.5	10.5
Styrene	8.52 U	1.52	1.7 U	2.84 U	1.46	1.51	1.7 U
Tetrachloroethene	13.6 U	3.09	8.27	29.5	43.5	7.93	12
Tetrahydrofuran	156	5.1	63.4	64	191	48.7	20.7
Toluene	7.54 U	13.2	9.04	12.7	9.42	16.4	11.8
Trichloroethene	2900	387	828	1330	377	403	548
Trichlorofluoromethane	11.2 U	1.62	2.25 U	3.75 U	1.69	1.53	2.25 U
1,1,1-Trichloroethane	6.71	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	1.74	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2.64	NA	NA	NA	NA	NA	NA

Notes:

1. Only compounds with detections are shown.
2. (µg/m³) = micrograms per cubic meter
3. NA = Not analyzed

Qualifiers:

U = Analyte not detected at or above the level indicated.

**TABLE 11: ANNUAL VAPOR SAMPLING RESULTS SUMMARY
FORMER WATERMARKS DESIGNS FACILITY
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139**

Compound	Sampling Location						
	VP-01	VP-02	VP-03	VP-04	VP-05	VP-06	VP-07
Baseline Sampling Results Summary (ug/m³) - August 2015							
CVOCs	1,909,219	3,414,000	2,044,050	309,649	371,597	47,923	390,070
PCE	18,000	32,800	22,700	10,400	2,400	5,250	6,850
TCE	1,890,000	3,380,000	2,020,000	299,000	369,000	42,500	383,000
cis-1,2- DCE	741	730	821	151	120	105	145
vinyl chloride	478	470	529	97.6	77.2	67.7	75.2
First Annual Sampling Results Summary (ug/m³) - July 2016							
CVOCs	3,346	5,595	11,255	320	576	2,325	1,065
PCE	230	370	240	25	130	1400	49
TCE	3,100	5,200	11,000	280	430	910	1,000
cis-1,2- DCE	9.6	19	9.2	9.2	9.6	9	9.5
vinyl chloride	6.2	5.7	5.9	5.9	6.2	5.8	6.1
Percent CVOC Reduction (Round 1)	99.8%	99.8%	99.4%	99.9%	99.8%	95%	99.7%
Second Annual Sampling Results Summary (ug/m³) - June 2018							
CVOCs	2,914	392	839	1,360	421	411	560
PCE	13.6	3.09	8.27	29.5	43.5	7.93	12
TCE	2900	387	828	1330	377	403	548
cis-1,2- DCE	ND	1.81	2.74	ND	ND	ND	ND
vinyl chloride	ND	ND	ND	ND	ND	ND	ND
Percent CVOC Reduction (Round 2) from Round 1	12.9%	93.0%	92.5%	<i>Increased</i>	27.0%	82.3%	47.4%
Percent CVOC Reduction from Baseline	99.8%	99.9%	99.9%	<i>99.6%</i>	99.9%	99.1%	99.9%

Notes:

1. Only compounds with detections are shown.
2. ug/m³ = micrograms per cubic meter
3. PCE = tetrachloroethylene
4. TCE = trichloroethylene
5. cis-1,2-DCE = cis-1,2-Dichloroethylene
6. CVOC = chlorinated volatile organic compounds
7. ND = Non-detect

Progress/Inspection Report No. 15
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: July 2018

1. Introduction

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion.

2. Remedial Actions Relative to the Site during this Reporting Period

AS/SVE System Operation, Maintenance, and Monitoring

As stated on the June 2018 Progress/Inspection Report, the AS/SVE system was restarted and operation, maintenance, and monitoring (OM&M) activities were performed on July 2, 2018 following the completion of the contaminant rebound test and reactivation of the air sparge and soil vapor extraction (AS/SVE) system.

As part of the monthly inspection, vapor samples were collected prior to the lead vapor-phase granular activated carbon (vGAC) unit (i.e., influent) and after the lag vGAC unit (i.e., effluent). Routine equipment maintenance was performed; OM&M on the system had not been conducted since March 2018.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

- Continued OM&M of the AS/SVE system
- Submission of a letter to the NYSDEC documenting the results of the contaminant rebound test with recommendations to shut down the AS/SVE system.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

OM&M sampling was performed as follows:

- An influent vapor sample was collected from the AS/SVE system and analyzed for volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method TO-15.
- An effluent vapor sample was collected from the AS/SVE system and analyzed for VOCs via USEPA Method TO-15.

Samples were analyzed by Alpha Analytical of Westborough, MA. Alpha is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory.

Based on the results of the most recent OM&M sampling, the AS/SVE system is functioning in compliance with Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants (DAR-1).

The following tables are attached to this progress report; analytical lab results are available upon request. The tables summarize the data collected and the functionality of the AS/SVE system, including mass of VOCs removed from the subsurface based on photoionization detector (PID) readings and laboratory data, as well as, the alarm history.

- Table 1 – AS/SVE System Vapor Sampling Results
- Table 2 – AS/SVE System Mass Removal – PID Data
- Table 3 – AS/SVE System Mass Removal – Total VOCs
- Table 4 – AS/SVE System DAR-1 Compliance
- Table 5 – AS/SVE System Alarm History

6. Deliverables Submitted During This Reporting Period

None

7. Information Regarding Percentage of Completion

As of July 2, 2018 and since the system was first started, the SVE system operated for 18,967 hours (92% uptime), and the AS system operated for 18,497 hours (90% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

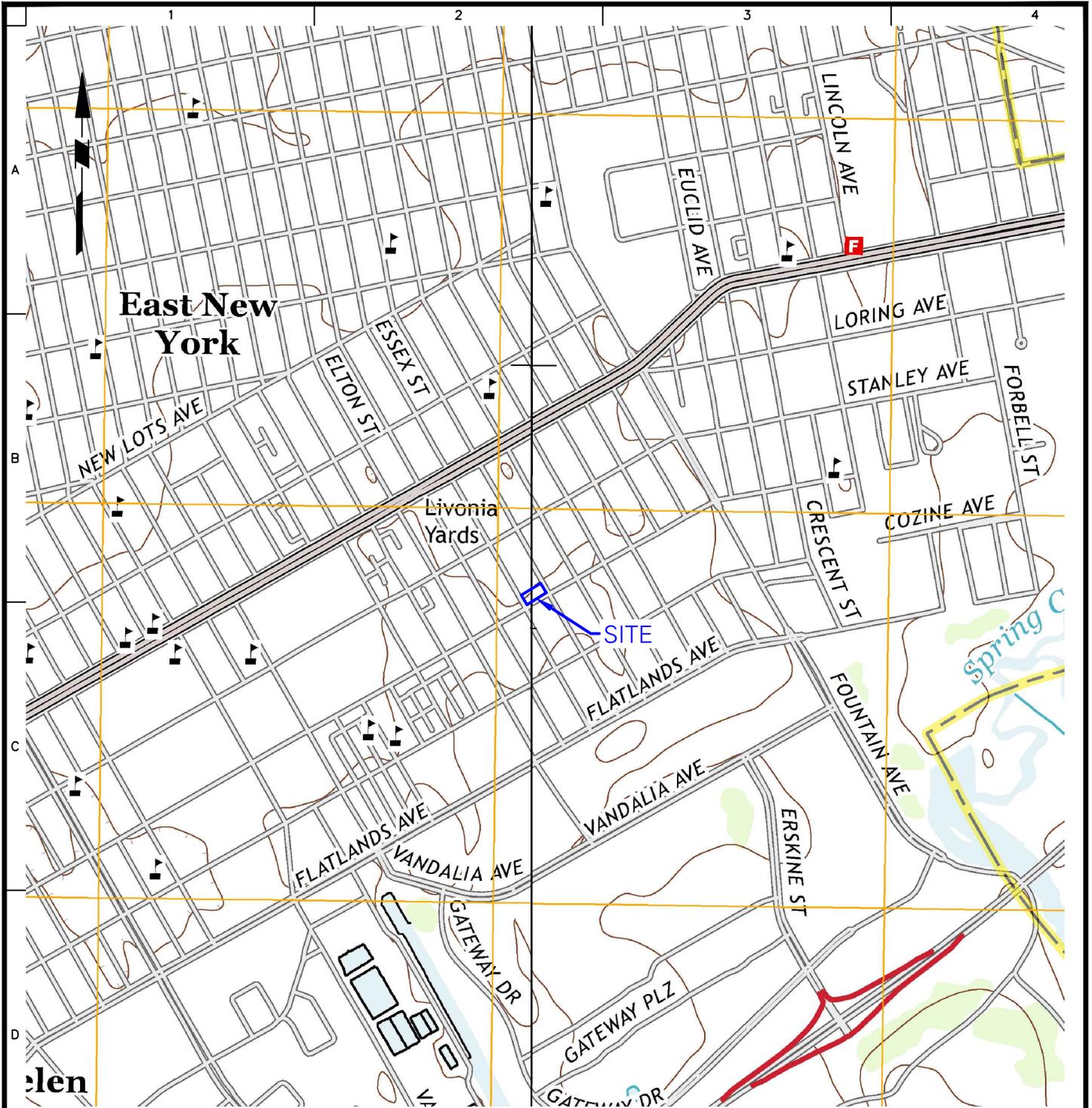
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:



APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

<p>21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com</p> <p>Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan</p>	<p>Project</p> <p>491 WORTMAN AVENUE</p> <p>BLOCK No. 4384, LOT Nos. 31 & 36 BROOKLYN</p> <p>KINGS NEW YORK</p>	<p>Figure Title</p> <p>SITE LOCATION MAP</p>	<p>Project No. 170329301</p> <p>Date 04/18/2015</p> <p>Scale N.T.S.</p> <p>Drawn By MLR</p> <p>Checked By GN</p> <p>Submission Date</p>	<p>Figure</p> <p>1</p> <p>Sheet 1 of 3</p>
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TABLES

TABLE 1: AS/SVE SYSTEM VAPOR SAMPLING RESULTS
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

LOCATION	vGAC INFLUENT		vGAC EFFLUENT	
SAMPLE ID	INFLUENT_070218		EFFLUENT_070218	
LAB SAMPLE ID	L1825168-01		L1825168-02	
SAMPLE DATE	7/2/2018		7/2/2018	
Volatile Organic Compounds (ug/m3)				
1,1,1-Trichloroethane	30.8	U	1.09	U
1,1,2,2-Tetrachloroethane	38.7	U	1.37	U
1,1,2-Trichloroethane	30.8	U	2.4	
1,1-Dichloroethane	22.8	U	0.809	U
1,1-Dichloroethene	22.4	U	0.793	U
1,2,4-Trichlorobenzene	41.9	U	1.48	U
1,2,4-Trimethylbenzene	27.7	U	1.18	
1,2-Dibromoethane	43.3	U	1.54	U
1,2-Dichlorobenzene	33.9	U	1.2	U
1,2-Dichloroethane	22.8	U	0.866	
1,2-Dichloropropane	41.7		0.924	U
1,3,5-Trimethylbenzene	27.7	U	0.983	U
1,3-Butadiene	12.5	U	0.442	U
1,3-Dichlorobenzene	33.9	U	1.2	U
1,4-Dichlorobenzene	33.9	U	1.2	U
1,4-Dioxane	20.3	U	0.721	U
2,2,4-Trimethylpentane	26.3	U	0.934	U
2-Butanone	41.6	U	1.95	
2-Hexanone	23.1	U	0.82	U
3-Chloropropene	17.7	U	0.626	U
4-Ethyltoluene	27.7	U	0.983	U
4-Methyl-2-pentanone	57.8	U	2.05	U
Acetone	75.3		18.5	
Benzene	18	U	0.639	U
Benzyl chloride	29.2	U	1.04	U
Bromodichloromethane	75		1.34	U
Bromoform	58.3	U	2.07	U
Bromomethane	21.9	U	0.777	U
Carbon disulfide	17.6	U	2.46	
Carbon tetrachloride	35.5	U	1.26	U
Chlorobenzene	26	U	0.921	U
Chloroethane	14.9	U	0.528	U
Chloroform	35.4		2.27	
Chloromethane	11.6	U	0.607	
cis-1,2-Dichloroethene	22.4	U	7.85	
cis-1,3-Dichloropropene	25.6	U	0.908	U
Cyclohexane	19.4	U	0.688	U
Dibromochloromethane	48	U	1.7	U
Dichlorodifluoromethane	27.9	U	4.04	
Ethanol	266	U	16.7	
Ethyl Acetate	50.8	U	1.8	U
Ethylbenzene	24.5	U	0.869	U
Freon-113	43.2	U	1.53	U
Freon-114	39.4	U	1.4	U
Heptane	23.1	U	0.82	U
Hexachlorobutadiene	60.2	U	2.13	U
Isopropanol	34.7	U	1.77	
Methyl tert butyl ether	20.3	U	0.721	U
Methylene chloride	49	U	23	
n-Hexane	19.9	U	5.6	
o-Xylene	24.5	U	0.869	U
p/m-Xylene	49.1	U	1.74	U
Styrene	24	U	0.852	U
Tertiary butyl Alcohol	42.7	U	1.52	U
Tetrachloroethene	201		2.22	
Tetrahydrofuran	41.6	U	1.47	U
Toluene	21.3	U	4.45	
trans-1,2-Dichloroethene	22.4	U	0.924	
trans-1,3-Dichloropropene	25.6	U	0.908	U
Trichloroethene	7470		3.38	
Trichlorofluoromethane	31.7	U	2.61	
Vinyl bromide	24.7	U	0.874	U
Vinyl chloride	14.4	U	0.511	U
Total VOCs	7898.4		102.777	

NOTES:

1. ug/m³ = micrograms per cubic meter
2. vGAC = vapor-phase granular activated carbon
3. Samples collected at the "vGAC INFLUENT" were collected before to the lead vGAC vessel.
4. Samples collected at the "vGAC EFFLUENT" were collected after the lag vGAC vessel.

Q is the Qualifier Column with definitions as follows:

U = The analyte was not detected at or above the level indicated.

**TABLE 2: AS/SVE SYSTEM MASS REMOVAL - PID DATA
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139**

DATE	INFLUENT CONCENTRATION (ppmv)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ppmv)	TOTAL OPERATIONAL HOURS	AVERAGE MOLECULAR WEIGHT	MASS REMOVAL RATE (lbs/hr)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	CUMULATIVE MASS REMOVED FROM SUBSURFACE (lbs)
10/21/2015	55.0	688	1.8	30	100	0.57	17.02	17.02
10/26/2015	8.3	650	0.6	150	100	0.08	9.31	26.34
11/6/2015	5.5	560	0.0	383	100	0.05	11.13	37.46
11/30/2015	1.9	593	0.3	958	100	0.01	8.46	45.92
12/28/2015	3.7	570	0.0	1,548	100	0.03	19.29	65.21
1/27/2016	1.2	525	0.5	2,180	100	0.01	3.60	68.81
2/24/2016	2.5	578	0.0	2,854	100	0.02	15.10	83.91
3/30/2016	0.2	550	0.0	3,693	100	0.002	1.43	85.34
4/29/2016	2.0	571	0.0	4,322	100	0.018	11.14	96.48
5/26/2016	0.4	600	0.0	4,972	100	0.004	2.42	98.90
6/29/2016	0.5	600	0.0	5,784	100	0.005	3.78	102.68
7/28/2016	3.0	600	0.0	6,431	100	0.028	18.06	120.73
8/31/2016	2.7	600	0.0	7,110	100	0.025	17.05	137.79
9/29/2016	7.5	760	2.0	7,802	100	0.065	44.85	182.63
10/31/2016	0.0	520	0.0	8,516	100	0.000	0.00	182.63
11/29/2016	0.0	560	0.0	9,211	100	0.000	0.00	182.63
12/28/2016	0.0	520	0.0	9,884	100	0.000	0.00	182.63
1/25/2017	2.8	600	0.0	10,530	100	0.026	16.83	199.46
3/7/2017	0.1	360	0.0	11,186	100	0.001	0.37	199.82
4/27/2017	0.0	600	0.0	12,185	100	0.000	0.00	199.82
5/25/2017	0.8	600	0.0	12,760	100	0.008	4.42	204.24
6/28/2017	0.04	600	0.0	13,575	100	0.000	0.33	204.57
7/21/2017	0.0	600	0.0	14,060	100	0.000	0.00	204.57
8/25/2017	0.0	600	0.0	14,852	100	0.000	0.00	204.57
9/27/2017	0.7	600	0.08	15,641	100	0.006	4.55	209.12
11/1/2017	0.0	640	0.00	16,422	100	0.000	0.00	209.12
11/28/2017	0.0	600	0.00	17,069	100	0.000	0.00	209.12
12/28/2017	0.0	560	0.00	17,618	100	0.000	0.00	209.12
1/31/2018	0.0	600	0.00	18,382	100	0.000	0.00	209.12
3/1/2018	0.0	580	0.00	18,961	100	0.000	0.00	209.12
7/2/2018	7,898.4	580	102.78	18,961	100	70.100	0.00	209.12

NOTES:

1. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
2. The influent and effluent concentrations are based on the PID readings.
3. Mass Removal rate (lb/hr) = ((Conc in ppmv)(flowrate scfm)(MW)(60 min/hr)) / ((387)(1,000,000)).
4. PID = photoionization detector
5. ppmv = parts per million volume
6. scfm = standard cubic feet per minute
7. lbs/hr = pounds per hour
8. lbs = pounds
9. SVE = soil vapor extraction

TABLE 3: AS/SVE SYSTEM MASS REMOVAL - LABORATORY DATA (TOTAL VOCs)
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

DATE	INFLUENT CONCENTRATION (ug/m3)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ug/m3)	TOTAL OPERATIONAL HOURS	INFLUENT RATE (mg/min)	EFFLUENT RATE (mg/min)	REMOVAL RATE (mg/min)	MASS REMOVED FROM SUBSURFACE (lbs)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	MASS REMOVED BY CARBON (lbs)	TOTAL MASS REMOVED BY CARBON (lbs)
10/20/2015	114,348	640	9,241	12	2049.12	165.60	1883.52	3.25	3.25	2.99	2.99
10/21/2015	32,758	688	1,129	30	631.05	21.75	609.30	1.50	4.76	1.45	4.44
10/26/2015	7,027	650	383	150	127.89	6.97	120.92	2.03	6.79	1.92	6.36
11/30/2015	3,144	593	426	958	52.20	7.07	45.13	5.58	12.36	4.82	11.18
12/28/2015	3,357	570	230	1,548	53.58	3.67	49.91	4.18	16.55	3.89	15.08
1/27/2016	621	525	183	2,180	9.13	2.69	6.44	0.76	17.31	0.54	15.62
2/24/2016	1,454	578	283	2,854	23.53	4.58	18.94	2.10	19.41	1.69	17.31
3/30/2016	825	550	75	3,693	12.71	1.16	11.55	1.41	20.82	1.28	18.59
4/29/2016	482	571	112	4,322	7.70	1.79	5.91	0.64	21.46	0.49	19.08
5/26/2016	1,169	600	162	4,972	19.64	2.73	16.91	1.69	23.15	1.45	20.53
6/29/2016	1,865	600	190	5,784	31.33	3.19	28.14	3.37	26.51	3.02	23.56
7/28/2016	3,706	600	232	6,431	62.26	3.90	58.36	5.33	31.84	4.99	28.55
8/31/2016	4,798	600	135	7,110	80.61	2.26	78.35	7.24	39.08	7.04	35.59
9/29/2016	1,045	760	179	7,802	22.24	3.81	18.43	2.04	41.12	1.69	37.27
10/31/2016	922	520	91	8,516	13.42	1.32	12.10	1.27	42.38	1.14	38.42
11/29/2016	790	560	167	9,211	12.38	2.62	9.76	1.14	43.52	0.90	39.31
12/28/2016	282	520	123	9,884	4.11	1.79	2.32	0.37	43.89	0.21	39.52
1/25/2017	4.7	600	5.6	10,530	0.08	0.09	-0.02	0.01	43.89	0.00	39.52
3/7/2017	762	360	120	11,186	7.68	1.21	6.47	0.67	44.56	0.56	40.08
4/27/2017	1,008	600	86	12,185	16.93	1.44	15.49	2.24	46.80	2.05	42.13
5/25/2017	771	600	48	12,760	12.95	0.81	12.15	0.99	47.78	0.92	43.05
6/28/2017	754	600	69	13,575	12.66	1.16	11.50	1.36	49.15	1.24	44.29
7/21/2017	2,434	600	235	14,060	40.89	3.95	36.94	2.62	51.77	2.37	46.66
8/25/2017	1,334	600	246	14,852	22.41	4.13	18.28	2.35	54.12	1.91	48.58
9/27/2017	1,059	600	83	15,641	17.79	1.39	16.40	1.86	55.98	1.71	50.29
11/1/2017	1,227	640	85	16,422	21.99	1.52	20.47	2.27	58.25	2.11	52.40
11/28/2017	295	600	64	17,069	4.96	1.08	3.88	0.42	58.67	0.33	52.73
12/28/2017	258	560	29	17,618	4.05	0.45	3.59	0.29	58.97	0.26	53.00
1/31/2018	289	600	13	18,382	4.85	0.23	4.62	0.49	59.46	0.47	53.46
3/1/2018	534	580	68	18,961	8.67	1.11	7.57	0.66	60.12	0.58	54.04
7/2/2018	7,898	580	103	18,961	128.27	1.67	126.60	0.00	60.12	0.00	54.04

NOTES:

- Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
- The influent and effluent concentrations are based on the lab analytical data and not the PID readings.
- ug/m3 = micrograms per cubic meter
- scfm = standard cubic feet per minute
- mg/min = milligrams per minute
- lbs = pounds
- SVE = soil vapor extraction
- Influent and effluent soil vapor samples collected on July 2, 2018 were sampled shortly after the air sparging/soil vapor extraction (AS/SVE) system restart; therefore, no mass was removed from the subsurface between March 1, 2018 and July 2, 2018 during the long-term contaminant rebound test.

TABLE 4: AS/SVE SYSTEM DAR-1 COMPLIANCE
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139

SAMPLING DATE: 7/2/2018

CHEMICAL COMPOUND	CARBON EFFLUENT CONCENTRATION MEASURED ($\mu\text{g}/\text{m}^3$)	EMISSION FLOWRATE MEASURED		OUTLET CONCENTRATION (Q_p) (lb/hr)	OUTLET CONCENTRATION (Q_a) (lb/yr)	MAX ANNUAL IMPACT (C_a) ($\mu\text{g}/\text{m}^3$)	MAX POTENTIAL IMPACT (C_p) ($\mu\text{g}/\text{m}^3$)	MAX SHORT-TERM IMPACT (C_{st}) ($\mu\text{g}/\text{m}^3$)	DAR-1 STANDARDS		EMISSION RESTRICTION REQUIRED (if $C_p > \text{AGC}$ and $C_a < \text{AGC}$)	SGC EMISSION EXCEEDANCE (if $C_{st} > \text{SGC}$)	AGC EMISSION EXCEEDANCE (if $C_a > \text{AGC}$)
		(SCFM)	(m^3/min)						SGC ($\mu\text{g}/\text{m}^3$)	AGC ($\mu\text{g}/\text{m}^3$)			
Volatile Organics, USEPA TO-15 Full List ($\mu\text{g}/\text{m}^3$)													
1,2,4-Trimethylbenzene	1.18	580	16.42386	2.56E-06	2.24E-02	2.01E-04	2.01E-04	1.31E-02	--	6	NO	No Standard	NO
2-Butanone	1.95	580	16.42386	4.23E-06	3.70E-02	3.33E-04	3.33E-04	2.16E-02	13000	5000	NO	NO	NO
Acetone	18.50	580	16.42386	4.01E-05	3.51E-01	3.16E-03	3.16E-03	2.05E-01	180,000	30,000	NO	NO	NO
Carbon disulfide	2.46	580	16.42386	5.33E-06	4.67E-02	4.20E-04	4.20E-04	2.73E-02	6,200	700	NO	NO	NO
Chloroform	2.27	580	16.42386	4.92E-06	4.31E-02	3.88E-04	3.87E-04	2.52E-02	150	0.04	NO	NO	NO
Chloromethane	0.61	580	16.42386	1.32E-06	1.15E-02	1.04E-04	1.04E-04	6.73E-03	6,200	700	NO	NO	NO
cis-1,2-Dichloroethylene	7.85	580	16.42386	1.70E-05	1.49E-01	1.34E-03	1.34E-03	8.70E-02	--	63	NO	No Standard	NO
Dichlorodifluoromethane	4.04	580	16.42386	8.76E-06	7.67E-02	6.90E-04	6.89E-04	4.48E-02	--	12,000	NO	No Standard	NO
Ethanol	16.70	580	16.42386	3.62E-05	3.17E-01	2.85E-03	2.85E-03	1.85E-01	--	45,000	NO	No Standard	NO
Isopropanol	1.77	580	16.42386	3.84E-06	3.36E-02	3.02E-04	3.02E-04	1.96E-02	98,000	7,000	NO	NO	NO
Methylene chloride	23.00	580	16.42386	4.99E-05	4.37E-01	3.93E-03	3.92E-03	2.55E-01	14,000	60	NO	NO	NO
n-Hexane	5.60	580	16.42386	1.21E-05	1.06E-01	9.56E-04	9.55E-04	6.21E-02	--	700	NO	No Standard	NO
Tetrachloroethene	2.22	580	16.42386	4.81E-06	4.22E-02	3.79E-04	3.79E-04	2.46E-02	300	4	NO	NO	NO
Toluene	4.45	580	16.42386	9.65E-06	8.45E-02	7.60E-04	7.59E-04	4.93E-02	37,000	5,000	NO	NO	NO
Trichloroethylene	3.38	580	16.42386	7.33E-06	6.42E-02	5.77E-04	5.76E-04	3.75E-02	14,000	0.2	NO	NO	NO
Trichlorofluoromethane	2.61	580	16.42386	5.66E-06	4.96E-02	4.46E-04	4.45E-04	2.89E-02	9,000	5,000	NO	NO	NO

NOTES AND QUALIFIERS:

1. Table only displays chemical compounds with detectable concentrations.
2. Concentrations below reporting limit (non detect) are assumed to be zero.
3. Air samples were analyzed for USEPA TO-15 compounds
4. All equations are referenced in NYSDEC, Division of Air Resources, Air Guide 1, Guidelines for the Control of Toxic Ambient Air Contaminants (11/12/97). Standard Point Source Method calculations were used.
5. Values in table are compared to DAR-1 Annual Guideline Concentrations (AGC)/Short-Term Guideline Concentrations (SGC) Tables dated February 28, 2014.
6. DAR-1 AGC and/or SGC values listed as "--" means there is no AGC or SGC standard for that compound.
7. SCFM = standard cubic feet per minute
8. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
9. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
10. m^3/min = cubic meter per minute
11. lb/hr = pounds per hour
12. lb/yr = pounds per year

**TABLE 5: AS/SVE SYSTEM ALARM HISTORY
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139**

DATE	ALARM	ALARM DESCRIPTION	REASON	REMEDY
10/23/2015	PAL-2501	Compressor Low Pressure Alarm	Uncertain of the reason. There may be a power fluctuation that trips the low pressure alarm, which shuts the AS system down.	On-site observation confirmed that this was a false alarm and was not caused by compressor failure or a breach in the air sparge manifold. The alarm was manually reset.
10/28/2015	LAH-7301	Storage Tank High Level Alarm	The SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into nine 55-gallon drums, and the SVE system vacuum has been optimized to extract a lesser volume of water.
11/5/2015	PAL-2501	Compressor Low Pressure Alarm	Caused by the air sparge compressor on/off time, which won't allow "OFF" time to be set to zero and therefore, the compressor cannot run continuously.	The air compressor timer has been by-passed and the compressor operation is linked to the SVE system operation. If the SVE system is operational, the compressor will operate unless a different AS system alarm has been triggered.
11/17/2015	PAL-2501	Compressor Low Pressure Alarm	This was an alarm test that was performed to ensure that the update to the Programmable Logic Controller (PLC) was successful.	The PLC update was successful and the air sparge compressor can run continuously. The air compressor timer is no longer being bypassed.
12/23/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
12/25/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/7/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied into eight 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/17/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
2/1/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted at a lower speed. The compressor speed was ramped up incrementally throughout the day until the previous set point was reached. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
4/3/2016	PAL-701	Blower Influent High Pressure Alarm	The alarm was most likely triggered due to power fluctuations caused by high wind conditions.	The alarm was cleared and the SVE system was restarted at a higher frequency. The system was monitored remotely for the remainder of the day.
4/29/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/9/2016	PAH-702	SVE System Effluent High Pressure Alarm	Anomalously high pressures were not noted on the SVE system discharge during the remote or on-site inspections. It is likely that the SVE effluent pressure switch needs to be recalibrated following almost a year's worth of continuous use.	The SVE system was restarted at a lower frequency and monitored on-site for about two hours.
8/26/2016	FAL-701	Blower Low Flow Alarm	The alarm was triggered due to a loose relay switch.	The switch was tightened during the August 31, 2016 monthly inspection and the system was restarted without further issue.
12/27/2016	PAL-2501	Compressor Low Pressure Alarm	The alarm was triggered due to a mechanical failure at the air compressor (i.e., the belts tore).	The air compressor belts were replaced on January 9, 2017 and the system was restarted.
3/7/2017	FAL-401	Transfer Pump Low Flow Alarm	The alarm was likely triggered due to the fluctuating volume of water extracted by the SVE system.	The AS/SVE system was restarted. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
3/8/2017	Low PLC Battery	Low Programmable Logic Controller (PLC) Battery	The alarm was triggered because the PLC battery can no longer hold a charge.	The PLC battery was replaced on March 10, 2017.
3/24/2017	VFDA-701	SVE System Variable Frequency Drive (VFD) Alarm	The alarm was triggered because the SVE system blower was not functioning within the intended parameters.	The blower was visually inspected, a piece of debris caught in the belts was removed, and the system was restarted.
7/4/2017	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/2/2017	FAL-701	Blower Low Flow Alarm	The alarm was likely triggered by a momentary power surge.	The alarm was cleared and the AS/SVE system was restarted. The system was monitored remotely for the remainder of the day.
11/29/2017	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The AS/SVE system was restarted; the relay was replaced during the 12/28/2017 monthly inspection.
2/24/2018	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The alarm was resolved on 3/1/2018 and then retriggered within 7 hours of resolution. A new VFD is required to address this issue. This alarm remains unresolved.
7/13/2018	TAH-701	SVE Discharge System High Temperature Alarm	The ambient air inside of the trailer was too high and caused SVE discharge temperature to exceed its set point of 150 degrees farenheight.	The set point of the SVE discharge temperature was increased to 175 degrees farenheight and the system was restarted.

Progress/Inspection Report No. 16
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: August 2018

1. Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion.

2. Remedial Actions Relative to the Site during this Reporting Period

AS/SVE System Operation, Maintenance, and Monitoring

Langan performed operation, maintenance, and monitoring (OM&M) activities of the air sparge and soil vapor extraction (AS/SVE) system on August 10, 2018.

As part of the monthly inspection, vapor samples were collected prior to the lead vapor-phase granular activated carbon (vGAC) unit (i.e., influent) and after the lag vGAC unit (i.e., effluent).

3. Actions Relative to the Site Anticipated for the Next Reporting Period

- Continued OM&M of the AS/SVE system
- Submission of a letter to the NYSDEC documenting the results of the contaminant rebound tests, operational history, and recent monitoring data of the AS/SVE system with recommendations to decommission the system.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

OM&M sampling was performed as follows:

- An influent vapor sample was collected from the AS/SVE system and analyzed for volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method TO-15.
- An effluent vapor sample was collected from the AS/SVE system and analyzed for VOCs via USEPA Method TO-15.

Samples were analyzed by Alpha Analytical of Westborough, MA. Alpha is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory.

Based on the results of the most recent OM&M sampling, the AS/SVE system is functioning in compliance with Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants (DAR-1).

The following tables are attached to this progress report; analytical lab results are available upon request. The tables summarize the data collected and the functionality of the AS/SVE system, including mass of VOCs removed from the subsurface based on photoionization detector (PID) readings and laboratory data, as well as, the alarm history.

- Table 1 – AS/SVE System Vapor Sampling Results
- Table 2 – AS/SVE System Mass Removal – PID Data
- Table 3 – AS/SVE System Mass Removal – Total VOCs
- Table 4 – AS/SVE System DAR-1 Compliance
- Table 5 – AS/SVE System Alarm History

6. Deliverables Submitted During This Reporting Period

None

7. Information Regarding Percentage of Completion

As of August 10, 2018 and since the system was first started, the SVE system operated for 19,903 hours (92% uptime), and the AS system operated for 19,433 hours (90% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

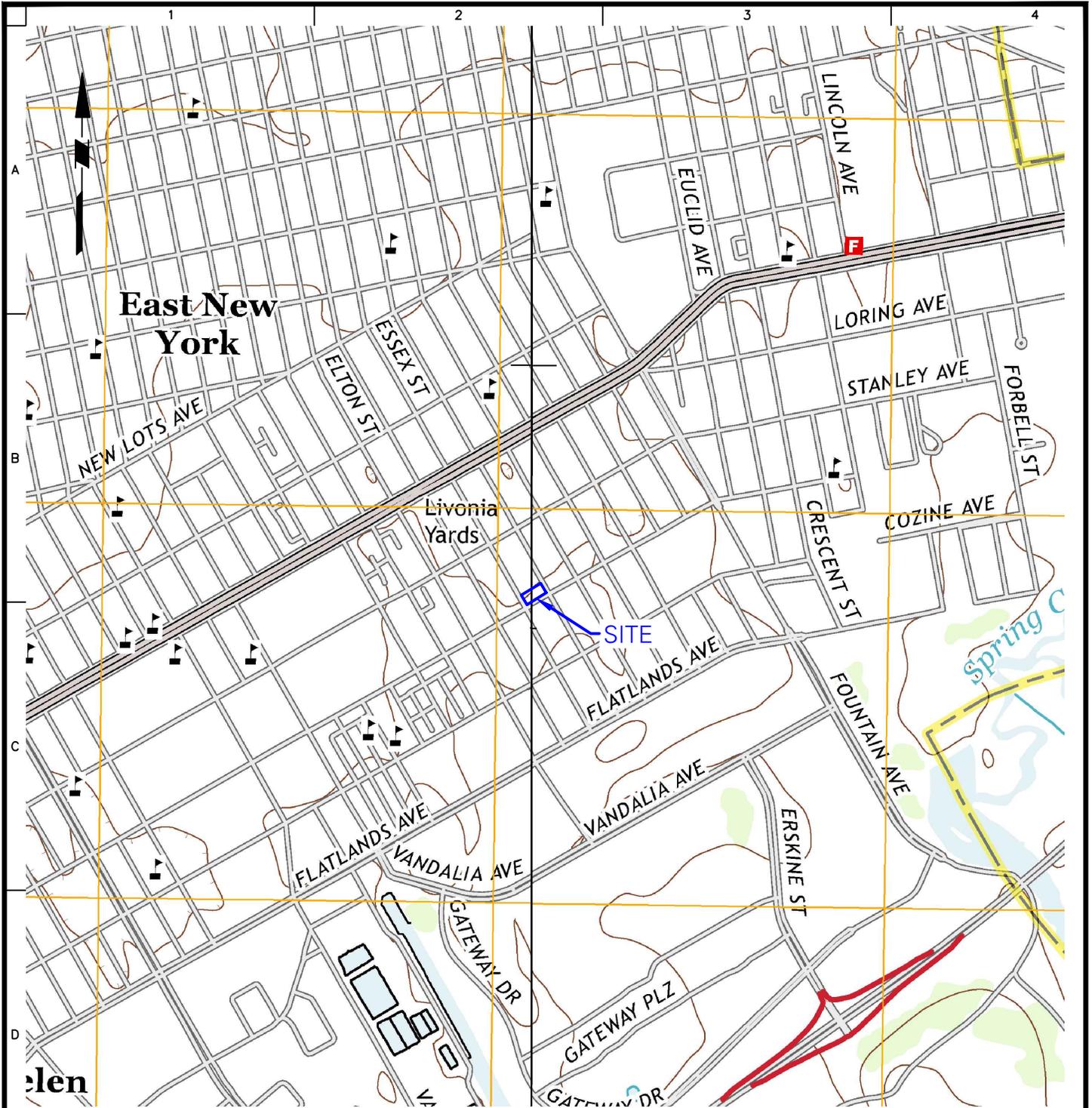
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:

 APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan	Project 491 WORTMAN AVENUE BLOCK No. 4384, LOT Nos. 31 & 36 BROOKLYN KINGS NEW YORK	Figure Title SITE LOCATION MAP	Project No. 170329301	Figure 1	
			Date 04/18/2015		
				Scale N.T.S.	
				Drawn By MLR	Checked By GN
				Submission Date	Sheet 1 of 3

TABLES

TABLE 1: AS/SVE SYSTEM VAPOR SAMPLING RESULTS
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

LOCATION	vGAC INFLUENT	vGAC EFFLUENT
SAMPLE ID	INFLUENT_070218	EFFLUENT_070218
LAB SAMPLE ID	L1825168-01	L1825168-02
SAMPLE DATE	8/10/2018	8/10/2018
Volatile Organic Compounds (ug/m3)		
1,1,1-Trichloroethane	11	5.16
1,1,2-Trichloroethane	10.9 U	1.36
1,1-Dichloroethane	8.09 U	1.04
1,1-Dichloroethene	0.793 U	2.07
1,2-Dichloroethane	8.09 U	0.903
1,2-Dichloropropane	164	0.924 U
2-Butanone	14.7 U	1.84
Acetone	23.8 U	19.5
Benzene	6.39 U	1.39
Carbon disulfide	6.23 U	2.7
Carbon tetrachloride	1.26	1.26 U
Chloroform	9.77 U	18.2
Chloromethane	4.13 U	0.999
cis-1,2-Dichloroethene	1.98	22.8
Cyclohexane	7.57	0.688 U
Dichlorodifluoromethane	9.89 U	2.02
Ethanol	94.2 U	14.3
Freon-113	15.3 U	4.42
Isopropanol	12.3 U	2.07
Methylene chloride	17.4 U	8.62
n-Hexane	7.05 U	5.5
Tetrachloroethene	1.76	1.57
Tetrahydrofuran	14.7 U	1.82
Toluene	7.54 U	2.23
trans-1,2-Dichloroethene	7.93 U	2.83
Trichloroethene	2340	1.07 U
Trichlorofluoromethane	11.2 U	1.34
Total VOCs	2527.57	153.682

NOTES:

1. ug/m³ = micrograms per cubic meter
2. vGAC = vapor-phase granular activated carbon
3. Samples collected at the "vGAC INFLUENT" were collected before to the lead vGAC vessel.
4. Samples collected at the "vGAC EFFLUENT" were collected after the lag vGAC vessel.

Q is the Qualifier Column with definitions as follows:

U = The analyte was not detected at or above the level indicated.

TABLE 2: AS/SVE SYSTEM MASS REMOVAL - PID DATA
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

DATE	INFLUENT CONCENTRATION (ppmv)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ppmv)	TOTAL OPERATIONAL HOURS	AVERAGE MOLECULAR WEIGHT	MASS REMOVAL RATE (lbs/hr)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	CUMULATIVE MASS REMOVED FROM SUBSURFACE (lbs)
10/21/2015	55.0	688	1.8	30	100	0.57	17.02	17.02
10/26/2015	8.3	650	0.6	150	100	0.08	9.31	26.34
11/6/2015	5.5	560	0.0	383	100	0.05	11.13	37.46
11/30/2015	1.9	593	0.3	958	100	0.01	8.46	45.92
12/28/2015	3.7	570	0.0	1,548	100	0.03	19.29	65.21
1/27/2016	1.2	525	0.5	2,180	100	0.01	3.60	68.81
2/24/2016	2.5	578	0.0	2,854	100	0.02	15.10	83.91
3/30/2016	0.2	550	0.0	3,693	100	0.002	1.43	85.34
4/29/2016	2.0	571	0.0	4,322	100	0.018	11.14	96.48
5/26/2016	0.4	600	0.0	4,972	100	0.004	2.42	98.90
6/29/2016	0.5	600	0.0	5,784	100	0.005	3.78	102.68
7/28/2016	3.0	600	0.0	6,431	100	0.028	18.06	120.73
8/31/2016	2.7	600	0.0	7,110	100	0.025	17.05	137.79
9/29/2016	7.5	760	2.0	7,802	100	0.065	44.85	182.63
10/31/2016	0.0	520	0.0	8,516	100	0.000	0.00	182.63
11/29/2016	0.0	560	0.0	9,211	100	0.000	0.00	182.63
12/28/2016	0.0	520	0.0	9,884	100	0.000	0.00	182.63
1/25/2017	2.8	600	0.0	10,530	100	0.026	16.83	199.46
3/7/2017	0.1	360	0.0	11,186	100	0.001	0.37	199.82
4/27/2017	0.0	600	0.0	12,185	100	0.000	0.00	199.82
5/25/2017	0.8	600	0.0	12,760	100	0.008	4.42	204.24
6/28/2017	0.04	600	0.0	13,575	100	0.000	0.33	204.57
7/21/2017	0.0	600	0.0	14,060	100	0.000	0.00	204.57
8/25/2017	0.0	600	0.0	14,852	100	0.000	0.00	204.57
9/27/2017	0.7	600	0.08	15,641	100	0.006	4.55	209.12
11/1/2017	0.0	640	0.00	16,422	100	0.000	0.00	209.12
11/28/2017	0.0	600	0.00	17,069	100	0.000	0.00	209.12
12/28/2017	0.0	560	0.00	17,618	100	0.000	0.00	209.12
1/31/2018	0.0	600	0.00	18,382	100	0.000	0.00	209.12
3/1/2018	0.0	580	0.00	18,961	100	0.000	0.00	209.12
8/10/2018	1.5	580	1.10	19,897	100	0.004	3.37	212.48

NOTES:

1. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
2. The influent and effluent concentrations are based on the PID readings.
3. Mass Removal rate (lb/hr) = ((Conc in ppmv)(flowrate scfm)(MW)(60 min/hr)) / ((387)(1,000,000)).
4. PID = photoionization detector
5. ppmv = parts per million volume
6. scfm = standard cubic feet per minute
7. lbs/hr = pounds per hour
8. lbs = pounds
9. SVE = soil vapor extraction

TABLE 3: AS/SVE SYSTEM MASS REMOVAL - LABORATORY DATA (TOTAL VOCs)
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM SITE NO. C224139

DATE	INFLUENT CONCENTRATION (ug/m3)	SVE BLOWER FLOWRATE (scfm)	EFFLUENT CONCENTRATION (ug/m3)	TOTAL OPERATIONAL HOURS	INFLUENT RATE (mg/min)	EFFLUENT RATE (mg/min)	REMOVAL RATE (mg/min)	MASS REMOVED FROM SUBSURFACE (lbs)	TOTAL MASS REMOVED FROM SUBSURFACE (lbs)	MASS REMOVED BY CARBON (lbs)	TOTAL MASS REMOVED BY CARBON (lbs)
10/20/2015	114,348	640	9,241	12	2049.12	165.60	1883.52	3.25	3.25	2.99	2.99
10/21/2015	32,758	688	1,129	30	631.05	21.75	609.30	1.50	4.76	1.45	4.44
10/26/2015	7,027	650	383	150	127.89	6.97	120.92	2.03	6.79	1.92	6.36
11/30/2015	3,144	593	426	958	52.20	7.07	45.13	5.58	12.36	4.82	11.18
12/28/2015	3,357	570	230	1,548	53.58	3.67	49.91	4.18	16.55	3.89	15.08
1/27/2016	621	525	183	2,180	9.13	2.69	6.44	0.76	17.31	0.54	15.62
2/24/2016	1,454	578	283	2,854	23.53	4.58	18.94	2.10	19.41	1.69	17.31
3/30/2016	825	550	75	3,693	12.71	1.16	11.55	1.41	20.82	1.28	18.59
4/29/2016	482	571	112	4,322	7.70	1.79	5.91	0.64	21.46	0.49	19.08
5/26/2016	1,169	600	162	4,972	19.64	2.73	16.91	1.69	23.15	1.45	20.53
6/29/2016	1,865	600	190	5,784	31.33	3.19	28.14	3.37	26.51	3.02	23.56
7/28/2016	3,706	600	232	6,431	62.26	3.90	58.36	5.33	31.84	4.99	28.55
8/31/2016	4,798	600	135	7,110	80.61	2.26	78.35	7.24	39.08	7.04	35.59
9/29/2016	1,045	760	179	7,802	22.24	3.81	18.43	2.04	41.12	1.69	37.27
10/31/2016	922	520	91	8,516	13.42	1.32	12.10	1.27	42.38	1.14	38.42
11/29/2016	790	560	167	9,211	12.38	2.62	9.76	1.14	43.52	0.90	39.31
12/28/2016	282	520	123	9,884	4.11	1.79	2.32	0.37	43.89	0.21	39.52
1/25/2017	4.7	600	5.6	10,530	0.08	0.09	-0.02	0.01	43.89	0.00	39.52
3/7/2017	762	360	120	11,186	7.68	1.21	6.47	0.67	44.56	0.56	40.08
4/27/2017	1,008	600	86	12,185	16.93	1.44	15.49	2.24	46.80	2.05	42.13
5/25/2017	771	600	48	12,760	12.95	0.81	12.15	0.99	47.78	0.92	43.05
6/28/2017	754	600	69	13,575	12.66	1.16	11.50	1.36	49.15	1.24	44.29
7/21/2017	2,434	600	235	14,060	40.89	3.95	36.94	2.62	51.77	2.37	46.66
8/25/2017	1,334	600	246	14,852	22.41	4.13	18.28	2.35	54.12	1.91	48.58
9/27/2017	1,059	600	83	15,641	17.79	1.39	16.40	1.86	55.98	1.71	50.29
11/1/2017	1,227	640	85	16,422	21.99	1.52	20.47	2.27	58.25	2.11	52.40
11/28/2017	295	600	64	17,069	4.96	1.08	3.88	0.42	58.67	0.33	52.73
12/28/2017	258	560	29	17,618	4.05	0.45	3.59	0.29	58.97	0.26	53.00
1/31/2018	289	600	13	18,382	4.85	0.23	4.62	0.49	59.46	0.47	53.46
3/1/2018	534	580	68	18,961	8.67	1.11	7.57	0.66	60.12	0.58	54.04
7/2/2018	7,898	580	103	18,961	128.27	1.67	126.60	0.00	60.12	0.00	54.04
8/10/2018	2,528	580	154	19,897	41.05	2.50	38.55	5.08	65.20	4.77	58.81

NOTES:

1. Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
2. The influent and effluent concentrations are based on the lab analytical data and not the PID readings.
3. ug/m3 = micrograms per cubic meter
4. scfm = standard cubic feet per minute
5. mg/min = milligrams per minute
6. lbs = pounds
7. SVE = soil vapor extraction
8. Influent and effluent soil vapor samples collected on July 2, 2018 were sampled shortly after the air sparging/soil vapor extraction (AS/SVE) system restart; therefore, no mass was removed from the subsurface between March 1, 2018 and July 2, 2018 during the long-term contaminant rebound test.

**TABLE 4: AS/SVE SYSTEM DAR-1 COMPLIANCE
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139**

SAMPLING DATE: 8/10/2018

CHEMICAL COMPOUND	CARBON EFFLUENT CONCENTRATION MEASURED ($\mu\text{g}/\text{m}^3$)	EMISSION FLOWRATE MEASURED		OUTLET CONCENTRATION (Q_p) (lb/hr)	OUTLET CONCENTRATION (Q_a) (lb/yr)	MAX ANNUAL IMPACT (C_a) ($\mu\text{g}/\text{m}^3$)	MAX POTENTIAL IMPACT (C_p) ($\mu\text{g}/\text{m}^3$)	MAX SHORT-TERM IMPACT (C_{st}) ($\mu\text{g}/\text{m}^3$)	DAR-1 STANDARDS		EMISSION RESTRICTION REQUIRED (if $C_p > \text{AGC}$ and $C_a < \text{AGC}$)	SGC EMISSION EXCEEDANCE (if $C_a > \text{SGC}$)	AGC EMISSION EXCEEDANCE (if $C_a > \text{AGC}$)
		(SCFM)	(m^3/min)						SGC ($\mu\text{g}/\text{m}^3$)	AGC ($\mu\text{g}/\text{m}^3$)			
Volatile Organics, USEPA TO-15 Full List ($\mu\text{g}/\text{m}^3$)													
1,1-Dichloroethylene	2.07	640	18.12288	4.95E-06	4.34E-02	3.90E-04	3.90E-04	2.53E-02	0	200	NO	No Standard	NO
2-Butanone	1.84	580	16.42386	3.99E-06	3.49E-02	3.14E-04	3.14E-04	2.04E-02	13000	5000	NO	NO	NO
Acetone	19.5	580	16.42386	4.23E-05	3.70E-01	3.33E-03	3.33E-03	2.16E-01	180,000	30,000	NO	NO	NO
Benzene	1.39	580	16.42386	3.01E-06	2.64E-02	2.37E-04	2.37E-04	1.54E-02	1,300	0.13	NO	NO	NO
Carbon disulfide	2.7	580	16.42386	5.85E-06	5.13E-02	4.61E-04	4.60E-04	2.99E-02	6,200	700	NO	NO	NO
Chloroform	18.2	580	16.42386	3.95E-05	3.46E-01	3.11E-03	3.10E-03	2.02E-01	150	0.04	NO	NO	NO
Chloromethane	0.999	580	16.42386	2.17E-06	1.90E-02	1.71E-04	1.70E-04	1.11E-02	6,200	700	NO	NO	NO
cis-1,2-Dichloroethylene	22.8	580	16.42386	4.94E-05	4.33E-01	3.89E-03	3.89E-03	2.53E-01	-	63	NO	No Standard	NO
Dichlorodifluoromethane	2.02	580	16.42386	4.38E-06	3.84E-02	3.45E-04	3.45E-04	2.24E-02	-	12,000	NO	No Standard	NO
Ethanol	14.3	580	16.42386	3.10E-05	2.72E-01	2.44E-03	2.44E-03	1.59E-01	-	45,000	NO	No Standard	NO
Isopropanol	2.07	580	16.42386	4.49E-06	3.93E-02	3.53E-04	3.53E-04	2.29E-02	98,000	7,000	NO	NO	NO
Freon 113	4.42	580	16.42386	9.58E-06	8.39E-02	7.55E-04	7.54E-04	4.90E-02	960,000	180,000	NO	NO	NO
Methylene chloride	8.62	580	16.42386	1.87E-05	1.64E-01	1.47E-03	1.47E-03	9.56E-02	14,000	60	NO	NO	NO
n-Hexane	5.5	580	16.42386	1.19E-05	1.04E-01	9.39E-04	9.38E-04	6.10E-02	-	700	NO	No Standard	NO
Tetrachloroethene	1.57	580	16.42386	3.40E-06	2.98E-02	2.68E-04	2.68E-04	1.74E-02	300	4	NO	NO	NO
Toluene	2.23	580	16.42386	4.83E-06	4.24E-02	3.81E-04	3.80E-04	2.47E-02	37,000	5,000	NO	NO	NO
Trichlorofluoromethane	1.34	580	16.42386	2.91E-06	2.54E-02	2.29E-04	2.29E-04	1.49E-02	9,000	5,000	NO	NO	NO

NOTES AND QUALIFIERS:

- Table only displays chemical compounds with detectable concentrations.
- Concentrations below reporting limit (non detect) are assumed to be zero.
- Air samples were analyzed for USEPA TO-15 compounds
- All equations are referenced in NYSDEC, Division of Air Resources, Air Guide 1, Guidelines for the Control of Toxic Ambient Air Contaminants (11/12/97). Standard Point Source Method calculations were used.
- Values in table are compared to DAR-1 Annual Guideline Concentrations (AGC)/Short-Term Guideline Concentrations (SGC) Tables dated February 28, 2014.
- DAR-1 AGC and/or SGC values listed as "-" means there is no AGC or SGC standard for that compound.
- SCFM = standard cubic feet per minute
- Blower flowrate is recorded from PDI-701 pitot tube flow indicator located on the blower discharge line.
- $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
- m^3/min = cubic meter per minute
- lb/hr = pounds per hour
- lb/yr = pounds per year

TABLE 5: AS/SVE SYSTEM ALARM HISTORY
491 WORTMAN AVENUE
BROOKLYN, NEW YORK
LANGAN PROJECT NO. 170329301
BROWNFIELD CLEANUP PROGRAM NO. C224139

DATE	ALARM	ALARM DESCRIPTION	REASON	REMEDY
10/23/2015	PAL-2501	Compressor Low Pressure Alarm	Uncertain of the reason. There may be a power fluctuation that trips the low pressure alarm, which shuts the AS system down.	On-site observation confirmed that this was a false alarm and was not caused by compressor failure or a breach in the air sparge manifold. The alarm was manually reset.
10/28/2015	LAH-7301	Storage Tank High Level Alarm	The SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into nine 55-gallon drums, and the SVE system vacuum has been optimized to extract a lesser volume of water.
11/5/2015	PAL-2501	Compressor Low Pressure Alarm	Caused by the air sparge compressor on/off time, which won't allow "OFF" time to be set to zero and therefore, the compressor cannot run continuously.	The air compressor timer has been by-passed and the compressor operation is linked to the SVE system operation. If the SVE system is operational, the compressor will operate unless a different AS system alarm has been triggered.
11/17/2015	PAL-2501	Compressor Low Pressure Alarm	This was an alarm test that was performed to ensure that the update to the Programmable Logic Controller (PLC) was successful.	The PLC update was successful and the air sparge compressor can run continuously. The air compressor timer is no longer being bypassed.
12/23/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
12/25/2015	LAH-7301	Storage Tank High Level Alarm	Following optimization, which included increasing the AS rate and the SVE system flow rate, the SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied into three 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/7/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied into eight 55-gallon drums. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
1/17/2016	LAH-7301	Storage Tank High Level Alarm	Following continued optimization of AS/SVE system, the SVE system began to extract a larger volume of water than anticipated.	The storage tank was emptied. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
2/1/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted at a lower speed. The compressor speed was ramped up incrementally throughout the day until the previous set point was reached. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
4/3/2016	PAL-701	Blower Influent High Pressure Alarm	The alarm was most likely triggered due to power fluctuations caused by high wind conditions.	The alarm was cleared and the SVE system was restarted at a higher frequency. The system was monitored remotely for the remainder of the day.
4/29/2016	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/9/2016	PAH-702	SVE System Effluent High Pressure Alarm	Anomalously high pressures were not noted on the SVE system discharge during the remote or on-site inspections. It is likely that the SVE effluent pressure switch needs to be recalibrated following almost a year's worth of continuous use.	The SVE system was restarted at a lower frequency and monitored on-site for about two hours.
8/26/2016	FAL-701	Blower Low Flow Alarm	The alarm was triggered due to a loose relay switch.	The switch was tightened during the August 31, 2016 monthly inspection and the system was restarted without further issue.
12/27/2016	PAL-2501	Compressor Low Pressure Alarm	The alarm was triggered due to a mechanical failure at the air compressor (i.e., the belts tore).	The air compressor belts were replaced on January 9, 2017 and the system was restarted.
3/7/2017	FAL-401	Transfer Pump Low Flow Alarm	The alarm was likely triggered due to the fluctuating volume of water extracted by the SVE system.	The AS/SVE system was restarted. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.
3/8/2017	Low PLC Battery	Low Programmable Logic Controller (PLC) Battery	The alarm was triggered because the PLC battery can no longer hold a charge.	The PLC battery was replaced on March 10, 2017.
3/24/2017	VFDA-701	SVE System Variable Frequency Drive (VFD) Alarm	The alarm was triggered because the SVE system blower was not functioning within the intended parameters.	The blower was visually inspected, a piece of debris caught in the belts was removed, and the system was restarted.
7/4/2017	TAH-2501	Air Compressor High Temperature Alarm	The AS system is operating close to the alarm set point so that as much warm air as possible is continuously injected into the subsurface. A slight change in the air flow rate and/or ambient temperature most likely caused the rise in discharge air temperature.	The alarm was cleared and the AS system was restarted. At restart, the allowable flow through the AS system was increased to alleviate the pressure on the air compressor discharge line. The heat exchanger flow and AS manifold temperature are being monitored on a daily basis in an effort to prevent tripping the high temperature alarm again.
8/2/2017	FAL-701	Blower Low Flow Alarm	The alarm was likely triggered by a momentary power surge.	The alarm was cleared and the AS/SVE system was restarted. The system was monitored remotely for the remainder of the day.
11/29/2017	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The AS/SVE system was restarted; the relay was replaced during the 12/28/2017 monthly inspection.
2/24/2018	VFDA-701	SVE System VFD Alarm	The alarm was triggered by a faulty blower permissive start relay.	The alarm was resolved on 3/1/2018 and then retriggered within 7 hours of resolution. A new VFD is required to address this issue. This alarm remains unresolved.
7/13/2018	TAH-701	SVE Discharge System High Temperature Alarm	The ambient air inside of the trailer was too high and caused SVE discharge temperature to exceed its set point of 150 degrees farenheight.	The set point of the SVE discharge temperature was increased to 175 degrees farenheight and the system was restarted.
8/15/2018	LAH-7301	Storage Tank High Level Alarm	The SVE system began to extract a larger volume of water than previously anticipated.	The storage tank was emptied. Both the AS and SVE system flow rates were adjusted in an effort to reduce excess water collection by the SVE system.

Progress/Inspection Report No. 17
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: September 2018

1. Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion.

2. Remedial Actions Relative to the Site during this Reporting Period

- Operation of the AS/SVE system per continuation of the four-month (July through October) remedial polishing phase.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

- Monthly OM&M activities will resume in October 2018 (not performed during September 2018).
- Submission of a letter to the NYSDEC documenting the results of the contaminant rebound tests, operational history, and recent monitoring data of the AS/SVE system with recommendations to decommission the system.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

None

6. Deliverables Submitted During This Reporting Period

None

7. Information Regarding Percentage of Completion

As of September 10, 2018 and since the system was first started, the SVE system operated for 20,647 hours (92% uptime), and the AS system operated for 20,177 hours (90% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

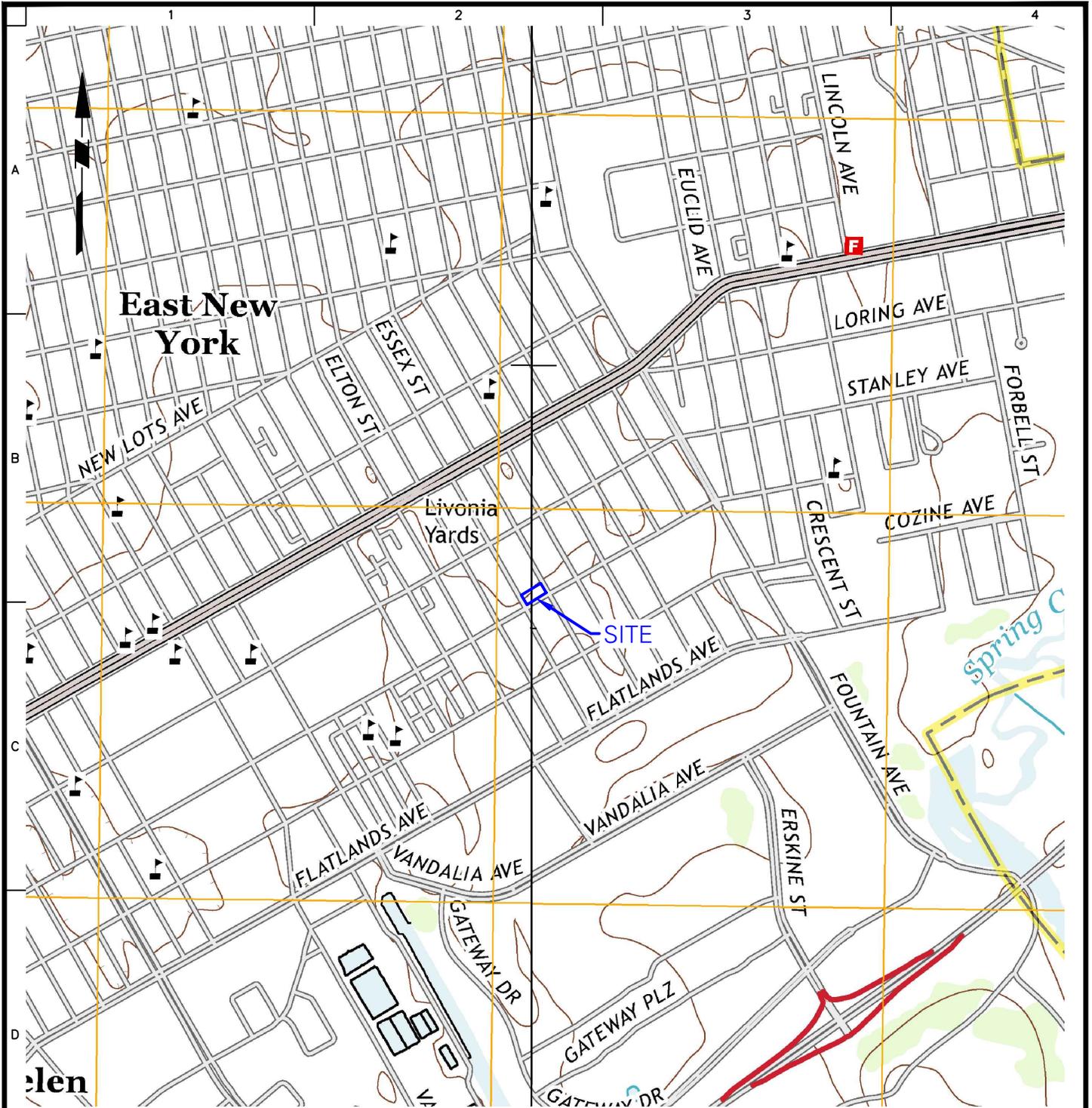
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:

 APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan	Project	Figure Title	Project No.	Figure
	491 WORTMAN AVENUE	SITE LOCATION MAP	170329301	1
	BLOCK No. 4384, LOT Nos. 31 & 36		Date	
	BROOKLYN NEW YORK		04/18/2015	
	KINGS		Scale	N.T.S.
			MLR	Checked By
			GN	Submission Date
				Sheet 1 of 3

Progress/Inspection Report No. 18
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: October 2018

1. Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion are currently vacant.

2. Remedial Actions Relative to the Site during this Reporting Period

Langan performed operation, maintenance, and monitoring (OM&M) activities of the air sparge and soil vapor extraction (AS/SVE) system on October 22, 2018.

On October 10, 2018, Langan submitted a letter to the NYSDEC documenting the results of the contaminant rebound tests, operational history, and recent monitoring data of the AS/SVE system with recommendations to decommission the system and transition into long-term operation, maintenance, and protection of engineering controls to manage residual contamination and mitigate vapor intrusion. The NYSDEC reviewed this request and provided comments requiring responses prior to making a determination.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

Monthly OM&M activities will resume in December 2018 (will not be performed during November 2018).

Submission of a letter addressing the NYSDEC's comments on the Remediation System Decommissioning Request Letter.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

None

6. Deliverables Submitted During This Reporting Period

Remediation System Decommissioning Request Letter, dated October 10, 2018.

7. Information Regarding Percentage of Completion

As of October 10, 2018 and since the system was first started, the SVE system operated for 21,367 hours (93% uptime), and the AS system operated for 20,897 hours (91% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

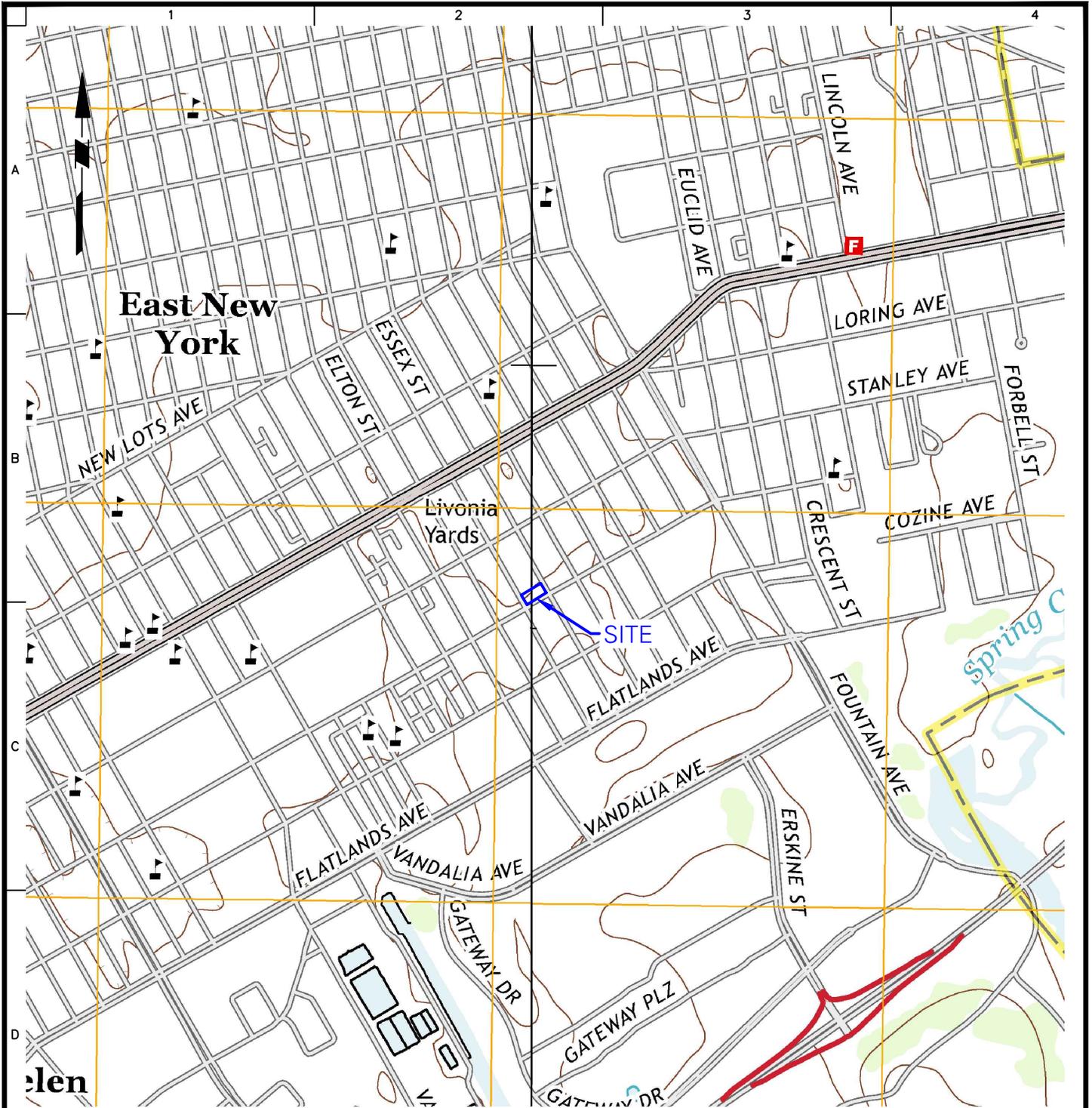
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:



APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

<p>LANGAN 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com</p> <p>Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan</p>	Project	Figure Title	Project No.	Figure
	491 WORTMAN AVENUE	SITE LOCATION MAP	170329301	1
	BLOCK No. 4384, LOT Nos. 31 & 36		Date	
	BROOKLYN		04/18/2015	
	KINGS	NEW YORK		Scale
			N.T.S.	
			Drawn By	Checked By
			MLR	GN
			Submission Date	
				Sheet 1 of 3

Progress/Inspection Report No. 19
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: November 2018

1. Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion are currently vacant.

2. Remedial Actions Relative to the Site during this Reporting Period

On November 12, 2018, Langan submitted a revised Remediation System Decommissioning Request Letter addressing the NYSDEC's comments. The Remediation System Decommissioning Request Letter documents the results of the contaminant rebound tests, operational history, and recent monitoring data of the AS/SVE system with recommendations to decommission the system and transition into long-term operation, maintenance, and protection of engineering controls to manage residual contamination and mitigate vapor intrusion.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

Monthly OM&M activities will resume in December 2018 (were not be performed during November 2018).

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

None

6. Deliverables Submitted During This Reporting Period

Remediation System Decommissioning Request Letter, dated November 12, 2018.

7. Information Regarding Percentage of Completion

As of November 10, 2018 and since the system was first started, the SVE system operated for 22,111 hours (95% uptime), and the AS system operated for 21,641 hours (93% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

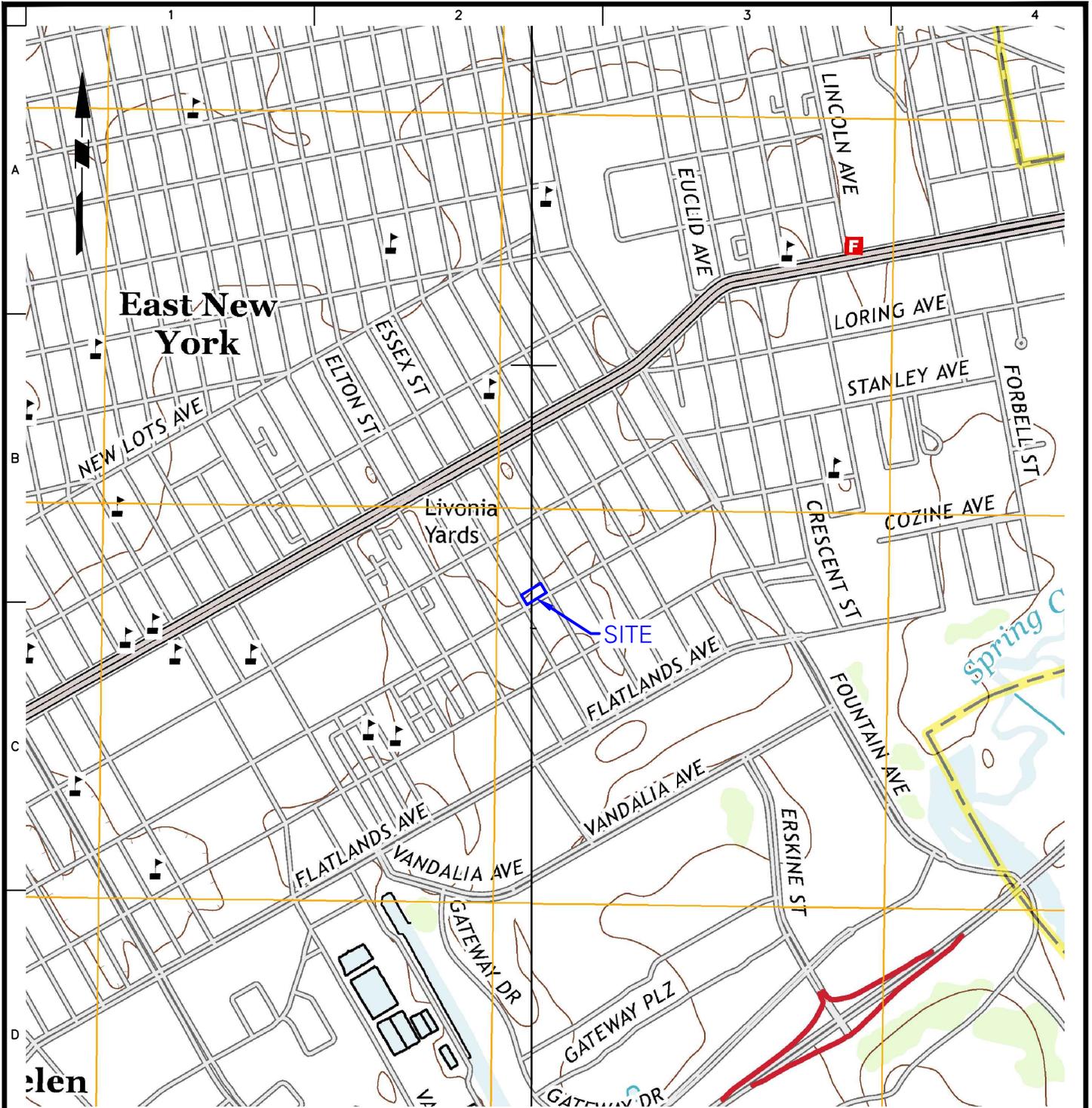
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:

 APPROXIMATE SITE BOUNDARY

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 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan	Project 491 WORTMAN AVENUE BLOCK No. 4384, LOT Nos. 31 & 36 BROOKLYN KINGS NEW YORK	Figure Title SITE LOCATION MAP	Project No. 170329301	Figure 1	
			Date 04/18/2015		
				Scale N.T.S.	
				Drawn By MLR	Checked By GN
				Submission Date	Sheet 1 of 3

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Progress/Inspection Report No. 20
J&H Holding Company, LLC
491 Wortman Avenue, Brooklyn, NY 11208
Brownfield Cleanup Program Site No. C224139
Reporting Period: December 2018

1. Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) submits this progress/inspection report on behalf of J&H Holding Company, LLC (the "Participant"). In accordance with Section 7.1 of the Site Management Plan (SMP), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 28, 2017, this progress/inspection report summarizes work performed at the Former Watermark Designs Facility (the "Site") during July 2018. The Final Engineering Report (FER) was submitted to the NYSDEC on May 25, 2017, and in accordance with the Brownfield Cleanup Agreement (BCA), submission of Monthly Brownfield Cleanup Program (BCP) Progress Reports is no longer required for the Site.

The Site (Block 4384, Lots 31 & 36) is located at 491 Wortman Avenue in Brooklyn, New York (Figure 1) and consists of a rectangular shaped lot that is about 19,000 square feet (± 0.44 acres). The Site is located in an area zoned for industrial/manufacturing use and is bound by Wortman Street to the south, Linwood Street to the west, Essex Street to the east, and a one-story building to the north. Currently, a one-story building with a partial basement covers the entire Site footprint. The one-story building is used as a warehouse in the western portion and an office space and a smaller warehouse in the eastern portion are currently vacant.

2. Remedial Actions Relative to the Site during this Reporting Period

Continued operation of the air sparge and soil vapor extraction (AS/SVE) system. Langan performed operation, maintenance, and monitoring (OM&M) activities of the AS/SVE system on December 6, 2018.

On December 26, 2018, the NYSDEC responded to the revised Remediation System Decommissioning Request letter recommending continued operation of the AS/SVE system and continued groundwater monitoring in accordance with the SMP.

3. Actions Relative to the Site Anticipated for the Next Reporting Period

Quarterly groundwater monitoring activities will resume in late January 2019. Monthly OM&M activities will resume in February 2019.

In addition to the quarterly monitoring activities, the Participant is considering installing supplement groundwater monitoring wells in the vicinity of MW-6 to better understand the natures of chlorinated volatile organic compounds impacts to that well. A plan will be submitted to NYSDEC review prior to well installing and groundwater sampling.

4. Approved Activity Modifications (changes of work scope and/or schedule)

None

5. Results of Sampling, Testing and Other Relevant Data

None

6. Deliverables Submitted During This Reporting Period

None

7. Information Regarding Percentage of Completion

As of December 31, 2018 and since the system was first started, the SVE system operated for 23,335 hours (96% uptime), and the AS system operated for 22,865 hours (94% uptime).

8. Unresolved Delays Encountered or Anticipated That May Affect the Schedule and Mitigation Efforts

None

9. Citizen Participation Plan Activities during This Reporting Period

None

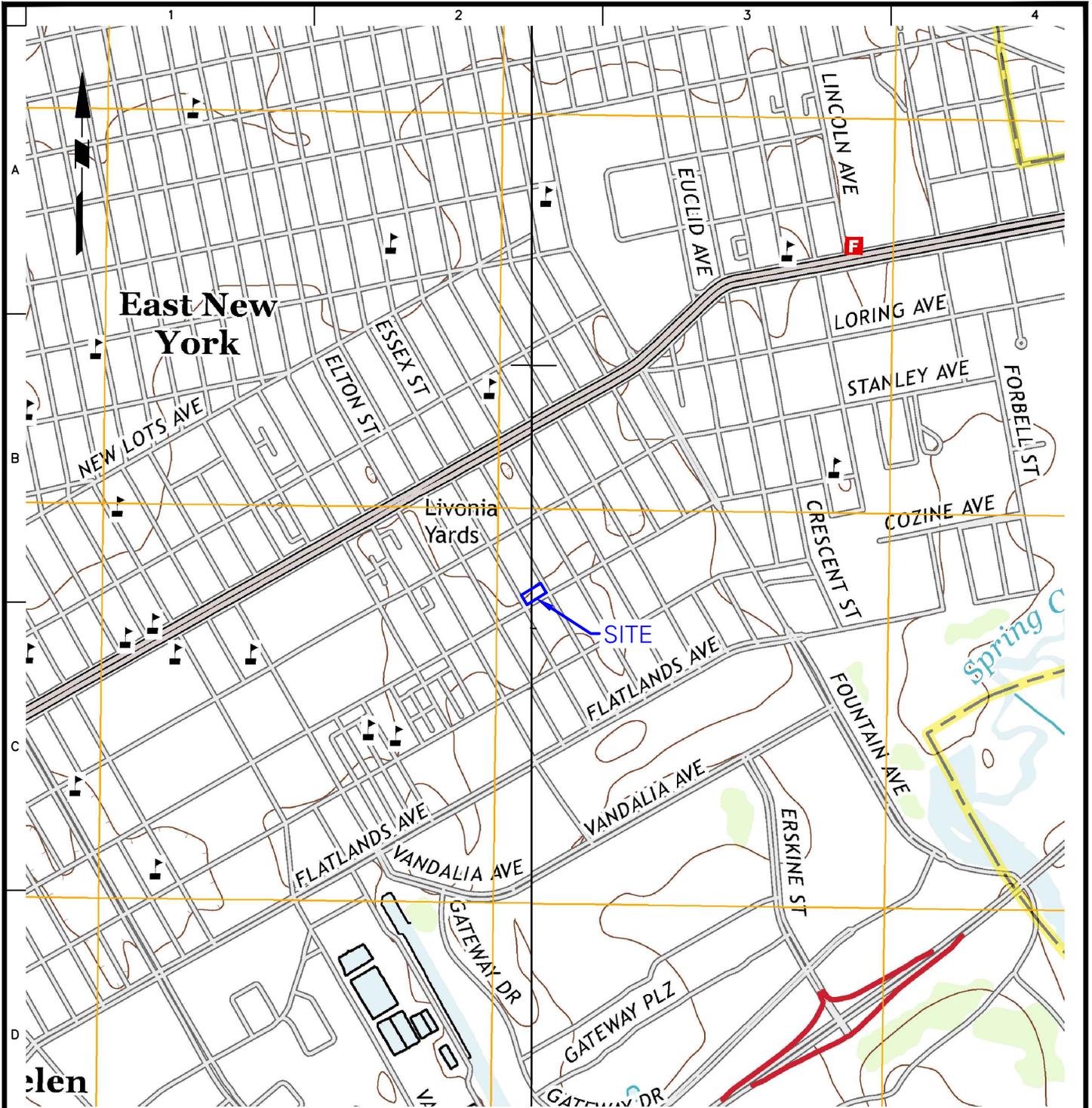
10. Activities Anticipated in Support of the CPP for the Next Reporting Period

None

11. Miscellaneous Information

None

FIGURES



LEGEND:

 APPROXIMATE SITE BOUNDARY

NOTE: BASE MAPS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) TOPOGRAPHIC QUADRANGLE MAPS FOR BROOKLYN AND JAMAICA.

<p>LANGAN 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com</p> <p>Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan</p>	Project	Figure Title	Project No.	Figure
	491 WORTMAN AVENUE	SITE LOCATION MAP	170329301	1
	BLOCK No. 4384, LOT Nos. 31 & 36		Date	
	BROOKLYN		04/18/2015	
	KINGS	NEW YORK		Scale
			N.T.S.	
			Drawn By	Checked By
			MLR	GN
			Submission Date	
				Sheet 1 of 3

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