NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor, Albany, NY 12233-7014
P: (518) 402-9662 I F: (518) 402-9679
www.dec.ny.gov

June 26th, 2018

Mr. Brian Birmingham, P.E.
National Grid
Site Investigation and Remediation
287 Maspeth Avenue
Brooklyn, NY 11211

Re: Loading Platform Area Investigation Report
Greenpoint Energy Center Former Manufactured Gas Plant (MGP)
Brooklyn, Kings County, New York
Site ID# 224052

Mr. Birmingham,

The New York State Department of Environmental Conservation (Department) has reviewed National Grid's January 2018 Loading Platform Area Investigation Report for the Greenpoint Energy Center Former MGP Site (224052). As you are aware, the investigation was completed in response to concerns brought about by the Department in a November 23, 2016 letter regarding a possible seep of non-aqueous phase liquid (NAPL) that may be emanating from the site.

Upon review of the report, the Department concurs with the conclusion that mobile NAPL does not appear to be present in the loading platform area adjacent to Newtown Creek. However, the Department does not necessarily conclude that the observed contamination was related to an off-site related source as stated in the report. While this is certainly plausible, the Department believes it is also possible that the contamination could be related to historic site related NAPL deposits in the creek that may have been disturbed and mobilized to the creek surface through ebullition or some other means.

The scope of the investigation has addressed the Department's concerns related to the alleged NAPL seep. As such, the absorbent booms that were deployed in the area may be removed. Please contact me at 518-402-9589 or by email at john.miller@dec.ny.gov with any questions or comments.

Sincerely,

John B. Miller, P.E.
Project Manager

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

ec: G. Cross (DER)
D. Hettrick (DOH)
Chris Morris (GEI)
William Ryan (National Grid)

January 26, 2018
Project 125180

Mr. Brian Bermingham
Project Manager
National Grid
Site Investigation & Remediation
287 Maspeth Avenue
Brooklyn, NY 11211

Consulting
Engineers and
Scientists

Re: Loading Platform Area Investigation Report
Remedial Investigation Areas 1 and 2
Greenpoint Energy Center Former Manufactured Gas Plant
287 Maspeth Avenue, Brooklyn, New York
Site No. 224052

Dear Mr. Bermingham:

GEI Consultants, Inc., P.C. (GEI) has prepared this letter report summarizing the findings of the Loading Platform area investigation at the Greenpoint Energy Center (the Site). The investigation was performed to evaluate whether non-aqueous phase liquid (NAPL) observed by New York City floating on the water surface off the southern portion of the Greenpoint Energy Center (GPEC) loading platform was related to migration of NAPL from the GPEC upland site. The work was performed from February 20, 2017 through June 8, 2017 in accordance with GEI's January 11, 2017 work plan, which was approved by the New York State Department of Environmental Conservation (NYSDEC) by email on February 13, 2017.

The GPEC sits adjacent to the Turning Basin portion of the Newtown Creek Superfund site. Immediately adjacent to the GPEC loading platform, the Turning Basin represents a depositional environment with up to 15 feet of accumulated soft sediments having been deposited near the south end of the loading platform.

As described further in this memo, the investigation did not identify any evidence of potentially mobile NAPL land-side of the loading platform that could be the source of the alleged NAPL seep observed by New York City. Based on the extensive soil boring observations collected along the loading platform, GEI concludes there is no mobile NAPL in soils adjacent to the loading platform that can account for the floating NAPL observation or that can impact the shallow sediments of Newtown Creek. The observation made by New York City is most likely the result of recent petroleum from other sources.

GEI Consultants, Inc., P.C.
110 Walt Whitman Road, Suite 204, Huntington Station, NY 11746
631.760.9300 fax: 631.760.9301

Scope of Work

A total of 17 soil borings were advanced to investigate the source of the alleged NAPL seepage near the southern portion of the GPEC loading platform. The locations of the soil borings are shown on **Figure 1**. The borings were advanced to a minimum elevation (El.) of -40 above mean sea level (12 feet below the original design dredge depth at El. -28), which corresponds to approximately 28 feet below the current mudline at El. -12 along southern portion of the loading platform.

Eight soil borings (GPEC-MW403 through GPEC-MW410) were originally advanced, along with a monitoring well installed at each of the soil boring locations. The screen zones were selected based on their proximity to impacted zones identified during boring advancement. Five additional soil borings (GPEC-SB404A through GPEC-SB408A) were subsequently advanced to further decrease the spacing between the existing borings in the area.

One 6-inch recovery well (GPEC-RW409) was also installed along with monitoring well GPEC-MW409 based on the presence of observed saturated NAPL in soils identified in the adjacent boring (discussed further below). Four soil borings (GPEC-SB414 through GPEC-SB417) were then advanced to delineate the area of saturated NAPL intervals identified in the GPEC-MW409 soil boring.

The soil borings were advanced and the monitoring and recovery wells installed using rotary-sonic and direct-push techniques. The monitoring wells were installed with Schedule 40 polyvinyl chloride (PVC) screen (0.020-inch slot) and riser. Each of the wells was installed with a 10-foot section of screen excluding GPEC-MW406 (5-foot screen interval). The recovery well was installed with a stainless-steel wire-wrapped screen (0.020-inch slot), a 5-foot stainless-steel sump, and a Schedule 40 PVC riser. Boreholes in which a well was not installed, as well as any open sections of boreholes beneath the installed wells, were tremie grouted to the surface with a cement/bentonite grout.

The soil borings and monitoring and recovery wells were installed in accordance with procedures included the previously-approved Phase 2/3 Remedial Investigation Work Plan (RIWP) for the GPEC site. Well development, investigative-derived waste (IDW) management and the implementation of a community air monitoring program (CAMP) were also conducted in accordance with the RIWP.

No analytical soil samples were collected during the installation of the 17 borings, monitoring wells, or recovery well. Groundwater from the monitoring wells was sampled following development of each well. The monitoring wells were purged and sampled using low-flow groundwater sampling procedures in accordance with the RIWP. The recovery well was developed by alternatively surging, with a surge block, and pumping in accordance with the RIWP.

Findings

Soil Borings and Well Installations

In each of the soil borings, soil samples were collected at continuous intervals to the termination depth and screened with a photoionization detector (PID). Soil boring logs and well construction logs are included in **Attachment 1**. The boring locations along with the greatest degree of observed impacts at each location are shown on **Figure 1**. A cross-section showing the subsurface stratigraphy and impacted intervals in the various wells and soil borings advanced along the bulkhead at the Site is shown on **Figure 2**. A second cross-section extending from the inland area through the GPEC-MW409 area into Newtown Creek is shown on **Figure 3**.

The only saturated NAPL interval observed in the 17 soil borings was at boring GPEC-MW409. An interval of NAPL-saturated soil was observed from approximately El. -23 to -30, at the base of the fill unit. Underlying the interval of NAPL-saturated soil was a 2 to 3-foot layer of sandy silt to silty sand that was NAPL-coated. Naphthalene-like odors were observed intermittently underlying the silt layer to approximately El. -47, but no impacts were observed in the bottom 16 feet of the boring. Residual impacts including NAPL blebs, sheen, black staining, and/or naphthalene-like odors were observed in the soil above the NAPL-saturated interval.

A recovery well (GPEC-RW409) was installed adjacent to monitoring well GPEC-MW409 and was screened from El. -22 to -32, encompassing the entire interval of the observed saturated NAPL. This well has been monitored monthly for NAPL recovery since it was developed in March 2017, but NAPL has not accumulated in the well.

Four soil borings were advanced approximately 25 feet to the north, south, and west of GPEC-MW409 to delineate the area of NAPL observed in soil at GPEC-MW409. NAPL-saturated soil was not observed in these four borings. These findings confirm that the NAPL observed in soils at GPEC-MW409 is isolated to the immediate vicinity of GPEC-MW409 and has not migrated to the sediments of Newtown Creek.

NAPL-coated soil was observed from approximately El. -25.5 to -28.5 in soil boring GPEC-SB414 and from approximately El. -23.5 to -28.5 in soil boring GPEC-SB417. Soil borings GPEC-SB414 and GPEC-SB417 are located to the south and north of GPEC-MW409, respectively. Impacts including sheen, staining, and/or a naphthalene-like odor were noted in the soil above and below the NAPL-coated interval in each boring. No impacts were observed in the bottom 7 feet of each boring. Impacts including NAPL blebs, sheen, staining, and/or a naphthalene-like odor were observed from approximately El. -23 to -36 in soil boring GPEC-SB415 and from approximately El. -23 to -38.5 in soil boring GPEC-SB416. These borings are located to the west of soil boring GPEC-MW409. No impacts were observed in the bottom 5 to 7 feet (approximate) of each boring. Fill material was observed in these four borings to a

maximum depth of El. -28.5. All of these observations soil are residual in nature and do not indicate the presence of potentially mobile NAPL at the locations of these 3 borings.

Figure 2 indicates that the NAPL saturated interval in the GPEC-MW409 and GPEC-RW409 (not shown) locations accumulated in a small pocket created by a confining layer of silt.

Various impacts were observed in the remaining borings, but no potentially mobile NAPL was identified. NAPL-coated soil was identified from approximately El. -27 to -30 and -58 to -62.5 in soil boring GPEC-MW407 and from approximately El. -25 to -26.5 in soil boring GPEC-MW410. Lesser impacts were observed in each of the remaining borings excluding GPEC-MW404 as shown on **Figure 1** and in the boring logs in **Attachment 1**. Fill material was observed to a minimum depth of El. +6.5 to a maximum depth of El. -30 across during the investigation.

In the southernmost portion of the investigation area, believed to be nearest the location of the NAPL reported by New York City, impacts were limited to staining and odor from approximately El. -16 to -18 at the GPEC-MW403 location, and staining and sheen from approximately El. -11 to -12 at GPEC-MW404A. No potentially mobile NAPL was identified in the area where New York City observed NAPL to be floating on the water near GPEC. Potentially mobile NAPL is present within two existing monitoring wells in the area (GPEC-MW01R and GPECC-MW205); however, as discussed in the previously submitted Interim Remedial Investigation Report for the Site dated November 2016, the depth at which the land-side occurrence of NAPL is present cannot account for the shallower sediment NAPL observations in Newtown Creek. As such, the deep NAPL in this area also cannot be the source of the NAPL observed by New York City.

Up to approximately 15 feet of sediment has accumulated in this depositional area of the Turning Basin. The NAPL observed by NYC on the water surface may be related to recent NAPL deposited with shallow sediments, or may be associated with NAPL spilled or released from a vessel that was trapped behind the wooden facing of the GPEC loading platform. Regardless, the NAPL observation does not represent a source associated with the GPEC site.

Groundwater Sampling

The groundwater sample analytical results are shown on **Table 1** and are compared to the NYSDEC Ambient Water Quality Standards (AWQS). Groundwater sampling forms are included in **Attachment 2**. NAPL was not observed in any of the newly installed wells during development or sampling.

The exceedances of the AWQS for benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were limited to two wells and included: benzene (2.62 micrograms per liter

[µg/L]) in well GPEC-MW410; ethylbenzene (137 µg/L) in GPEC-MW407; and total xylenes (91 µg/L) in GPEC-MW407.

Chlorinated volatile organic compounds (VOCs) exceeded the AWQS, including: 1,2-dichloroethane (max 1.34 µg/L) in GPEC-MW404 through GPEC-MW407; cis-1,2-dichloroethene (8.73 µg/L) in GPEC-MW407; and tetrachloroethene (max 8.14 µg/L)] in GPEC-MW406 and GPEC-MW407. The chlorinated VOC detections are not known to be related to historical or current Site operations.

Polycyclic aromatic hydrocarbons (PAHs) were detected in each of the wells sampled. PAHs exceeding the AWQS include: acenaphthene (max 37.5 µg/L) in GPEC-MW405, GPEC-MW407, and GPEC-MW410; benzo(a)anthracene (max 0.528 µg/L) in GPEC-MW405, GPEC-MW409, and GPEC-MW410; chrysene (0.334 µg/L) in GPEC-MW410; naphthalene (max 627 µg/L) in GPEC-MW407 and GPEC-MW410; and nitrobenzene (0.43 J µg/L) in GPEC-MW410.

Metals were also detected in each of the wells sampled. Metals exceeding the AWQS include: iron (max 13,700 µg/L) in GPEC-MW403 through GPEC-MW408 and GPEC-MW410; magnesium (max 367,000 µg/L) in GPEC-MW405 through GPEC-MW407 and GPEC-MW410; manganese (max 2,090 µg/L) in GPEC-MW403 through GPEC-MW408 and GPEC-MW410; and sodium (max 3,190,000 µg/L) in all eight wells. Metals analysis was limited to total metals. The detections of these metals do not represent contaminants, but rather naturally occurring metals associated with the soils and sodium in particular is representative of the saline conditions observed in Newtown Creek.

Polychlorinated biphenyls (PCBs) were not detected in any of the wells sampled.

Conclusions

NAPL-saturated soil identified during the investigation was limited to soil boring GPEC-MW409 from approximately El. -23 to -30. The interval of NAPL-saturated soil was at the base of a fill layer and is confined within a small pocket created by a confining layer of fine grained soil. The lack of NAPL-saturated soil in the four delineation borings advanced to the north, south, and west and the diminishing impacts observed beneath the silt layer in boring GPEC-MW409 indicate that the NAPL in this area is not mobile. As depicted on Figure 3, the observed NAPL corresponds to the base of the accumulated sediment wedge in Newtown Creek. A 6-inch recovery well (GPEC-RW409) was installed in this area, and NAPL has not been observed in the well since it was developed, further indicating that the NAPL is not mobile.

No potentially mobile NAPL was identified at any other soil boring location. NAPL was not observed in any of the newly installed monitoring wells during the groundwater sampling event.

Based on these findings, there is no identified pathway for NAPL migration to the shallow sediments in Newtown Creek. No potentially mobile NAPL was identified that could account for the NAPL observed floating on the water surface at the southern portion of the site. As stated above, previously identified deep NAPL present in two monitoring wells in the area also cannot account for the shallower sediment NAPL observations in Newtown Creek or the observed NAPL floating at the southern portion of the Loading Dock.

If you have any questions or require additional information, please feel free to contact Chris Morris at 516-545-2586 or Dave Terry at 860-368-5396.

Sincerely,

Chris Morris
Project Manager

David B. Terry
V.P., Principal, LEP, P.G.

Enclosures
c: D. Hetrick (NYSDOH)

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Table

Table 1. GPEC Loading Platform Area Investigation
Groundwater Analysis Results
National Grid
Brooklyn, New York

Analyte	µnits	CAS No.	Sample Name / Sample Date / Parent Sample — NYS AWQS	GPEC-MW403 3/24/2017	GPEC-MW404 3/28/2017	GPEC-MW405 3/28/2017	GPEC-MW406 3/27/2017	GPEC-MW407 3/27/2017	GPEC-MW408 3/27/2017	GPEC-MW409 3/24/2017	GPEC-MW-XX-032417 3/24/2017 GPEC-MW409	GPEC-MW409 FILT 3/24/2017
BTEX	µg/L											
Benzene		71-43-2	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Toluene		108-88-3	5	0.5 U	0.5 U	0.5 U	0.5 U	**3.17**	0.5 U	0.5 U	0.5 U	
Ethylbenzene		100-41-4	5	0.5 U	0.5 U	**2.21**	0.5 U	**137**	**0.484 J**	**0.545**	**0.42 J**	
Total Xylene		1330-20-7	5	1 U	1 U	**1.07**	1 U	**91**	1 U	1 U	1 U	
Total BTEX (ND=0)		TBTEX_ND0	NE	ND	ND	**3.28**	ND	**231.2**	**0.484**	**0.545**	**0.42**	
Other VOCs	µg/L											
Acetone		67-64-1	50*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Acrolein (propenal)		107-02-8	5	20 U	20 U	20 U	20 U	20 U	20 U	10 U	10 U	
Acrylonitrile		107-13-1	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Bromodichloromethane		75-27-4	50*	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromoform		75-25-2	50*	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Bromomethane		74-83-9	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
t-Butyl alcohol (Tertiary Butyl Alcohol)		75-65-0	NE	2 U	2 U	2 U	2 U	2 U	2 U	2 R	2 R	
Carbon disulfide		75-15-0	60*	1 U	**0.535 J**	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
Carbon tetrachloride		56-23-5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Chlorobenzene		108-90-7	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Chloroethane		75-00-3	5	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
2-Chloroethyl vinyl ether		110-75-8	NE	1 U	1 U	1 U	1 U	1 U	1 U	2 R	2 R	
Chloroform (Trichloromethane)		67-66-3	7	0.5 U	**1.26**	0.5 U	**0.537**	**2.12**	0.5 U	0.5 U	0.5 U	
Chloromethane		74-87-3	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Dibromochloromethane		124-48-1	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Dichlorodifluoromethane (Freon 12)		75-71-8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,1-Dichloroethane		75-34-3	5	0.5 U	**0.523**	**3.5**	**2.3**	**0.57**	0.5 U	0.5 U	0.5 U	
1,2-Dichloroethane		107-06-2	0.6	0.5 U	**0.755**	**0.86**	**1.34**	**0.91**	0.5 U	0.5 U	0.5 U	
1,1-Dichloroethene		75-35-4	5	0.5 U	0.5 U	**0.832**	**0.719**	0.5 U	0.5 U	0.5 U	0.5 U	
cis-1,2-Dichloroethene		156-59-2	5	0.5 U	**0.717**	**0.584**	**0.632**	**8.73**	0.5 U	**1.1**	**0.991**	
trans-1,2-Dichloroethene		156-60-5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
1,2-Dichloropropane		78-87-5	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
cis-1,3-Dichloropropene		10061-01-5	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
trans-1,3-Dichloropropene		10061-02-6	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Diisopropyl ether (DIPE)		108-20-3	NE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
2-Hexanone		591-78-6	50*	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	
Methyl ethyl ketone (2-Butanone)		78-93-3	50*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Methyl tert-butyl ether (MTBE)		1634-04-4	10*	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	
Methylene chloride		75-09-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Styrene		100-42-5	5	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
1,1,2,2-Tetrachloroethane		79-34-5	5	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
Tetrachloroethene (PCE)		127-18-4	5	0.5 U	0.5 U	**1.49**	**8.14**	**5.59**	0.5 U	0.5 U	0.5 U	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		76-13-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,2,4-Trichlorobenzene		120-82-1	5	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
1,1,1-Trichloroethane (TCA)		71-55-6	5	0.5 U	0.5 U	0.5 U	**0.606**	0.5 U	0.5 U	0.5 U	0.5 U	
1,1,2-Trichloroethane		79-00-5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	

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National Grid
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Analyte	µnits	CAS No.	Sample Name / Sample Date / Parent Sample / NYS AWQS	GPEC-MW403 3/24/2017	GPEC-MW404 3/28/2017	GPEC-MW405 3/28/2017	GPEC-MW406 3/27/2017	GPEC-MW407 3/27/2017	GPEC-MW408 3/27/2017	GPEC-MW409 3/24/2017	GPEC-MW-XX-032417 3/24/2017 GPEC-MW409	GPEC-MW409 FILT 3/24/2017
Trichloroethene (TCE)		79-01-6	5	0.5 U	**0.692**	**1.21**	**1.42**	**1.57**	0.5 U	0.5 U	0.5 U	
Trichlorofluoromethane (Freon 11)		75-69-4	5	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	
1,2,3-Trichloropropane		96-18-4	0.04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Vinyl acetate		108-05-4	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Vinyl chloride		75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
NYSDEC PAH17	µg/L											
Acenaphthene		83-32-9	20*	**0.224 J**	**0.89 J**	**28.4**	**2.51**	**37.5**	**1.78**	**0.946 J**	**0.924 J**	
Acenaphthylene		208-96-8	NE	1 U	**0.349 J**	**21.1**	**0.39 J**	**6.8**	1 U	1 U	1 U	
Anthracene		120-12-7	50*	1 U	**0.675 J**	**4.58**	**0.622 J**	**4.39**	**0.245 J**	**0.286 J**	**0.247 J**	
Benzo(a)anthracene		56-55-3	0.002*	1 U	1 U	**0.296 J**	1 U	1 U	1 U	**0.274 J**	1 U	
Benzo(b)fluoranthene		205-99-2	0.002*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Benzo(k)fluoranthene		207-08-9	0.002*	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	
Benzo(g,h,i)perylene		191-24-2	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	
Benzo(a)pyrene		50-32-8	ND	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chrysene		218-01-9	0.002*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Dibenz(a,h)anthracene		53-70-3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	
Fluoranthene		206-44-0	50*	1 U	**0.58 J**	**1.87**	**0.916 J**	**1.38**	**0.227 J**	**0.247 J**	**0.29 J**	
Fluorene		86-73-7	50*	1 U	**0.649 J**	**2.28**	**2.2**	**23.7**	**0.389 J**	**0.504 J**	**0.462 J**	
Indeno(1,2,3-cd)pyrene		193-39-5	0.002*	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	
2-Methylnaphthalene		91-57-6	NE	1 U	**0.198 J**	**3.17**	**0.826 J**	**18.4**	**0.967 J**	1 U	1 U	
Naphthalene		91-20-3	10*	1 U	**0.533 J**	**6.52**	**1.34**	**627 D**	**1.96**	**0.284 J**	**0.282 J**	
Phenanthrene		85-01-8	50*	**0.229 J**	**0.857 J**	**21.6**	**1.85**	**24.1**	**0.91 J**	**1.12**	**0.562 J**	
Pyrene		129-00-0	50*	1 U	**1.15**	**2.66**	**1.53**	**2.01**	**0.411 J**	**0.396 J**	**0.423 J**	
Total PAH (17) (ND=0)		TPAH17_ND0	NE	**0.453**	**5.881**	**92.48**	**12.18**	**745.3**	**6.889**	**4.057**	**3.19**	
NYSDEC PAH17 Other SVOCs	µg/L											
Aniline		62-53-3	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Benzidine		92-87-5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Benzoic acid		65-85-0	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Benzyl alcohol		100-51-6	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Bis(2-chloroethoxy)methane		111-91-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Bis(2-chloroethyl)ether		111-44-4	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,2-oxybis(1-Chloropropane)		108-60-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Bis(2-ethylhexyl)phthalate		117-81-7	5	1 U	**0.463 J**	**1.08**	1 U	1 U	**0.616 J**	1 U	1 U	
4-Bromophenyl phenyl ether		101-55-3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Butyl benzyl phthalate		85-68-7	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Carbazole		86-74-8	NE	1 U	1 U	1 U	1 U	**1.99**	1 U	1 U	1 U	
4-Chloro-3-methylphenol		59-50-7	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Chloroaniline		106-47-8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2-Chloronaphthalene		91-58-7	10*	1 U	1 U	**0.165 J**	**0.211 J**	**1.54**	1 U	1 U	1 U	
2-Chlorophenol		95-57-8	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Chlorophenyl phenyl ether		7005-72-3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Dibenzofuran		132-64-9	NE	1 U	1 U	**1.69**	**0.222 J**	**3.77**	1 U	1 U	1 U	
1,2-Dichlorobenzene		95-50-1	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,3-Dichlorobenzene		541-73-1	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	

Table 1. GPEC Loading Platform Area Investigation
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Analyte	µnits	CAS No.	Sample Name / Sample Date / Parent Sample / NYS AWQS	GPEC-MW403 3/24/2017	GPEC-MW404 3/28/2017	GPEC-MW405 3/28/2017	GPEC-MW406 3/27/2017	GPEC-MW407 3/27/2017	GPEC-MW408 3/27/2017	GPEC-MW409 3/24/2017	GPEC-MW-XX-032417 3/24/2017 GPEC-MW409	GPEC-MW409 FILT 3/24/2017
1,4-Dichlorobenzene		106-46-7	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
3,3-Dichlorobenzidine		91-94-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,4-Dichlorophenol		120-83-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Diethyl phthalate		84-66-2	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Dimethyl phthalate		131-11-3	50*	1 U	1 U	**0.159 J**	1 U	1 U	1 U	1 U	1 U	
2,4-Dimethylphenol		105-67-9	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Di-n-butyl phthalate		84-74-2	50	1 U	1 U	1 U	1 U	**0.865 J**	1 U	**0.49 J**	**0.373 J**	
4,6-Dinitro-2-methylphenol		534-52-1	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,4-Dinitrophenol		51-28-5	10*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,4-Dinitrotoluene		121-14-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,6-Dinitrotoluene		606-20-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Di-n-octyl phthalate		117-84-0	50*	1 U	1 U	**0.319 J**	1 U	1 U	1 U	1 U	1 U	
1,2-Diphenylhydrazine		122-66-7	0	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Hexachlorobenzene		118-74-1	0.04	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,3-Hexachlorobutadiene (C-46)		87-68-3	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Hexachlorocyclopentadiene		77-47-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Hexachloroethane		67-72-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Isophorone		78-59-1	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2-Methylphenol (o-Cresol)		95-48-7	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Methylphenol (p-Cresol)		106-44-5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2-Nitroaniline		88-74-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
3-Nitroaniline		99-09-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Nitroaniline		100-01-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Nitrobenzene		98-95-3	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2-Nitrophenol		88-75-5	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
4-Nitrophenol		100-02-7	NE	1 U	1 U	1 U	1 U	**1.13**	1 U	1 U	1 U	
N-Nitrosodimethylamine (NDMA)		62-75-9	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
N-Nitrosodiphenylamine (NDFA)		86-30-6	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Pentachlorophenol		87-86-5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Phenol		108-95-2	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Pyridine		110-86-1	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
1,2,4-Trichlorobenzene		120-82-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,4,5-Trichlorophenol		95-95-4	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
2,4,6-Trichlorophenol		88-06-2	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
PCB Aroclors	µg/L											
Aroclor 1016		12674-11-2	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1221		11104-28-2	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1232		11141-16-5	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1242		53469-21-9	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1248		12672-29-6	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1254		11097-69-1	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1260		11096-82-5	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Aroclor 1262		37324-23-5	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	

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Analyte	µnits	CAS No.	Sample Name / Sample Date / Parent Sample NYS AWQS	GPEC-MW403 3/24/2017	GPEC-MW404 3/28/2017	GPEC-MW405 3/28/2017	GPEC-MW406 3/27/2017	GPEC-MW407 3/27/2017	GPEC-MW408 3/27/2017	GPEC-MW409 3/24/2017	GPEC-MW-XX-032417 3/24/2017 GPEC-MW409	GPEC-MW409 FILT 3/24/2017
Aroclor 1268		11100-14-4	NE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Total PCBs (Lab calculated)		1336-36-3	0.09	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	
Total Metals	µg/L											
Aluminum		7429-90-5	NE	**78.6**	**103**	**151**	**72.1**	**138**	**19.3 J**	**17.2**	**17.5**	
Antimony		7440-36-0	3	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Arsenic		7440-38-2	25	2 U	**1.33 J**	2 U	**3.87**	**2.5**	**8.71**	**6.67**	**7.2**	
Barium		7440-39-3	1000	**40**	**107**	**65.5**	**51.4**	**101**	**20.6**	**12.5**	**13.5**	
Beryllium		7440-41-7	3*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Cadmium		7440-43-9	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Calcium		7440-70-2	NE	**87300**	**73300**	**73400**	**113000**	**114000**	**32900**	**37100**	**38500**	
Chromium		7440-47-3	50	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Cobalt		7440-48-4	NE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Copper		7440-50-8	200	**2.34**	**7.53**	**7.48**	**2.88**	**7.28**	**1.92 J**	**6.49**	**5.35**	
Iron		7439-89-6	300	**3620**	**4540**	**13700**	**8550**	**8660**	**1280**	**294**	**298**	**16.7 J**
Lead		7439-92-1	25	**3.87**	**7.26**	**5.3**	**0.787 J**	**1.25 J**	2 U	2 U	2 U	
Magnesium		7439-95-4	35000*	**32900**	**33800**	**41300**	**55400**	**60200**	**16900**	**16000**	**16400**	
Manganese		7439-96-5	300	**2090**	**1490**	**1570**	**1620**	**1380**	**339**	**263**	**273**	
Mercury		7439-97-6	0.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Nickel		7440-02-0	100	2 U	2 U	2 U	2 U	**24.1**	2 U	**1.91 J**	**1.18 J**	
Potassium		7440-09-7	NE	**9980**	**13300**	**13100**	**6290**	**7350**	**6790**	**7010**	**7210**	
Selenium		7782-49-2	10	8 U	**5.16 J**	**1.67 J**	8 U	8 U	**3 J**	**2.55**	2 U	
Silver		7440-22-4	50	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Sodium		7440-23-5	20000	**140000**	**130000**	**228000**	**230000**	**279000**	**131000**	**98100**	**101000**	
Thallium		7440-28-0	0.5*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Vanadium		7440-62-2	NE	**2.26**	**2.32**	**1.84 J**	**1.32 J**	**1.33 J**	2 U	2 U	2 U	
Zinc		7440-66-6	2000*	**5.1**	**11.9**	**8.34**	**14.1**	**7.75**	**3.01**	**1.42 J**	2 U	
Cyanides	µg/L											
Free Cyanide		FREECN	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Total Cyanide		57-12-5	200	20 U	20 U	**29**	**133**	**20**	20 U	20 U	20 U	
Other												
Nitrate as Nitrogen	µg/L	14797-55-8	10000							500 U	500 U	
Sulfate	µg/L	14808-79-8	250000							**27600 J**	**45400 J**	

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Analyte	µnits	CAS No.	Sample Name Sample Date Parent Sample NYS AWQS	GPEC-MW-XX-032417 FILT 3/24/2017 GPEC-MW409 FILT	GPEC-MW410 3/27/2017
BTEX	µg/L				
Benzene		71-43-2	1		**2.62**
Toluene		108-88-3	5		0.5 U
Ethylbenzene		100-41-4	5		**1.86**
Total Xylene		1330-20-7	5		**4.1**
Total BTEX (ND=0)		TBTEX_ND0	NE		**8.58**
Other VOCs	µg/L				
Acetone		67-64-1	50*		2 U
Acrolein (propenal)		107-02-8	5		20 U
Acrylonitrile		107-13-1	5		10 U
Bromodichloromethane		75-27-4	50*		0.5 U
Bromoform		75-25-2	50*		0.5 U
Bromomethane		74-83-9	5		1 U
t-Butyl alcohol (Tertiary Butyl Alcohol)		75-65-0	NE		2 U
Carbon disulfide		75-15-0	60*		1 U
Carbon tetrachloride		56-23-5	5		0.5 U
Chlorobenzene		108-90-7	5		0.5 U
Chloroethane		75-00-3	5		1 U
2-Chloroethyl vinyl ether		110-75-8	NE		1 U
Chloroform (Trichloromethane)		67-66-3	7		0.5 U
Chloromethane		74-87-3	5		0.5 U
Dibromochloromethane		124-48-1	50*		1 U
Dichlorodifluoromethane (Freon 12)		75-71-8	5		1 U
1,1-Dichloroethane		75-34-3	5		0.5 U
1,2-Dichloroethane		107-06-2	0.6		0.5 U
1,1-Dichloroethene		75-35-4	5		0.5 U
cis-1,2-Dichloroethene		156-59-2	5		0.5 U
trans-1,2-Dichloroethene		156-60-5	5		0.5 U
1,2-Dichloropropane		78-87-5	1		0.5 U
cis-1,3-Dichloropropene		10061-01-5	0.4		0.5 U
trans-1,3-Dichloropropene		10061-02-6	0.4		0.5 U
Diisopropyl ether (DIPE)		108-20-3	NE		0.5 U
2-Hexanone		591-78-6	50*		1 U
Methyl ethyl ketone (2-Butanone)		78-93-3	50*		2 U
Methyl tert-butyl ether (MTBE)		1634-04-4	10*		0.5 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE		1 U
Methylene chloride		75-09-2	5		1 U
Styrene		100-42-5	5		1 U
1,1,2,2-Tetrachloroethane		79-34-5	5		1 U
Tetrachloroethene (PCE)		127-18-4	5		0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		76-13-1	5		1 U
1,2,4-Trichlorobenzene		120-82-1	5		1 U
1,1,1-Trichloroethane (TCA)		71-55-6	5		0.5 U
1,1,2-Trichloroethane		79-00-5	1		1 U

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Analyte	µnits	CAS No.	Sample Name Sample Date Parent Sample NYS AWQS	GPEC-MW-XX-032417 FILT 3/24/2017 GPEC-MW409 FILT	GPEC-MW410 3/27/2017
Trichloroethene (TCE)		79-01-6	5		0.5 U
Trichlorofluoromethane (Freon 11)		75-69-4	5		1 U
1,2,3-Trichloropropane		96-18-4	0.04		0.5 U
Vinyl acetate		108-05-4	NE		1 U
Vinyl chloride		75-01-4	2		1 U
NYSDEC PAH17	µg/L				
Acenaphthene		83-32-9	20*		**37.2**
Acenaphthylene		208-96-8	NE		**1.74**
Anthracene		120-12-7	50*		**3.41**
Benzo(a)anthracene		56-55-3	0.002*		**0.528 J**
Benzo(b)fluoranthene		205-99-2	0.002*		1 U
Benzo(k)fluoranthene		207-08-9	0.002*		1 U
Benzo(g,h,i)perylene		191-24-2	NE		1 U
Benzo(a)pyrene		50-32-8	ND		1 U
Chrysene		218-01-9	0.002*		**0.334 J**
Dibenz(a,h)anthracene		53-70-3	NE		1 U
Fluoranthene		206-44-0	50*		**2.11**
Fluorene		86-73-7	50*		**2.26**
Indeno(1,2,3-cd)pyrene		193-39-5	0.002*		1 U
2-Methylnaphthalene		91-57-6	NE		**2.76**
Naphthalene		91-20-3	10*		**16.8**
Phenanthrene		85-01-8	50*		**10.7**
Pyrene		129-00-0	50*		**3.53**
Total PAH (17) (ND=0)		TPAH17_ND0	NE		**81.37**
NYSDEC PAH17 Other SVOCs	µg/L				
Aniline		62-53-3	5		1 U
Benzidine		92-87-5	5		1 U
Benzoic acid		65-85-0	NE		1 U
Benzyl alcohol		100-51-6	NE		1 U
Bis(2-chloroethoxy)methane		111-91-1	5		1 U
Bis(2-chloroethyl)ether		111-44-4	1		1 U
2,2-oxybis(1-Chloropropane)		108-60-1	5		1 U
Bis(2-ethylhexyl)phthalate		117-81-7	5		1 U
4-Bromophenyl phenyl ether		101-55-3	NE		1 U
Butyl benzyl phthalate		85-68-7	50*		1 U
Carbazole		86-74-8	NE		**0.617 J**
4-Chloro-3-methylphenol		59-50-7	NE		1 U
4-Chloroaniline		106-47-8	5		1 U
2-Chloronaphthalene		91-58-7	10*		**3.33**
2-Chlorophenol		95-57-8	NE		1 U
4-Chlorophenyl phenyl ether		7005-72-3	NE		1 U
Dibenzofuran		132-64-9	NE		**0.649 J**
1,2-Dichlorobenzene		95-50-1	3		1 U
1,3-Dichlorobenzene		541-73-1	3		1 U

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Analyte	µnits	CAS No.	Sample Name Sample Date Parent Sample NYS AWQS	GPEC-MW-XX-032417 FILT 3/24/2017 GPEC-MW409 FILT	GPEC-MW410 3/27/2017
1,4-Dichlorobenzene		106-46-7	3		1 U
3,3-Dichlorobenzidine		91-94-1	5		1 U
2,4-Dichlorophenol		120-83-2	5		1 U
Diethyl phthalate		84-66-2	50*		1 U
Dimethyl phthalate		131-11-3	50*		1 U
2,4-Dimethylphenol		105-67-9	50*		1 U
Di-n-butyl phthalate		84-74-2	50		**0.203 J**
4,6-Dinitro-2-methylphenol		534-52-1	NE		1 U
2,4-Dinitrophenol		51-28-5	10*		1 U
2,4-Dinitrotoluene		121-14-2	5		1 U
2,6-Dinitrotoluene		606-20-2	5		**2.73**
Di-n-octyl phthalate		117-84-0	50*		1 U
1,2-Diphenylhydrazine		122-66-7	0		1 U
Hexachlorobenzene		118-74-1	0.04		1 U
1,3-Hexachlorobutadiene (C-46)		87-68-3	0.5		1 U
Hexachlorocyclopentadiene		77-47-4	5		1 U
Hexachloroethane		67-72-1	5		1 U
Isophorone		78-59-1	50*		1 U
2-Methylphenol (o-Cresol)		95-48-7	1		1 U
4-Methylphenol (p-Cresol)		106-44-5	1		1 U
2-Nitroaniline		88-74-4	5		1 U
3-Nitroaniline		99-09-2	5		1 U
4-Nitroaniline		100-01-6	5		1 U
Nitrobenzene		98-95-3	0.4		**0.43 J**
2-Nitrophenol		88-75-5	NE		1 U
4-Nitrophenol		100-02-7	NE		1 U
N-Nitrosodimethylamine (NDMA)		62-75-9	NE		1 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	50*		1 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE		1 U
Pentachlorophenol		87-86-5	1		1 U
Phenol		108-95-2	1		1 U
Pyridine		110-86-1	50*		1 U
1,2,4-Trichlorobenzene		120-82-1	5		1 U
2,4,5-Trichlorophenol		95-95-4	NE		1 U
2,4,6-Trichlorophenol		88-06-2	NE		1 U
PCB Aroclors	µg/L				
Aroclor 1016		12674-11-2	NE		0.05 U
Aroclor 1221		11104-28-2	NE		0.05 U
Aroclor 1232		11141-16-5	NE		0.05 U
Aroclor 1242		53469-21-9	NE		0.05 U
Aroclor 1248		12672-29-6	NE		0.05 U
Aroclor 1254		11097-69-1	NE		0.05 U
Aroclor 1260		11096-82-5	NE		0.05 U
Aroclor 1262		37324-23-5	NE		0.05 U

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National Grid
Brooklyn, New York

Analyte	µnits	CAS No.	NYS AWQS	Sample Name Sample Date Parent Sample GPEC-MW-XX-032417 FILT 3/24/2017 GPEC-MW409 FILT	GPEC-MW410 3/27/2017
Aroclor 1268		11100-14-4	NE		0.05 U
Total PCBs (Lab calculated)		1336-36-3	0.09		0.05 U
Total Metals	µg/L				
Aluminum		7429-90-5	NE		**146**
Antimony		7440-36-0	3		2 U
Arsenic		7440-38-2	25		**1.8 J**
Barium		7440-39-3	1000		**260**
Beryllium		7440-41-7	3*		2 U
Cadmium		7440-43-9	5		2 U
Calcium		7440-70-2	NE		**153000**
Chromium		7440-47-3	50		2 U
Cobalt		7440-48-4	NE		2 U
Copper		7440-50-8	200		**6.78**
Iron		7439-89-6	300	**31.8**	**1450**
Lead		7439-92-1	25		**2.97**
Magnesium		7439-95-4	35000*		**367000**
Manganese		7439-96-5	300		**393**
Mercury		7439-97-6	0.7		0.5 U
Nickel		7440-02-0	100		2 U
Potassium		7440-09-7	NE		**109000**
Selenium		7782-49-2	10		8 U
Silver		7440-22-4	50		2 U
Sodium		7440-23-5	20000		**3190000 D**
Thallium		7440-28-0	0.5*		2 U
Vanadium		7440-62-2	NE		**3.55**
Zinc		7440-66-6	2000*		**5.62**
Cyanides	µg/L				
Free Cyanide		FREECN	NE		5 U
Total Cyanide		57-12-5	200		20 U
Other					
Nitrate as Nitrogen	µg/L	14797-55-8	10000		
Sulfate	µg/L	14808-79-8	250000		

Table 1. GPEC Loading Platform Area Investigation
Groundwater Analysis Results
National Grid
Brooklyn, New York

Notes:

Analytes in blue are not detected in any sample
µg/L= micrograms per liter or parts per billion (ppb)

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
SVOC = Semi-Volatile Organic Compound
VOC = Volatile Organic Compound

Total BTEX, Total VOCs, Total PAHs, Total SVOCs, and Total PCBs are calculated using detects only.
Total PAH16 is calculated using the EPA16 list of analytes: Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Phenanthrene, and Pyrene
Total PAH17 is calculated using the EPA16 list of analytes plus 2-Methylnaphthalene

NYS AWQS = New York State Ambient Water Quality Standards and Guidance Values for GA groundwater
* indicates the value is a guidance value and not a standard

CAS No. = Chemical Abstracts Service Number
ND = Not Detected
NE = Not Established
NYSDEC = New York State Department of Environmental Conservation

Bolding indicates a detected result concentration
Shading and bolding indicates that the detected concentration is above the NYSDOH guidance it was compared to
Gray shading and bolding indicates that the detected result value exceeds the NYS AWQS

Data Qualifiers:
D = The result is for a diluted sample.
J = The result is an estimated value.
R = The result is rejected.
U = The result was not detected above the reporting limit.
UJ = The results was not detected at or above the reporting limit shown and the reporting limit is estimated.

Figures

AREA 8

AREA 7

AREA 4

AREA 2

AREA 1

AREA 4

GPEC-MW402

GPEC-SB07/MW-7D

GPEC-SB10/MW-10

GPEC-SB06/MW-6

GPEC-SB/PZ322

GPEC-SB/PZ323

GPEC-SB101A/MW-101D

GPEC-SB321

GPEC-SB315

GPEC-SB306I

GPEC-GT07 (MW)

GPEC-SB302

GPEC-GT08

GPEC-SB102/MW-102D

GPEC-SB209

GPEC-SB208

GPEC-MW410

GPEC-SB03/MW-3D

GPEC-SB417

GPEC-SB106/MW-3WT

GPEC-SB03S/MW-3S

GPEC-RW409

GPEC-SB416

GPEC-MW409

GPEC-SB415

GPEC-SB414

GPEC-MW408

GPEC-SB207

GPEC-SB408A

GPEC-MW407

GPEC-SB206

GPEC-SB407A

GPEC-SB02/MW-2

GPEC-MW406

GPEC-SB105/MW-2D

GPEC-SB406A

GPEC-MW405

GPEC-SB104

GPEC-SB405A

GPEC-SB/MW205

GPEC-MW404

GPEC-SB404A

GPEC-MW1D

GPEC-SB103A/MW-103

GPEC-SB103

GPEC-SB204

GPEC-SB01/SB-01B/MW01R

GPEC-SB202

GPEC-MW403

GPEC-SB203

GPEC-GT10D (MW)

NEWTOWN CREEK

LEGEND

IMPACTS ABOVE -50 MSL

- NAPL SATURATED
- NAPL COATED MATERIAL
- NAPL BLEBS, GLOBS, SHEEN
- STAINING, ODOR
- INDUSTRIAL IMPACTS- (PETROLEUM SATURATION OR OTHER UNNATURAL) SATURATION AND SHEENS
- INDUSTRIAL IMPACTS- (PETROLEUM OR OTHER UNNATURAL) STAINING & ODORS
- WOOD CIPS/BLUE DISCOLORATIONS /SULFER-LIKE ODOR
- NO OBSERVED IMPACTS
- BORING LOCATION
- SITE BOUNDARY
- PHASE 1 INVESTIGATION
- PHASE 2 INVESTIGATION

SOURCES:
1. AERIAL PHOTOGRAPH 2014 GOOGLE EARTH PRO.

0 110 220

SCALE: 1" = 110'

Loading Platform Area Investigation
Remedial Investigation Areas 1 and 2
Greenpoint Energy Center Former Manufactured Gas Plant Site
Brooklyn, New York

nationalgrid

GEI Consultants

LOADING PLATFORM AREA INVESTIGATION

Project 125180 | September 2017 | Fig. 1

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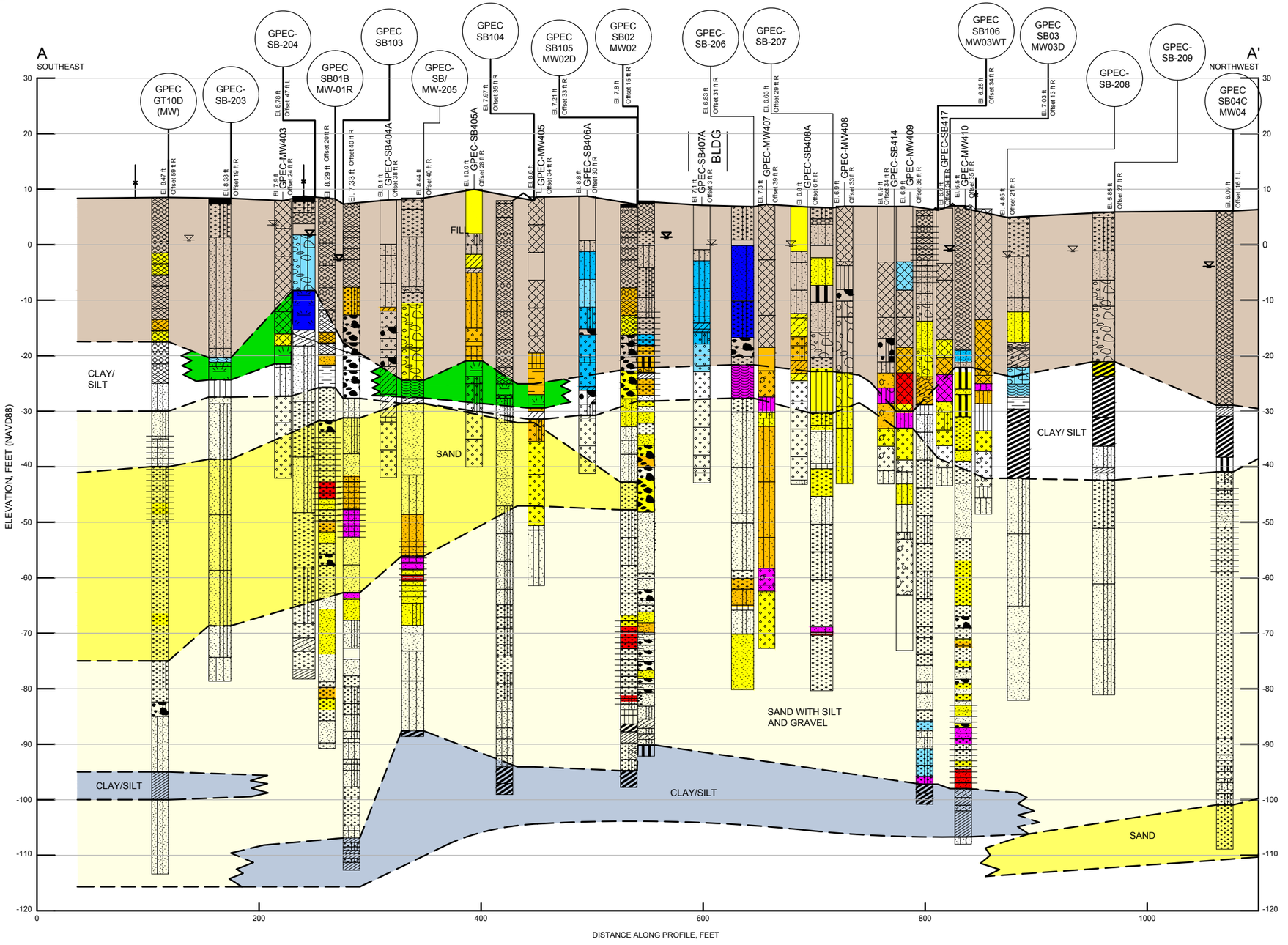

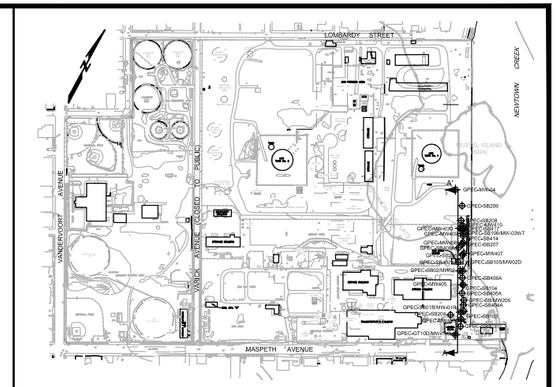

PROFILE LOCATION MAP

0 1000 2000

SCALE: 1" = 1000'

LEGEND

GPEC-MW-1 — BORING NUMBER

EL. 11.7 ft, 20' E — ELEVATION OF GROUND SURFACE AND OFFSET OF BORING FROM PROFILE LINE

EXISTING GROUND SURFACE

GROUNDWATER ELEVATION (FT)

INTERPRETIVE STRATUM BOUNDARY

GROUNDWATER LEVEL MEASURED AT COMPLETETION OF DRILLING

GROUNDWATER LEVEL MEASURED IN MONITORING WELL

SCREENED SECTION OF OBSERVATION WELL

LITHOLOGY

- ASPHALT
- FILL
- OH, MODERATE TO HIGHLY PLASTIC ORGANIC SILTS AND CLAYS
- CH, FAT CLAY
- MH, ELASTIC SILT
- OL, LOW PLASTICITY ORGANIC SILTS AND CLAYS
- CL, LEAN CLAY OR SANDY LEAN CLAY
- ML, SILT OR SANDY SILT
- SC, CLAYEY SAND
- SM, SILTY SAND, SILTY SAND WITH GRAVEL
- SP, POORLY GRADED SAND, PPORLY GRADED SAND WITH GRAVEL
- SW, WELL GRADED SAND, WELL GRADED SAND WITH GRAVEL
- GC, CLAYEY GRAVEL
- GM, SILTY GRAVEL, SILTY GRAVEL WITH SAND
- GP, POORLY GRADED GRAVEL, POORLY GRADED GRAVEL WITH SAND
- GW, WELL GRADED GRAVEL, WELL GRADED GRAVEL WITH SAND
- BOULDERS AND COBBLES
- CREEK SEDIMENT
- PEAT/MEADOW MAT

STRATIGRAPHY

- FILL
- SEDIMENTS
- ORGANIC CLAY
- CLAY/SILT
- SILT
- SAND WITH SILT AND GRAVEL
- SAND
- WATER
- PEAT/MEADOW MAT

PHYSICAL OBSERVATIONS

- NAPL SATURATED
- NAPL COATED MATERIAL
- SOLID NAPL
- NAPL BLEBS, GLOBS, SHEEN
- STAINING, ODOR
- INDUSTRIAL IMPACTS - (PETROLEUM OR OTHER UNNATURAL) SATURATION & SHEENS
- INDUSTRIAL IMPACTS - (PETROLEUM OR OTHER UNNATURAL) STAINING & ODORS
- WOOD CHIPS/BLUE DISCOLORATION/SULFER-LIKE ODOR
- NO OBSERVED IMPACTS

NOTE: SEVERAL BORINGS SHIFTED SLIGHTLY FROM SURVEYED LOCATION FOR VISIBILITY.

HORIZONTAL SCALE: 1" = 100'

0 100' 200'

0 20' 40'

VERTICAL SCALE: 1" = 20'

NOTE: 5x VERTICAL EXAGGERATION

Loading Platform Area Investigation
Remedial Investigation Areas 1 and 2
Greenpoint Energy Center Former Manufactured Gas Plant Site
Brooklyn, New York

nationalgrid

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SUBSURFACE PROFILE A

Project 125180 | September 2017 | Fig. 2

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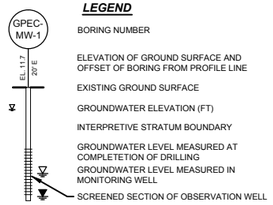


LEGEND

BORING NUMBER

ELEVATION OF GROUND SURFACE AND OFFSET OF BORING FROM PROFILE LINE

EXISTING GROUND SURFACE

GROUNDWATER ELEVATION (FT)

INTERPRETIVE STRATUM BOUNDARY

GROUNDWATER LEVEL MEASURED AT COMPLETETION OF DRILLING

GROUNDWATER LEVEL MEASURED IN MONITORING WELL

SCREENED SECTION OF OBSERVATION WELL

LITHOLOGY

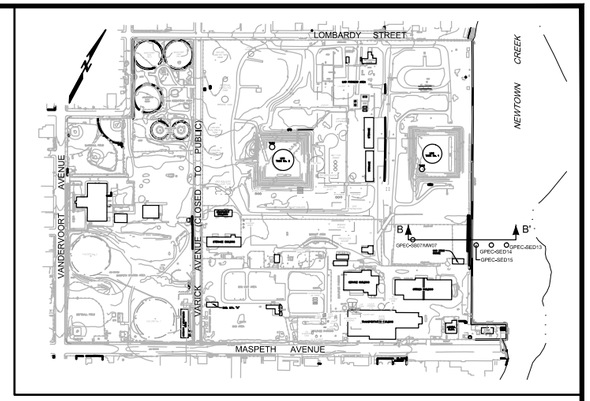
- ASPHALT
- FILL
- OH, MODERATE TO HIGHLY PLASTIC ORGANIC SILTS AND CLAYS
- CH, FAT CLAY
- MH, ELASTIC SILT
- OL, LOW PLASTICITY ORGANIC SILTS AND CLAYS
- CL, LEAN CLAY OR SANDY LEAN CLAY
- ML, SILT OR SANDY SILT
- SC, CLAYEY SAND
- SM, SILTY SAND, SILTY SAND WITH GRAVEL
- SP, POORLY GRADED SAND, PPORLY GRADED SAND WITH GRAVEL
- SW, WELL GRADED SAND, WELL GRADED SAND WITH GRAVEL
- GC, CLAYEY GRAVEL
- GM, SILTY GRAVEL, SILTY GRAVEL WITH SAND
- GP, POORLY GRADED GRAVEL, POORLY GRADED GRAVEL WITH SAND
- GW, WELL GRADED GRAVEL, WELL GRADED GRAVEL WITH SAND
- BOULDERS AND COBBLES
- CREEK SEDIMENT
- PEAT/MEADOW MAT

STRATIGRAPHY

- FILL
- SEDIMENTS
- ORGANIC CLAY
- CLAY/SILT
- SILT
- SAND WITH SILT AND GRAVEL
- SAND
- WATER
- PEAT/MEADOW MAT

PHYSICAL OBSERVATIONS

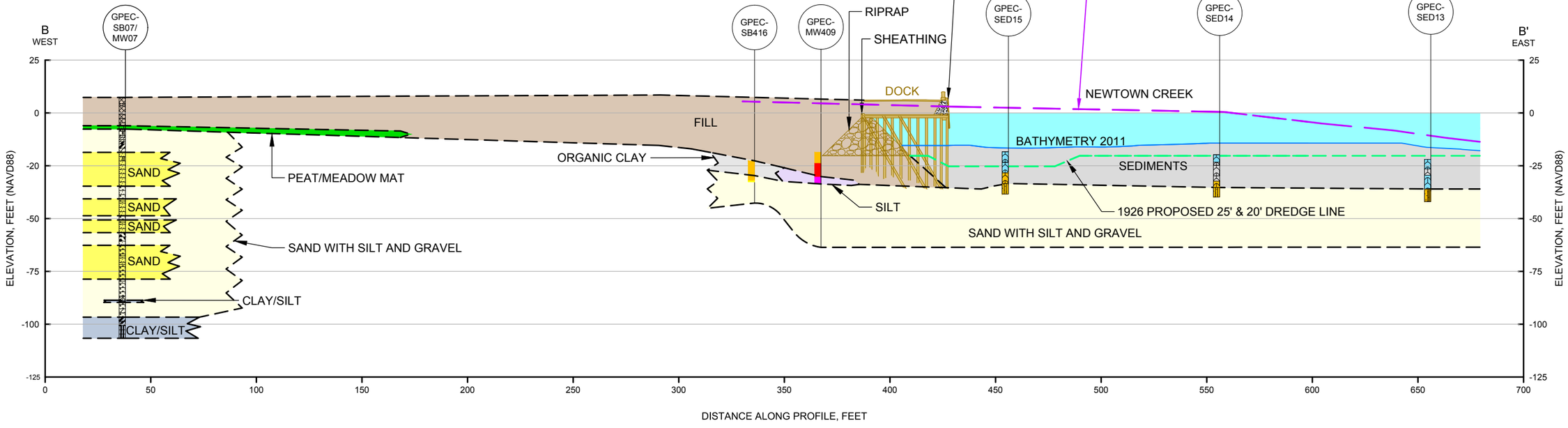
- NAPL SATURATED
- NAPL COATED MATERIAL
- SOLID NAPL
- NAPL BLEBS, GLOBS, SHEEN
- STAINING, ODOR
- INDUSTRIAL IMPACTS - (PETROLEUM OR OTHER UNNATURAL) SATURATION & SHEENS
- INDUSTRIAL IMPACTS - (PETROLEUM OR OTHER UNNATURAL) STAINING & ODORS
- WOOD CHIPS/BLUE DISCOLORATION/SULFER-LIKE ODOR
- NO OBSERVED IMPACTS



PROFILE LOCATION MAP

0 1000 2000

SCALE: 1" = 1000'



HORIZONTAL SCALE: 1" = 50'

0 50' 100'

0 50' 100'

VERTICAL SCALE: 1" = 50'

NOTE: 1x VERTICAL EXAGGERATION

Loading Platform Area Investigation
Remedial Investigation Areas 1 and 2
Greenpoint Energy Center Former Manufactured Gas Plant Site
Brooklyn, New York

nationalgrid

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SUBSURFACE PROFILE B

Project 125180 | September 2017 | Fig. 3

---- \\gtb1v-fs01\CAD\Project\National Grid\Greenpoint\Loading Platform Area Investigation\125180-LPAI-Figs.dwg - 9/6/2017

Attachment 1

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-MW403

GROUND SURFACE ELEVATION (FT): 7.91 **LOCATION:** Area 1
NORTHING (FT): 687736 **EASTING (FT):** 651255 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 2/28/2017 - 2/28/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	5/0.9	0.0				(0'- 5') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subangular, ~5% fines, non plastic; max. gravel size 2", dry, brown, red brick fragments, wood fragments, FILL, loose.
0	5	S2	5/1.3	0.0				(5'- 10') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subangular, ~5% fines, non plastic; max. gravel size 2", dry, brown, red brick fragments, wood fragments, FILL, loose, wet at sample bottom.
-5	10	S3	10/6	0.0			OLO	(10'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~35% fines, low plasticity, ~15% gravel, fine to coarse, angular to subrounded; max. gravel size 3", slight organic-like odor, wet, brown to black, wood fragments, FILL, moderately loose.
-10	15							
-15	20	S4	4/4	0.0				(20'- 24') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, medium to coarse, ~40% gravel, fine to coarse, angular to subrounded; max. gravel size 3.5", wet, black, cobbles >4.5", red brick fragments, wood fragments, FILL, loose.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

GEI Consultants

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455 Winding Brook Drive
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Glastonbury, CT 06033
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CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 2 of 2
GPEC-MW403

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	6/4.9	0.0			NLO	(24'- 26.1') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, medium to coarse, ~40% gravel, fine to coarse, angular to subrounded; max. gravel size 3.5", moderate naphthalene-like odor, wet, black, cobbles >4.5", red brick fragments, wood fragments, FILL, loose.
-20							OLO	(26.1'- 29.4') PEAT (PT); strong organic-like odor, reddish brown, meadow mat, fibrous, roots, leaves, tight.
	30	S6	10/7.6	0.0				(29.4'- 30') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, low plasticity; wet, gray, loose.
-25							OLO	(30'- 35.2') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, low plasticity; slight organic-like odor, wet, gray to black, loose.
	35							(35.2'- 40') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray, loose.
-30								
	40	S7	10/5.5	0.0				(40'- 50') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray, loose.
-35								
	45							
-40								
	50							End of Boring at 50 feet. Monitoring well GPEC-MW403 installed.

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Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
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TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 3
GPEC-MW404

GROUND SURFACE ELEVATION (FT): 8.49 **LOCATION:** Area 1
NORTHING (FT): 687857 **EASTING (FT):** 651232 **TOTAL DEPTH (FT):** 55.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 2/27/2017 - 2/27/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	5/1.1	0.0				(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic; max. gravel size 2.5", moist, dark brown, red brick fragments, FILL, loose.
0	5	S2	5/1.1	0.0				(5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic; max. gravel size 2.5", wet, dark brown, red brick fragments, FILL, loose.
-5	10	S3	5/3.1	0.0			OLO	(10'- 15') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subangular to subrounded, ~5% fines, non plastic; max. gravel size 2", moderate organic-like odor, dark brown to gray, red brick fragments, cobbles >4.5", FILL, loose.
-10	15	S4	5/1.4	0.0			OLO	(15'- 20') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subangular to subrounded, ~5% fines, non plastic; max. gravel size 2", moderate organic-like odor, dark brown to gray, red brick fragments, cobbles >4.5", FILL, loose.
-15	20	S5	10/5.6	0.0			OLO	(20'- 26.3') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subangular to subrounded, ~5% fines, non plastic; max. gravel size 2", moderate organic-like odor, dark brown to gray, red brick fragments, cobbles >4.5", FILL, loose.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
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JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR
CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG

GPEC-MW404

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25						OLO	
-20							OLO	(26.3'- 30') SILT WITH SAND AND GRAVEL (ML); ~70% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, subangular to subrounded, ~10% sand, fine; max. gravel size 3", slight organic-like odor, moist, gray, moderately loose.
	30	S6	10/1	0.0				(30'- 40') SILT WITH SAND AND GRAVEL (ML); ~70% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, subangular to subrounded, ~10% sand, fine; max. gravel size 3", slight organic-like odor, moist, gray, moderately loose.
-25								
	35						OLO	
-30								
	40	S7	5/0	0.0				(40'- 45') NO RECOVERY.
-35								
	45	S8	10/6.4	0.0				(45'- 55') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel, fine to coarse, subangular to subrounded; max. gravel size 2", wet, gray to brown, loose.
-40								
	50							

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
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JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
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Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG

GPEC-MW404

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55							End of Boring at 55 feet. Monitoring well GPEC-MW404 installed.

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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BORING LOG
PAGE 1 of 3
GPEC-MW405

GROUND SURFACE ELEVATION (FT): 8.58 **LOCATION:** Area 1
NORTHING (FT): 687955 **EASTING (FT):** 651191 **TOTAL DEPTH (FT):** 70.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 2/27/2017 - 2/28/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	5/1.2	0.0				(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~20% fines, non plastic; max. gravel size 2", dry, brown, red brick fragments, debris, FILL, loose.
0	5	S2	5/2.1	0.0				(5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~20% fines, non plastic; max. gravel size 2", wet, brown, red brick fragments, debris, FILL, loose.
-5	10	S3	5/0					(10'- 15') NO RECOVERY.
-10	15	S4	5/1.6	0.0				(15'- 20') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to coarse, ~30% gravel, fine to coarse, angular to subrounded, ~10% fines, non plastic; max. gravel size 3", wet, brown, red brick fragments, glass, wood, mica, FILL, loose.
-15	20	S5	5/1.5	0.0				(20'- 25') WIDELY GRADED GRAVEL WITH SAND (GW); ~90% gravel, fine to coarse, angular to subrounded, ~10% sand, fine to coarse; max. gravel size 3", wet, gray to brown, red brick fragments, wood, FILL, loose.

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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BORING LOG

GPEC-MW405

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S6	5/2.3	0.0				(25'- 28.1') WIDELY GRADED GRAVEL WITH SAND (GW); ~90% gravel, fine to coarse, angular to subrounded, ~10% sand, fine to coarse; max. gravel size 3", wet, gray to brown, red brick fragments, wood, FILL, loose.
-20							NLO	(28.1'- 30') GRAVELLY SILT (ML); ~60% fines, non plastic to low plasticity, ~30% gravel, fine to coarse, angular to subangular, ~10% sand, fine to medium; max. gravel size 3", slight naphthalene-like odor, brown to gray, sheen.
	30	S7	10/7.5	0.0			NLO	(30'- 30.9') GRAVELLY SILT (ML); ~60% fines, non plastic to low plasticity, ~30% gravel, fine to coarse, angular to subangular, ~10% sand, fine to medium; max. gravel size 3", slight naphthalene-like odor, brown to gray, NAPL blebs and globs.
-25				4.3			NLO	(30.9'- 35.6') ORGANIC CLAY (OL); ~100% fines, low plasticity; moderate naphthalene-like odor, wet, roots, wood fragments, NAPL blebs and globs in top 8", stained black, tight.
	35			1.5				
							OLO	(35.6'- 38') PEAT (PT); moderate organic-like odor, brown, meadow mat, fibrous, roots.
-30				0.0			NLO	(38'- 38.6') WIDELY GRADED GRAVEL WITH SAND (GW); ~70% gravel, fine to coarse, angular to subangular, ~30% sand, fine to coarse; max. gravel size 3", slight naphthalene-like odor, stained black, sheen.
	40	S8	10/5.25	0.8				(38.6'- 40') LEAN CLAY (CL); ~90% fines, low plasticity, ~10% sand, fine; moist, gray, tight.
				0.6			NLO	(40'- 44') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subrounded, ~15% fines, low plasticity; max. gravel size 3", moderate naphthalene-like odor, wet, stained black, NAPL blebs and globs, loose.
-35				0.8				(44'- 50') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded; max. gravel size 3", slight naphthalene-like odor, wet, light brown to gray, loose.
	45			0.5			NLO	
-40				0.0				
	50	S9	10/7.75	13.2				(50'- 59.2') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded; max. gravel size 3", slight naphthalene-like odor, wet, light brown to gray, loose.
				8.7			NLO	
				14.6				

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BORING LOG

GPEC-MW405

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55			12.1			NLO	
				6.8				
-50				4.6				
				3.1				
	60			3.0				
		S10	10/4.9	0.0				(59.2'- 60') SILTY SAND (SM); ~60% sand, fine to medium, ~40% fines, non plastic to low plasticity; wet, light brown to gray, moderately loose. (60'- 70') SILTY SAND (SM); ~60% sand, fine to medium, ~40% fines, non plastic to low plasticity; wet, light brown to gray, moderately loose.
-55								
	65							
-60								
	70							End of Boring at 70 feet. Monitoring well GPEC-MW405 installed.

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BORING LOG
PAGE 1 of 3
GPEC-MW406

GROUND SURFACE ELEVATION (FT): 7.44 **LOCATION:** Area 2
NORTHING (FT): 688048 **EASTING (FT):** 651161 **TOTAL DEPTH (FT):** 70.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: D. Sharpe **DATE START / END:** 3/2/2017 - 3/3/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/3.7	0.0				(0'- 4.5') Gravel FILL.
0	5							(4.5'- 8.2') SANDY SILT (ML); ~60% fines, non plastic, ~40% sand, fine to coarse; wet, brown.
								(8.2'- 10') SANDY SILT (ML); ~60% fines, non plastic, ~40% sand, fine to coarse; wet, dark brown.
-5	10	S2	10/2.8	0.5				(10'- 14.5') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to coarse, ~10% fines, non plastic, ~5% gravel, fine to coarse; max. gravel size 1.5", moderate naphthalene-like odor, black staining, NAPL blebs, and sheen.
				1.3			NLO	
				1.7				
-10	15			5.6				(14.5'- 20') SANDY SILT WITH GRAVEL (ML); ~40% fines, non plastic, ~30% gravel, fine to coarse, ~30% sand, fine to coarse; max. gravel size 3", moderate naphthalene-like odor, black staining, NAPL blebs, and sheen.
				7.9			NLO	
-15	20	S3	10/2.3	0.6				(20'- 30') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~25% gravel, fine to coarse, ~25% fines, non plastic; max. gravel size 2.5", moderate naphthalene-like odor, wet, gray to black staining.
				0.7			NLO	

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Glastonbury, CT 06033
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BORING LOG

GPEC-MW406

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25			0.7			NLO	
	30	S4	10/2.2	0.4				(30'- 40') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse; max. gravel size 3", slight naphthalene-like odor, black staining, chunk of wood at sample bottom.
-25				0.5				
	35			0.5			NLO	
-30				0.4				
	40	S5	10/6.7	4.4				(40'- 50') SANDY SILT (ML); ~50% fines, non plastic, ~45% sand, fine to medium, ~5% gravel, fine to coarse; max. gravel size 1", moderate naphthalene-like odor, black staining, NAPL blebs, and sheen, wood chunks at sample top.
-35				1.9				
				1.0				
	45			5.4			NLO	
-40				5.7				
				7.9				
	50	S6	10/3	0.5				(50'- 55.3') SANDY SILT (ML); ~50% fines, non plastic, ~45% sand, fine to coarse, ~5% gravel, fine to coarse; max. gravel size 1", slight naphthalene-like odor, gray to black staining.
-45							NLO	

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BORING LOG
PAGE 3 of 3
GPEC-MW406

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55			0.5			NLO	
-50				0.5				(55.3'- 60') SILTY GRAVEL WITH SAND (GM); ~50% gravel, fine to coarse, ~30% fines, non plastic, ~20% sand, fine to coarse; max. gravel size 2", gray to black.
	60	S7	10/1.7	0.0				(60'- 70') SILTY SAND (SM); ~50% sand, fine to coarse, ~50% fines, non plastic; slight naphthalene-like odor, wet, gray to black.
-55								
	65						NLO	
-60								
	70							End of Boring at 70 feet. Monitoring well GPEC-MW406 installed.

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BORING LOG
PAGE 1 of 3
GPEC-MW407

GROUND SURFACE ELEVATION (FT): 7.26 **LOCATION:** Area 2
NORTHING (FT): 688153 **EASTING (FT):** 651129 **TOTAL DEPTH (FT):** 80.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/1/2017 - 3/2/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/1.3	0.0				(0'- 10') SILTY SAND WITH GRAVEL (SM); ~40% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded to angular, ~30% fines, low plasticity; max. gravel size 3", wet, brown, red brick fragments, concrete fragments, FILL, loose.
0	5							
-5	10	S2	10/2.5	0.0				(10'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to medium, ~30% fines, low plasticity, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 3", wet, brown to gray, red brick fragments, concrete fragments, wood pieces, cobbles up to 4.5", FILL, loose.
-10	15							
-15	20	S3	10/3.2	0.0				(20'- 25.8') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray, trace wood fragments, FILL, loose.

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BORING LOG

GPEC-MW407

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25							(25.8'- 30') WIDELY GRADED GRAVEL (GW); ~90% gravel, coarse, angular to subrounded, ~10% sand, fine to coarse; max. gravel size 3", wet, gray, trace sheen, loose.
-25	30	S4	10/7.9	0.3 0.6 1.7 3.6 4.7			NLO	(30'- 34.7') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subangular to subrounded, ~5% fines, non plastic; max. gravel size 3", slight naphthalene-like odor, wet, gray, trace sheen, loose.
-30	35			9.9 1.3 1.2			NLO	(34.7'- 37.5') SANDY SILT WITH GRAVEL (ML); ~50% fines, low plasticity, ~30% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular; max. gravel size 1.5", strong naphthalene-like odor, wet, black, NAPL-coated, moderately loose.
				1.0			NLO	(37.5'- 38.5') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic to low plasticity; max. gravel size 2", slight naphthalene-like odor, wet, brown, shell fragments, loose.
-35	40	S5	10/8	1.9 2.1 2.3 2.0			NLO	(38.5'- 40') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines, non plastic; slight naphthalene-like odor, wet, black, loose. (40'- 50') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines, non plastic; slight naphthalene-like odor, wet, black, trace sheen, loose.
-40	45			2.8 0.8 1.0 0.6				
-45	50	S6	10/8.1	1.1 2.3 2.7			NLO	(50'- 60') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines, non plastic; slight naphthalene-like odor, wet, black, trace sheen, loose.

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BORING LOG

GPEC-MW407

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55			2.6				
				2.1				
				1.1			NLO	
-50				0.8				
				0.9				
	60	S7	10/9.6	1.1				(60'- 65.6') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines, non plastic; slight naphthalene-like odor, wet, black, trace sheen, loose.
				1.6				
-55				1.1			NLO	
				1.2				
				1.9				
	65			2.8				
				3.8				(65.6'- 68.6') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", moderate naphthalene-like odor, wet, black, NAPL-coated from 81-99", loose.
-60				16.9			NLO	
				16.0				(68.6'- 69.7') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~20% gravel, fine; moderate naphthalene-like odor, wet, gray, NAPL-coated from 106-112", loose.
							NLO	
	70	S8	10/2.8	0.7			NLO	(69.7'- 70') SANDY SILT (ML); non plastic to low plasticity, ~70% gravel, ~30% sand, fine to medium; slight naphthalene-like odor, wet, tight.
-65								(70'- 80') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; slight naphthalene-like odor, wet, gray to brown, loose.
				0.6				
	75						NLO	
-70				0.5				
	80							End of Boring at 80 feet. Monitoring well GPEC-MW407 installed.

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-MW408

GROUND SURFACE ELEVATION (FT): 6.93 **LOCATION:** Area 2
NORTHING (FT): 688218 **EASTING (FT):** 651101 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: D. Sharpe **DATE START / END:** 3/2/2017 - 3/2/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/2.8	0.0				(0'- 10') SILTY GRAVEL WITH SAND (GM); ~55% gravel, fine to coarse, ~30% sand, fine to coarse, ~15% fines, non plastic; max. gravel size 2", dry, black to brown, FILL, wet at sample bottom.
0	5							
-5	10	S2	5/3.8	0.0				(10'- 10.7') SILTY GRAVEL WITH SAND (GM); ~55% gravel, fine to coarse, ~30% sand, fine to coarse, ~15% fines, non plastic; max. gravel size 2", wet, black to brown, FILL. (10.7'- 15') SANDY SILT WITH GRAVEL (ML); ~70% fines, non plastic, ~15% gravel, fine to coarse, ~15% sand, fine to medium; max. gravel size 3", wet, brown.
-10	15	S3	5/3.9	0.0				(15'- 17.1') WELL GRADED GRAVEL (GW); ~95% gravel, fine to coarse, ~5% fines, non plastic; max. gravel size 2", wet. (17.1'- 20') SILTY GRAVEL (GM); ~50% gravel, coarse, ~40% fines, non plastic, ~10% sand, fine to coarse; max. gravel size 5", wet, brown, cobbles.
-15	20	S4	10/3.2	0.0				(20'- 30') SILTY GRAVEL (GM); ~50% gravel, coarse, ~30% fines, non plastic, ~20% sand, fine to coarse; max. gravel size 5", wet, dark brown, cobbles.

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BORING LOG

GPEC-MW408

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25							
-25	30	S5	10/5.5	0.0 0.1 0.2 0.6 1.0				(30'- 36.1') SILTY GRAVEL (GM); ~50% gravel, coarse, ~40% fines, non plastic, ~10% sand, fine to coarse; max. gravel size 4", wet, dark brown, cobbles, black staining.
-30	35			0.5 0.3 0.2			NLO	(36.1'- 40') SILTY SAND (SM); ~50% sand, fine to coarse, ~40% fines, non plastic, ~10% gravel, fine to medium; max. gravel size 0.5", moderate naphthalene-like odor, wet.
-35	40	S6	10/8.6	0.6 0.7 1.2 1.8				(40'- 50') SILTY SAND (SM); ~70% sand, fine to coarse, ~30% fines, non plastic; slight naphthalene-like odor, wet, black staining.
-40	45			1.0 0.7 0.4 0.4			NLO	
	50							End of Boring at 50 feet. Monitoring well GPEC-MW408 installed.

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BORING LOG
PAGE 1 of 3
GPEC-MW409

GROUND SURFACE ELEVATION (FT): 6.90 **LOCATION:** Area 2
NORTHING (FT): 688274 **EASTING (FT):** 651085 **TOTAL DEPTH (FT):** 80.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/8/2017 - 3/8/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	0	S1	10/0					(0'- 10') NO RECOVERY.
5								
	5							
0								
	10	S2	10/3.8	0.0				(10'- 15.1') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to medium, ~30% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", wet, brown to reddish brown, red brick fragments, wood chips, FILL, black ash/staining in bottom 4", tight.
-5								
	15							(15.1'- 20') WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); ~70% gravel, fine to coarse, angular to subangular, ~20% sand, fine to coarse, ~10% fines, non plastic to low plasticity; max. gravel size 3.5", wet, gray, cobbles up to 4.5", red brick fragments, FILL, loose.
-10								
	20	S3	10/3.3	0.0				(20'- 25.4') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subangular, ~15% fines, non plastic; max. gravel size 2", wet, gray to brown, red brick fragments, asphalt pieces, FILL, loose.
-15				2.1				

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BORING LOG
PAGE 2 of 3
GPEC-MW409

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25			1.4				
-20				3.4			NLO	(25.4'- 30') WIDELY GRADED GRAVEL (GW); ~90% gravel, fine to coarse, angular to subangular, ~10% sand, fine to coarse; max. gravel size 3.5", slight naphthalene-like odor, wet, gray to brown, cobbles up to 4.5", red brick fragments, concrete pieces, wood chips, FILL, NAPL blebs.
	30	S4	10/3.8	76.0				
				380.0				
-25				710.0				
				990.0				
				1140.0			NLO	(30'- 36.9') WIDELY GRADED GRAVEL (GW); ~90% gravel, fine to coarse, angular to subangular, ~10% sand, fine to coarse; max. gravel size 3.5", strong naphthalene-like odor, wet, gray to brown, red brick fragments, concrete pieces, wood chips, FILL, saturated with NAPL.
				840.0				
	35			911.0				
				117.0				
-30				168.0				
				84.0				
				71.0			NLO	(36.9'- 40') SANDY SILT WITH GRAVEL (ML); ~50% fines, non plastic to low plasticity, ~30% sand, fine to medium, ~20% gravel, fine to coarse, subrounded to subangular; max. gravel size 2.5", moderate naphthalene-like odor, wet, gray to black, trace roots/organics, NAPL coated in top 6", black staining, moderately tight.
				92.0				
	40	S5	10/10	86.0				(40'- 45.7') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2.5", slight naphthalene-like odor, wet, gray to brown, loose.
				87.0				
-35				14.0				
				18.0			NLO	
				12.0				
	45			14.0				
				24.0				(45.7'- 47.8') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded to subangular; max. gravel size 2.5", wet, brown, loose.
-40				27.0				
				34.0				
				44.0				(47.8'- 50') SILTY SAND (SM); ~70% sand, fine to coarse, ~30% fines, non plastic; wet, brown, moderately loose.
				17.1				
	50	S6	10/4.8	44.0				
				19.4			NLO	(50'- 53.7') SILTY SAND (SM); ~70% sand, fine to coarse, ~30% fines, non plastic; slight naphthalene-like odor, wet, gray to brown, moderately loose.
-45				33.0				

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BORING LOG

GPEC-MW409

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55			14.4				(53.7'- 58.7') SILTY SAND (SM); ~70% sand, fine to coarse, ~30% fines, non plastic; wet, brown, moderately loose.
				4.0				
-50				4.0				
				2.2				
				1.7				
				1.5				(58.7'- 60') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines, non plastic; wet, brown, loose.
	60	S7	10/5.8	0.0				(60'- 70') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", wet, brown, loose.
-55								
	65							
-60								
	70	S8	10/0					(70'- 80') NO RECOVERY.
-65								
	75							
-70								
	80							End of Boring at 80 feet.
								Monitoring well GPEC-MW409 installed.

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BORING LOG
PAGE 1 of 2
GPEC-RW409

GROUND SURFACE ELEVATION (FT): 6.71 **LOCATION:** Area 2
NORTHING (FT): 688281 **EASTING (FT):** 651080 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/6/2017 - 3/6/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/0					(0'- 10') NO RECOVERY.
0	5							
-5	10	S2	10/1.1	0.0				(10'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, low plasticity, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", slight naphthalene-like odor, wet, dark brown, red brick fragments, porcelain fragments, wood chips, FILL, trace sheen, loose.
-10	15						NLO	
-15	20	S3	10/2.3	26.3 34.7 41.8			NLO	(20'- 25.2') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, low plasticity, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", moderate naphthalene-like odor, wet, dark brown, red brick fragments, porcelain fragments, wood chips, FILL, trace black staining, loose.

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GPEC-RW409

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	25			26.7			NLO	
				84.4				(25.2'- 30') SANDY SILT WITH GRAVEL (ML); ~50% fines, low plasticity, ~30% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 3", moderate naphthalene-like odor, wet, gray, red brick fragments, FILL, some black staining, tight.
-20				114.5			NLO	
				111.9				
	30	S4	10/6.7	322.8				(30'- 35.5') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, fine to coarse, ~40% gravel, fine to coarse, angular to subangular; max. gravel size 3", strong naphthalene-like odor, saturated with NAPL, loose.
				301.9				
-25				348.3				
				208.8			NLO	
				167.2				
				902.5				
	35			924.1				
				1511.0			NLO	(35.5'- 36.6') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subangular, ~15% fines, low plasticity; max. gravel size 2", strong naphthalene-like odor, saturated with NAPL, tight.
-30				294.3				(36.6'- 38.9') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, angular to subangular, ~15% fines, low plasticity; max. gravel size 2", strong naphthalene-like odor, stained black and NAPL-coated, tight.
				262.1			NLO	
				103.0				
				103.4				(38.9'- 40') SANDY SILT (ML); ~70% fines, non plastic to low plasticity, ~20% sand, fine to medium, ~10% gravel, fine to coarse, subrounded; max. gravel size 1", wet, gray, tight.
	40	S5	10/9.7	114.0				(40'- 43.3') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded to subangular; max. gravel size 1", moderate naphthalene-like odor, wet, gray to brown, some black staining, loose.
				151.8				
-35				909.7			NLO	
				118.9				
				244.4				(43.3'- 47.2') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded to subangular; max. gravel size 1", moderate naphthalene-like odor, wet, brown, loose.
				128.4				
	45			153.5			NLO	
				94.9				
-40				76.1				
				54.8			NLO	(47.2'- 48.5') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, fine to coarse, ~40% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", slight naphthalene-like odor, wet, brown, loose.
				61.5				
				21.8				(48.5'- 50') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, non plastic; wet, brown, loose.
	50							End of Boring at 50 feet.
								Recovery well GPEC-RW409 installed.

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PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 3
GPEC-MW410

GROUND SURFACE ELEVATION (FT): 6.46 **LOCATION:** Area 2
NORTHING (FT): 688321 **EASTING (FT):** 651068 **TOTAL DEPTH (FT):** 55.0
DRILLED BY: Cascade Drilling / Jon Weeks **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/1/2017 - 3/1/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/1.3	0.0				(0'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to medium, ~40% gravel, fine to coarse, angular to subangular, ~10% fines, low plasticity; max. gravel size 1.5", wet, brown to black, red brick fragments, porcelain fragments, trace asphalt, FILL, loose.
0	5							
-5	10	S2	10/2.5	0.0				(10'- 20') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to medium, ~40% gravel, fine to coarse, angular to subangular, ~10% fines, low plasticity; max. gravel size 1.5", wet, brown to gray, red brick fragments, porcelain fragments, trace asphalt, FILL, loose.
-10	15							
-15	20	S3	10/1.8	0.5			NLO	(20'- 30') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to medium, ~40% gravel, fine to coarse, angular to subangular, ~10% fines, low plasticity; max. gravel size 1.5", moderate naphthalene-like odor, wet, brown to black, red brick fragments, porcelain fragments, trace asphalt, FILL, sheen and black staining, loose.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG

GPEC-MW410

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25						NLO	
	30	S4	10/6.2	3.0			NLO	(30'- 31.5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, fine to medium, ~40% gravel, fine to coarse, angular to subangular, ~10% fines, low plasticity; max. gravel size 1.5", moderate naphthalene-like odor, wet, brown to black, red brick fragments, porcelain fragments, trace asphalt, FILL, NAPL blebs, loose.
-25				1.3			NLO	
				0.6			NLO	(31.5'- 32.8') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, subrounded to subangular, ~15% fines, low plasticity; max. gravel size 2", moderate naphthalene-like odor, black, NAPL-coated, loose.
	35			0.7			NLO	
-30				1.4				(32.8'- 35.1') SANDY SILT (ML); ~70% fines, low plasticity, ~20% sand, fine, ~10% gravel, fine to coarse, subrounded to subangular; max. gravel size 1", moderate naphthalene-like odor, wet, black, shell fragments, wood chips, sheen and black staining, tight.
				3.8				
				0.4				(35.1'- 40') SILT (ML); ~90% fines, low plasticity, ~10% sand, fine; moist, gray, shell fragments, wood chips, tight.
	40			0.0				
-35		S5	10/9.3	0.0			NLO	(40'- 43.7') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to medium, subangular to subrounded, ~5% fines, non plastic; max. gravel size 0.75", slight naphthalene-like odor, wet, gray to brown, loose.
								(43.7'- 50') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2", wet, brown to tan, loose.
-40	45							
	50	S6	5/3.8	0.0				(50'- 52.1') SANDY SILT (ML); ~60% fines, non plastic to low plasticity, ~40% sand, fine; wet, light brown, loose.
-45								(52.1'- 55') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, non plastic to low plasticity; wet, light brown, loose.

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BORING LOG

GPEC-MW410

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	55							End of Boring at 55 feet. Monitoring well GPEC-MW410 installed.

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Glastonbury, CT 06033
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BORING LOG
PAGE 1 of 2
GPEC-SB414

GROUND SURFACE ELEVATION (FT): 6.87 **LOCATION:** Area 2
NORTHING (FT): 688260 **EASTING (FT):** 651087 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/10/2017 - 3/10/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/0					(0'- 10') NO RECOVERY.
0	5							
-5	10	S2	10/2.9	0.0				(10'- 20') NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); ~60% sand, fine to medium, ~20% gravel, fine to coarse, angular to subrounded, ~20% fines, non plastic to low plasticity; max. gravel size 3.5", wet, brown, red brick fragments, wood chips, concrete and tile pieces, FILL, loose.
-10	15							
-15	20	S3	10/4.2	0.0				(20'- 23.8') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, non plastic; wet, brown, coal fragments, FILL, loose.

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IN. = INCHES
FT. = FEET

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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BORING LOG

GPEC-SB414

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25							(23.8'- 28') WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); ~70% gravel, fine to coarse, angular to subangular, ~20% sand, fine to coarse, ~10% fines, low plasticity; max. gravel size 3", wet, brown, loose.
	30						OLO	(28'- 30') SANDY SILT WITH GRAVEL (ML); ~60% fines, low plasticity, ~20% gravel, fine to coarse, angular to subangular, ~20% sand, fine to medium; max. gravel size 3", slight organic-like odor, black, wood fragments.
-25		S4	10/4.6	6.5				(30'- 32.7') NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% sand, fine to medium, ~20% gravel, fine to coarse; strong naphthalene-like odor, wet, stained black with sheen, loose.
				11.4			NLO	
				15.1				
				15.6				(32.7'- 35.5') GRAVELLY SILT (ML); ~70% fines, low plasticity, ~20% gravel, fine to coarse, angular to subrounded, ~10% sand, fine to coarse; max. gravel size 3", strong naphthalene-like odor, wet, black, NAPL-coated with blebs, moderately loose.
				19.4			NLO	
	35			10.3				
-30				7.4				(35.5'- 40') NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% sand, medium to coarse, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 2", moderate naphthalene-like odor, wet, black to gray, staining, trace sheen, loose.
				8.6				
				5.2			NLO	
				3.9				
	40	S5	10/8.3	6.1				(40'- 43.2') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~25% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2", slight naphthalene-like odor, wet, gray to brown, loose.
-35				3.4			NLO	
				5.5				
				2.4				(43.2'- 47.6') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~25% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2", wet, brown, loose.
	45			1.1				
-40				0.7				
				0.4				(47.6'- 50') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, non plastic; wet, brown, moderately loose.
	50			0.0				End of Boring at 50 feet.

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CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB415

GROUND SURFACE ELEVATION (FT): 7.02 **LOCATION:** Area 2
NORTHING (FT): 688252 **EASTING (FT):** 651058 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/9/2017 - 3/9/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	0	S1	10/0					(0'- 10') NO RECOVERY.
5								
	5							
0								
	10	S2	10/3.8	0.0				(10'- 20') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subrounded, ~20% fines, non plastic to low plasticity; max. gravel size 3", wet, brown, red brick fragments, concrete pieces, large ~10" chunk of wood at sample bottom, FILL, loose.
-5								
	15							
-10								
	20	S3	10/6.9	0.0				(20'- 28') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subrounded, ~20% fines, non plastic to low plasticity; max. gravel size 3", wet, brown, red brick fragments, concrete pieces, trace coal fragments, FILL, loose.
-15								

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MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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Glastonbury, CT 06033
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GEI PROJECT NUMBER: 125180

BORING LOG

GPEC-SB415

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25							
							OLO	(28'- 30') SILT WITH SAND (ML); ~80% fines, non plastic to low plasticity, ~10% gravel, fine to coarse, subrounded to subangular, ~10% sand, fine; max. gravel size 3", slight organic-like odor, wet, brown to reddish brown, tight.
	30	S4	10/8.7	7.1				(30'- 33.5') ORGANIC SOIL WITH SAND (OL/OH); ~70% fines, low to medium plasticity, ~15% gravel, fine to coarse, angular to subrounded, ~15% sand, fine to medium; max. gravel size 3.5", moderate naphthalene-like odor, wet, organics, roots, fibrous, black to gray staining, NAPL blebs and sheen, tight.
-25				12.6			NLO	
				32.7				
				3.9				
				5.4				(33.5'- 35.6') CLAYEY SAND (SC); ~80% sand, fine to coarse, ~20% fines, low to medium plasticity; moderate naphthalene-like odor, wet, stained black, loose.
	35			2.3			NLO	
				4.8				
				1.0				(35.6'- 38.7') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1", moderate naphthalene-like odor, wet, gray to brown, stained black in top 12", loose.
-30				2.3			NLO	
				2.9				
				2.0				
				1.0			NLO	(38.7'- 40') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, medium to coarse, ~30% gravel, fine to coarse, subrounded to subangular; slight naphthalene-like odor, wet, yellowish brown, loose.
	40	S5	10/10	3.5				(40'- 42.8') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, medium to coarse, ~30% gravel, fine to coarse, subrounded to subangular; slight naphthalene-like odor, wet, gray to brown, loose.
-35				1.0			NLO	
				1.1				(42.8'- 46.25') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2.5", wet, brown, loose.
	45			0.8				
-40				0.6				(46.25'- 47.8') SILTY SAND (SM); ~70% sand, fine to medium, ~30% fines, non plastic; wet, brown, moderately loose.
				0.4				(47.8'- 50') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, brown, loose.
	50							End of Boring at 50 feet.

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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BORING LOG
PAGE 1 of 2
GPEC-SB416

GROUND SURFACE ELEVATION (FT): 7.12 **LOCATION:** Area 2
NORTHING (FT): 688271 **EASTING (FT):** 651052 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/9/2017 - 3/9/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0	S1	10/0					(0'- 10') NO RECOVERY.
0	5							
-5	10	S2	10/2.7	0.0				(10'- 20') NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); ~70% sand, fine to medium, ~20% gravel, fine to coarse, angular to subrounded, ~10% fines, non plastic; max. gravel size 1.75", dry, brown, red brick fragments, asphalt pieces, concrete pieces, FILL, loose.
-10	15							
-15	20	S3	10/3.3	0.0				(20'- 24.9') SILTY SAND (SM); ~70% sand, fine to medium, ~25% fines, non plastic, ~5% gravel, fine; wet, brown, FILL, loose.

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CITY/STATE: Brooklyn, New York
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BORING LOG

GPEC-SB416

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
-20	25							(24.9'- 30') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, subrounded to angular, ~15% fines, non plastic to low plasticity; max. gravel size 3.5", wet, brown, red brick fragments, concrete pieces, FILL, loose.
-25	30	S4	10/7.7	3.3				(30'- 37') ORGANIC CLAY (OL); ~90% fines, low to medium plasticity, ~10% sand, fine; moderate naphthalene-like odor, wet, brown to gray, organics and roots, black staining, NAPL blebs, tight.
				8.1				
				14.5				
				44.1				
				19.4			NLO	
				16.8				
	35			63.5				
				52.0				
-30				23.2				
				14.0				(37'- 39.5') NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% sand, medium to coarse, ~25% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", moderate naphthalene-like odor, wet, black to gray, NAPL blebs, black staining, loose.
				8.9			NLO	
				9.2				
	40						NLO	(39.5'- 40') NARROWLY GRADED SAND WITH GRAVEL (SP); ~75% sand, medium to coarse, ~25% gravel, fine to coarse, subrounded to subangular; max. gravel size 3", slight naphthalene-like odor, wet, gray, trace black staining, loose.
		S5	10/10	3.3				(40'- 44.7') NARROWLY GRADED SAND (SP); ~100% sand, medium to coarse; moderate naphthalene-like odor, wet, gray, loose.
-35				8.3				
				9.9			NLO	
				5.4				
				6.1				
	45			5.2			NLO	(44.7'- 45.5') NARROWLY GRADED SAND WITH GRAVEL (SP); ~60% sand, medium to coarse, ~40% gravel, fine to coarse, subrounded to subangular; max. gravel size 2", moderate naphthalene-like odor, wet, gray, loose.
				2.4				(45.5'- 48.9') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~25% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 2", wet, brown, loose.
-40				1.8				
				1.7				
				1.8				
				1.4				(48.9'- 50') SILTY SAND (SM); non plastic, ~70% sand, fine to medium, ~30% gravel; wet, brown, loose.
	50							End of Boring at 50 feet.

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S_V = TORVANE PEAK

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IN. = INCHES
FT. = FEET

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CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigations
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB417

GROUND SURFACE ELEVATION (FT): 6.60 **LOCATION:** Area 2
NORTHING (FT): 688303 **EASTING (FT):** 651073 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / R. Gerard-Maillet **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 3/9/2017 - 3/9/2017
DRILLING DETAILS: Sonic Coring / TerraSonic TSI 150CC
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: 0-8 FT BGS vacuum / hand cleared prior to boring advancement.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
6.6	0	S1	10/0					(0'- 10') NO RECOVERY.
5	5							
0	10	S2	10/1.9	0.0				(10'- 13') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to medium, ~25% fines, non plastic to low plasticity, ~15% gravel, fine to coarse, angular to subrounded; max. gravel size 3", wet, brown, red brick fragments, concrete pieces, coal fragments, tile pieces, FILL, loose.
-5	15							(13'- 20') WIDELY GRADED GRAVEL WITH SAND (GW); ~85% gravel, fine to coarse, angular to subrounded, ~15% sand, fine to coarse; max. gravel size 3", wet, brown, red brick fragments, tile pieces, FILL, loose.
-10	20	S3	10/6.1	0.0				(20'- 23.7') WIDELY GRADED GRAVEL WITH SAND (GW); ~85% gravel, fine to coarse, angular to subrounded, ~15% sand, fine to coarse; max. gravel size 3", wet, brown, red brick fragments, tile pieces, FILL, loose.
-15								

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

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455 Winding Brook Drive
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Glastonbury, CT 06033
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BORING LOG
PAGE 2 of 2
GPEC-SB417

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25							(23.7'- 27') SILTY GRAVEL (GM); ~60% gravel, fine to coarse, angular to subangular, ~40% fines, low plasticity; max. gravel size 3.5", wet, gray to black, red brick fragments, coal, black ash, FILL, black staining, tight.
-20				0.4				
				0.8			NLO	(27'- 30') WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); ~70% gravel, fine to coarse, angular to subrounded, ~20% sand, fine to medium, ~10% fines, non plastic; max. gravel size 3.5", slight naphthalene-like odor, wet, red brick fragments, coal, black ash, FILL, black staining, trace sheen, loose.
				1.0				
	30			1.8				
		S4	10/3.1	10.0				(30'- 34.9') SILT WITH GRAVEL (ML); ~80% fines, low plasticity, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 3", moderate naphthalene-like odor, wet, black, wood chunks, red brick fragments, FILL, NAPL coating, blebs, tight.
-25				6.8				
				8.9			NLO	
				6.6				
				2.1				
	35			3.4			NLO	(34.9'- 36.8') NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% sand, medium to coarse, ~20% gravel, fine to coarse, subrounded to subangular; max. gravel size 2", moderate naphthalene-like odor, wet, black, loose.
-30				1.7				(36.8'- 40') WIDELY GRADED SAND WITH SILT (SW-SM); ~90% sand, fine to coarse, ~10% fines, non plastic; slight naphthalene-like odor, wet, brown, loose.
				1.4			NLO	
				1.1				
	40	S5	10/5.7	1.7				(40'- 42.8') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; slight naphthalene-like odor, wet, gray to brown, loose.
-35				1.0			NLO	
								(42.8'- 46.8') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, brown, loose.
				0.7				
	45			0.4				
-40								(46.8'- 50') SILTY SAND (SM); ~60% sand, fine to medium, ~40% fines, non plastic; wet, brown, moderately tight.
				0.0				
	50							End of Boring at 50 feet.

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ENVIRONMENTAL BORING LOG JANUARY 2017 GREENPOINT BORINGS LCM.GPJ GEI TEMPLATE 11-7-13.GDT 8/10/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigation
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB404A

GROUND SURFACE ELEVATION (FT): 8.05 **LOCATION:** Area 1
NORTHING (FT): 687830 **EASTING (FT):** 651238 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Evan Moraits **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 5/10/2017 - 5/10/2017
DRILLING DETAILS: Geoprobe 7822DT Track Mounted Rig
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0							(0'- 8') Vacuum / Hand Cleared.
0	5	S1	2/2	0.0				(8'- 10') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 2", moist, brown, asphalt, red brick, and concrete fragments, loose, FILL.
-5	10	S2	5/5	0.0				(10'- 15') SILTY SAND (SM); ~50% sand, fine to coarse, ~40% fines, non plastic to low plasticity, ~10% gravel, fine, angular to subangular; max. gravel size 0.25", wet, brown to black, red brick fragments, wood chips/chunks, loose, FILL. Groundwater at 10' bgs.
-10	15	S3	5/4.2	0.0				(15'- 19.3') SILTY SAND (SM); ~50% sand, fine to coarse, ~40% fines, non plastic to low plasticity, ~10% gravel, fine, angular to subangular; max. gravel size 0.25", wet, brown to black, red brick fragments, wood chips/chunks, loose, FILL.
-15	20	S4	5/2.8	0.0			OLO	(19.3'- 20') SANDY CLAY WITH GRAVEL (CL); ~40% fines, low to medium plasticity, ~30% gravel, fine to coarse, angular to subangular, ~30% sand, fine to coarse; max. gravel size 1.75", wet, black to dark brown, black staining, trace sheen, trace black ash, loose, FILL.
							OLO	(20'- 22.9') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; slight organic-like odor, wet, brown, loose, FILL.
	25							(22.9'- 25') SANDY GRAVEL (GW); ~70% gravel, fine to coarse, angular to subrounded, ~30% sand, fine to coarse; max. gravel size

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
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CLIENT: National Grid - Greenpoint
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BORING LOG
PAGE 2 of 2
GPEC-SB404A

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	5/3.8	0.0			OLO	2.25", moderate organic-like odor, wet, brown to gray, loose, FILL. (25'- 27') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; slight organic-like odor, wet, brown, loose, FILL.
-20							OLO	(27'- 28.4') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, fine to coarse, ~40% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", moderate organic-like odor, wet, brown to gray, red brick fragments, loose, FILL.
							OLO	(28.4'- 30') WIDELY GRADED GRAVEL WITH CLAY (GW-GC); ~80% gravel, fine to coarse, angular to subangular, ~20% fines, low plasticity; max. gravel size 2", strong organic-like odor, wet, black, loose.
	30	S6	5/1.6	0.0				(30'- 35') SANDY CLAY (CL); ~70% fines, low to medium plasticity, ~20% sand, fine to medium, ~10% gravel, fine, subrounded to subangular; max. gravel size 0.25", slight organic-like odor, wet, black to gray, roots/organics, loose.
-25							OLO	
	35	S7	5/4.7	0.0				(35'- 39.1') SANDY CLAY (CL); ~80% fines, low to medium plasticity, ~20% sand, fine; slight organic-like odor, wet, black to brown, roots/organics, tight.
-30							OLO	
	40	S8	5/4.3	0.0				(39.1'- 40') SILTY SAND (SM); ~80% sand, fine to medium, ~20% fines, non plastic; wet, gray, tight. (40'- 45') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, fine to coarse, ~40% gravel, fine to coarse, subrounded to subangular; max. gravel size 1.5", wet, gray, loose.
-35								
	45	S9	5/4.2	0.0				(45'- 50') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, subrounded to subangular, ~5% fines, non plastic; max. gravel size 0.5", wet, light brown to gray, loose.
-40								
	50							End of Boring at 50 feet. Grout to surface.

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
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Glastonbury, CT 06033
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CLIENT: National Grid - Greenpoint
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CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB405A

GROUND SURFACE ELEVATION (FT): 9.96 **LOCATION:** Area 1
NORTHING (FT): 687900 **EASTING (FT):** 651204 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Evan Moraits **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 5/16/2017 - 5/16/2017
DRILLING DETAILS: Geoprobe 7822DT Track Mounted Rig
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: Plastic liner split and stuck in the casing on the 35'-40' bgs interval.

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	0							(0'- 8') Vacuum / Hand Cleared. Black staining observed.
5	5							
		S1	2/0.8	0.0				(8'- 10') WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM); ~60% sand, fine to coarse, ~30% gravel, fine to coarse, angular to subrounded, ~10% fines, non plastic; max. gravel size 1.5", wet, brown, red brick fragments, loose, FILL.
0	10	S2	5/3.8	0.0				(10'- 11.7') SILTY SAND WITH GRAVEL (SM); ~40% sand, fine to coarse, ~30% gravel, fine to coarse, angular to subrounded, ~30% fines, non plastic to low plasticity; max. gravel size 1", wet, brown, red brick and concrete fragments, loose, FILL.
							NLO	(11.7'- 14.2') SANDY CLAY WITH GRAVEL (CL); ~50% fines, low to medium plasticity, ~30% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1", slight naphthalene-like odor, wet, gray to black, black staining, organics, roots, tight.
-5	15	S3	5/1.3	0.0				(14.2'- 15') SANDY CLAY (CL); ~60% fines, low to medium plasticity, ~30% sand, fine to coarse, ~10% gravel, fine to coarse, subangular to subrounded; max. gravel size 2", wet, gray, tight. (15'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, angular to subrounded, ~20% fines, non plastic to low plasticity; max. gravel size 2", wet, brown to black, trace black staining, trace sheen on water, loose.
-10	20	S4	5/2.2	0.0 0.0 0.0 0.0 8.7			OLO	(20'- 25') SILTY SAND (SM); ~70% sand, fine to coarse, ~20% fines, non plastic to low plasticity, ~10% gravel, fine, angular to subrounded; max. gravel size 0.25", moderate organic-like odor, wet, brown, trace sheen on water, loose.
	25							

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

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BORING LOG
PAGE 2 of 2
GPEC-SB405A

ELEV. FT.	DEPTH FT.	TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	5/2.6	0.8				(25'- 27.4') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine, subangular to subrounded; max. gravel size 0.25", moderate organic-like odor, wet, brown, trace sheen on water, loose.
				1.1			OLO	
				3.3				(27.4'- 28.2') SANDY GRAVEL (GW); ~70% gravel, fine to coarse, angular to subrounded, ~30% sand, coarse; max. gravel size 1.75", moderate organic-like odor, wet, brown, trace sheen on water, loose.
				4.1			OLO	
				3.2			NLO	(28.2'- 30') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.75", slight naphthalene-like odor, wet, brown, trace sheen, loose.
-20	30	S6	5/2.8	23.0			NLO	
				6.0				(30'- 30.9') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.75", moderate naphthalene-like odor, wet, gray, NAPL blebs, sheen, loose.
				23.1			OLO	
				6.9				(30.9'- 33.7') PEAT (PT); strong organic-like odor, moist, reddish brown to gray, meadow mat, organics, roots, leaf fragments.
				1.2				
				1.3			OLO	(33.7'- 35') WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM); ~60% sand, fine to coarse, ~25% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic; max. gravel size 1", slight organic-like odor, wet, brown to black, shell fragments, loose.
-25	35			0.0				
		S7	5/NM	0.0				(35'- 40') WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM); ~60% sand, fine to coarse, ~25% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic; max. gravel size 1", slight organic-like odor, wet, brown to black, shell fragments, loose.
							OLO	
-30	40	S8	5/1.8	0.0				(40'- 45') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1", wet, brown to gray, loose.
-35	45	S9	5/5	0.0				(45'- 50') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1", wet, brown to gray, loose.
-40	50							End of Boring at 50 feet. Grout to surface.

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS LOADING PLATFORM ADDITIONAL GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigation
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB406A

GROUND SURFACE ELEVATION (FT): 8.75 **LOCATION:** Area 2
NORTHING (FT): 687997 **EASTING (FT):** 651173 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Evan Moraits **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 5/11/2017 - 5/11/2017
DRILLING DETAILS: Geoprobe 7822DT Track Mounted Rig
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	0							(0'- 8') Vacuum / Hand Cleared.
5	5							
0	10	S1	2/0.8	0.0				(8'- 10') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to medium, ~20% gravel, fine to coarse, angular to subangular, ~20% fines, non plastic; max. gravel size 1.5", moist, brown, red brick and asphalt fragments, tight, FILL.
		S2	5/2.3	0.0			PLO	(10'- 15') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to medium, ~20% gravel, fine to coarse, angular to subangular, ~20% fines, non plastic; max. gravel size 1.5", moderate petroleum-like odor, wet, brown, sheen, trace black staining, red brick and asphalt fragments, loose, FILL.
-5	15	S3	5/5	0.0			PLO	(15'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.25", slight petroleum-like odor, wet, brown, black staining, red brick, glass, and wood fragments, loose, FILL.
-10	20	S4	5/3.5	0.8 0.8 0.7 0.5 0.5 0.0 0.0			PLO	(20'- 23.9') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to coarse, ~10% fines, non plastic, ~5% gravel, fine, subrounded to subangular; max. gravel size 0.25", slight petroleum-like odor, wet, brown, trace sheen, loose.
-15	25							(23.9'- 25') SANDY GRAVEL (GW); ~75% gravel, fine to coarse, angular to subrounded, ~25% sand, fine to coarse; max. gravel size

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FT. = FEET

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigation
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG

GPEC-SB406A

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	5/3.9	4.3 12.8 2.1 9.0 8.7 11.1 2.1 0.0			OLO	1.75", wet, brown, tight. (25'- 29') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to coarse, subangular to subrounded, ~5% fines, non plastic; max. gravel size 0.75", moderate organic-like odor, wet, brown, trace sheen, loose.
-20	30						OLO	(29'- 30') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.25", moderate organic-like odor, wet, brown, trace sheen, loose.
		S6	5/2.9	25.2 18.2 6.8 11.4 28.2 6.7 7.0			PLO	(30'- 34.3') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; moderate petroleum-like odor, wet, gray to black, sheen, loose.
-25							PLO	(34.3'- 35') CLAY WITH SAND (CL); ~90% fines, medium plasticity, ~10% sand, fine; moderate petroleum-like odor, wet, black to dark brown, black staining, sheen, trace organics, tight.
	35	S7	5/3.8	0.0			OLO	(35'- 37.5') SANDY GRAVEL WITH CLAY (GW-GC); ~50% gravel, fine to coarse, angular to subrounded, ~30% sand, fine to coarse, ~20% fines, low to medium plasticity; max. gravel size 0.5", moderate organic-like odor, wet, black to brown, organics, roots, shell fragments, loose.
-30							OLO	(37.5'- 39.5') WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM); ~60% sand, fine to coarse, ~25% gravel, fine to coarse, angular to subrounded, ~15% fines, non plastic; max. gravel size 0.75", moderate organic-like odor, wet, dark brown to black, shell fragments, trace organics, loose.
	40						OLO	(39.5'- 40') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1.25", slight organic-like odor, wet, gray to brown, tight.
		S8	5/3.9	0.0			OLO	(40'- 45') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1.25", slight organic-like odor, wet, gray to brown, tight.
-35	45							
		S9	5/3.3	0.0			OLO	(45'- 50') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1.25", slight organic-like odor, wet, gray to brown, tight.
-40	50							End of Boring at 50 feet. Grout to surface.

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/5/17

GEI Consultants

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Glastonbury, CT 06033
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CLIENT: National Grid - Greenpoint
PROJECT: Ph. 2/3 RI Additional Investigation
CITY/STATE: Brooklyn, New York
GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB407A

GROUND SURFACE ELEVATION (FT): 7.10 **LOCATION:** Area 2
NORTHING (FT): 688086 **EASTING (FT):** 651114 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Evan Moraits **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 5/15/2017 - 5/15/2017
DRILLING DETAILS: Geoprobe 7822DT Track Mounted Rig
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0							(0'- 8') Vacuum / Hand Cleared.
0	5							
-5	10	S1	2/0.8	0.0				(8'- 10') SILTY SAND (SM); ~60% sand, fine to coarse, ~35% fines, non plastic, ~5% gravel, fine to coarse, angular to subangular; max. gravel size 0.75", wet, brown, red brick and asphalt fragments, loose, FILL.
-10	15	S2	5/5	0.0				(10'- 15') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 1.25", wet, brown to dark brown, trace sheen on water, red brick and wood fragments, loose, FILL.
-15	20	S3	5/5	0.0				(15'- 20') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 1.25", wet, brown to dark brown, trace sheen on water, trace black staining, red brick and wood fragments, loose, FILL.
		S4	5/5	1.2			PLO	(20'- 21.2') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic to low plasticity, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 1.25", moderate petroleum-like odor, wet, brown to dark brown, NAPL blebs, sheen, trace black staining, red brick and wood fragments, loose, FILL.
				0.5				
				0.7			PLO	
				7.0				
				24.4			PLO	
				4.0			PLO	(21.2'- 22.3') CLAY (CL); medium plasticity; moderate petroleum-like odor, wet, gray, NAPL blebs, sheen, tight.
				2.7				(22.3'- 22.8') SANDY CLAY (CL); ~70% fines, low to medium plasticity, ~30% sand, fine to coarse; moderate petroleum-like odor,
				2.3			PLO	
	25							

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/17/17

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BORING LOG
PAGE 2 of 2
GPEC-SB407A

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	5/3.7	0.0				wet, black, NAPL blebs, sheen, black staining, loose. (22.8'- 23') PEAT (PT); moderate petroleum-like odor, brown to black, sheen, meadow mat, organics, roots,. (23'- 25') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, fine to coarse, ~10% gravel, fine to coarse, subangular to subrounded, ~10% fines, non plastic; max. gravel size 1", moderate petroleum-like odor, wet, black, NAPL blebs, sheen, black staining, loose.
-20	30	S6	5/5	0.0				(25'- 30') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subrounded, ~5% fines, non plastic; max. gravel size 1.5", wet, brown to black, black staining, trace shell fragments, loose. (30'- 35') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray, loose.
-25	35	S7	5/5	0.0				(35'- 40') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray, loose.
-30	40	S8	5/5	0.0				(40'- 45') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, gray to brown, loose.
-35	45	S9	5/3.7	0.0				(45'- 47.4') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, brown to gray, loose.
-40								(47.4'- 48.2') WIDELY GRADED SAND WITH GRAVEL (SW); ~65% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded to subangular, ~5% fines, non plastic; max. gravel size 1.25", wet, brown, loose. (48.2'- 50') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines, non plastic; wet, brown, loose.
	50							End of Boring at 50 feet. Grout to surface.

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/17/17

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GEI PROJECT NUMBER: 125180

BORING LOG
PAGE 1 of 2
GPEC-SB408A

GROUND SURFACE ELEVATION (FT): 6.80 **LOCATION:** Area 2
NORTHING (FT): 688177 **EASTING (FT):** 651086 **TOTAL DEPTH (FT):** 50.0
DRILLED BY: Cascade Drilling / Evan Moraits **DATUM VERT. / HORZ.:** NAVD 88 / NAD83 NY East Zone
LOGGED BY: G. Holmes **DATE START / END:** 6/8/2017 - 6/8/2017
DRILLING DETAILS: Geoprobe 7822DT Track Mounted Rig
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
5	0							(0'- 8') Vacuum / Hand Cleared. Black staining observed.
0	5							
	10	S1	2/1.2	0.0				(8'- 10') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", wet, brown to dark brown, red brick, concrete, and wood fragments, loose, FILL.
-5		S2	5/4.8	0.0				(10'- 15') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", wet, brown to dark brown, red brick, concrete, and wood fragments, loose, FILL.
	15	S3	5/5	0.0				(15'- 19.2') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, non plastic, ~20% gravel, fine to coarse, angular to subrounded; max. gravel size 1.5", wet, brown to dark brown, red brick, concrete, and wood fragments, loose, FILL.
-10							NLO	(19.2'- 20') CLAYEY SAND WITH GRAVEL (SC); ~50% sand, fine to medium, ~30% fines, low plasticity, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 1", slight naphthalene-like odor, wet, brown to black, black staining, red brick and asphalt fragments, trace roots/organics, tight, FILL.
	20	S4	5/3.6	0.0				(20'- 23.4') CLAYEY SAND WITH GRAVEL (SC); ~50% sand, fine to medium, ~30% fines, low plasticity, ~20% gravel, fine to coarse, angular to subangular; max. gravel size 1", wet, brown to black, black staining near base, red brick and asphalt fragments, trace roots/organics, tight, FILL.
-15								(23.4'- 25') WIDELY GRADED SAND WITH SILT (SW-SM); ~80%
	25							

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BORING LOG
PAGE 2 of 2
GPEC-SB408A

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC FT./FT.	PID (PPM)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25	S5	5/5	0.0				sand, fine to coarse, ~15% fines, non plastic, ~5% gravel, fine to coarse, angular; max. gravel size 0.75", wet, black, black staining, trace sheen, slag, red brick and wood fragments, loose.
-20				0.0			NLO	(25'- 27.7') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, fine to coarse, ~15% fines, non plastic, ~5% gravel, fine to coarse, angular; max. gravel size 0.75", slight naphthalene-like odor, wet, brown to black, trace black staining, trace sheen, slag, red brick and wood fragments, loose.
				0.0				
				0.8				
				33.2			NLO	
				82.8				
	30			56.2				(27.7'- 30') SANDY CLAY (CL); ~80% fines, medium plasticity, ~20% sand, fine to coarse; strong naphthalene-like odor, wet, gray to black, black staining, sheen, trace NAPL blebs, wood fragments, organics, coarse sand lense at 29.7', tight.
		S6	5/5	21.6			NLO	
				0.6				
-25				0.0				(30'- 31.3') CLAYEY SAND WITH GRAVEL (SC); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, angular to subrounded, ~20% fines, medium plasticity; max. gravel size 1.5", moderate naphthalene-like odor, wet, brown to black, black staining, wood fragments.
				0.0				
				0.0				
				0.0				
	35	S7	5/5	0.0				(31.3'- 35') WIDELY GRADED SAND WITH GRAVEL (SW); ~60% sand, fine to coarse, ~40% gravel, fine to coarse, subangular to subrounded; max. gravel size 1.75", wet, dark brown, loose.
-30								(35'- 40') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% gravel, fine, subrounded; max. gravel size 0.25", wet, tan to light gray, loose.
	40	S8	5/4.4	0.0				(40'- 45') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, subrounded, ~5% fines, non plastic; max. gravel size 0.25", wet, gray to brown, loose.
-35								
	45	S9	5/4.6	0.0				(45'- 49.2') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, subrounded, ~5% fines, non plastic; max. gravel size 0.25", wet, gray to brown, loose.
-40								
	50							(49.2'- 50') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines, non plastic; wet, tan, loose.
								End of Boring at 50 feet.
								Grout to surface.

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ENVIRONMENTAL BORING LOG GREENPOINT BORINGS_LOADING PLATFORM ADDITIONAL_GH.GPJ GEI TEMPLATE 11-7-13.GDT 7/17/17

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW403

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG.	1 OF 1
Client	National Grid	Boring No.	GPEC-MW403
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 1
Inspected by	George Holmes	Date Started 2/28/17	
Checked by	Chris Morris	Date Completed 2/28/17	Project No. 125180-3-1302

SURVEY N 687735.5
DATUM E 651255.2

GROUND ELEVATION 7.91

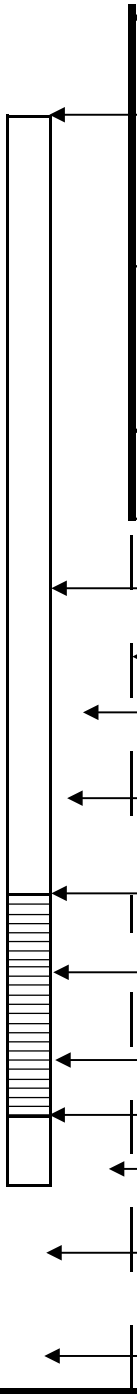
GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Peat (~26-29')

Silty Sand

Sand



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	28.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	30.5
DEPTH TOP OF PERVIOUS SECTION	33.5
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	43.5
DEPTH BOTTOM OF SAND COLUMN (FT)	45.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	45.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	50.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW404

Project	Greenpoint Energy Center	PG. 1 OF 1	
Location	Brooklyn, New York		
Client	National Grid	Boring No.	GPEC-MW404
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 1
Inspected by	George Holmes	Date Started 2/27/17	
Checked by	Chris Morris	Date Completed 2/27/17	Project No. 125180-3-1302

SURVEY N 687856.8
DATUM E 651232.1

GROUND ELEVATION 8.49

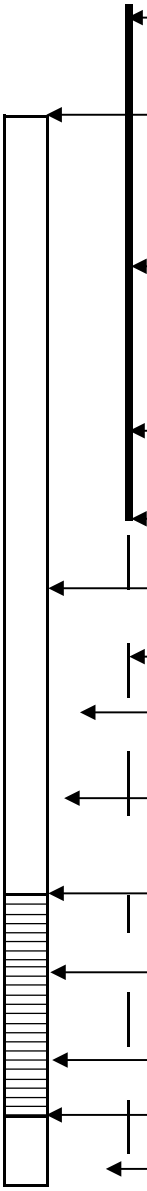
GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Peat (~26-29')

Silty Sand

Sand



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	30.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	33.0
DEPTH TOP OF PERVIOUS SECTION	35.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	45.0
DEPTH BOTTOM OF SAND COLUMN (FT)	45.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	45.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	55.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

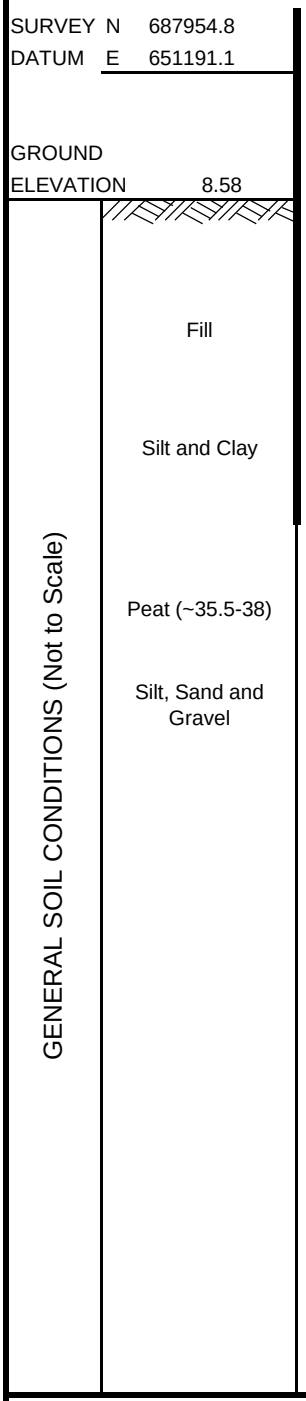
GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW405

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG.	1 OF 1
Client	National Grid	Boring No.	GPEC-MW405
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 1
Inspected by	George Holmes	Date Started 2/27/17	
Checked by	Chris Morris	Date Completed 2/28/17	Project No. 125180-3-1302

SURVEY N 687954.8
DATUM E 651191.1

GROUND ELEVATION 8.58



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	35.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	37.5
DEPTH TOP OF PERVIOUS SECTION	40.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	50.0
DEPTH BOTTOM OF SAND COLUMN (FT)	50.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	50.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	70.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW406

Project	Greenpoint Energy Center	PG. 1 OF 1	
Location	Brooklyn, New York		
Client	National Grid	Boring No.	GPEC-MW406
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	David Sharpe	Date Started 3/2/17	
Checked by	Chris Morris	Date Completed 3/3/17	Project No. 125180-3-1302

SURVEY N 688047.5
DATUM E 651161.0

GROUND ELEVATION 7.44

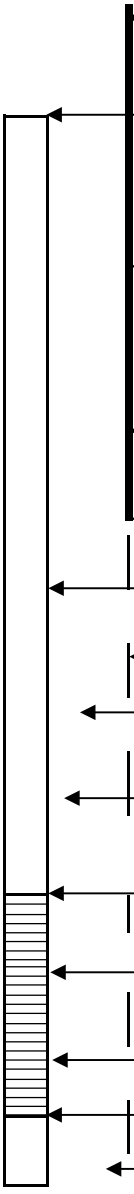
GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Silt and Sand

Gravel

Silty Sand



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	51.0
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	55.0
DEPTH TOP OF PERVIOUS SECTION	55.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	60.0
DEPTH BOTTOM OF SAND COLUMN (FT)	60.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	60.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	70.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW407

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG.	1 OF 1
Client	National Grid	Boring No.	GPEC-MW407
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	George Holmes	Date Started 3/1/17	
Checked by	Chris Morris	Date Completed 3/2/17	Project No. 125180-3-1302

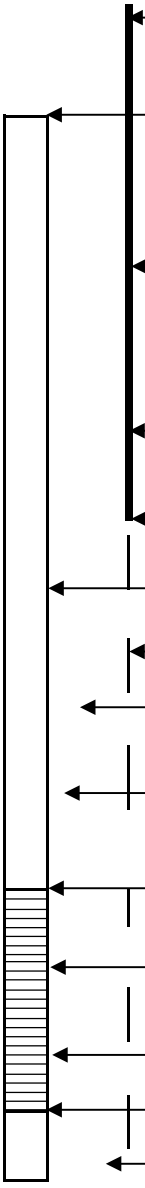
SURVEY N 688153.0
DATUM E 651129.4

GROUND ELEVATION 7.26

GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Silt, sand and gravel



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	55.0
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	57.5
DEPTH TOP OF PERVIOUS SECTION	60.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	70.0
DEPTH BOTTOM OF SAND COLUMN (FT)	70.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	70.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	80.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW408

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG. 1 OF 1	
Client	National Grid	Boring No.	GPEC-MW408
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	David Sharpe	Date Started 3/2/17	
Checked by	Chris Morris	Date Completed 3/2/17	Project No. 125180-3-1302

SURVEY N 688217.6
DATUM E 651101.4

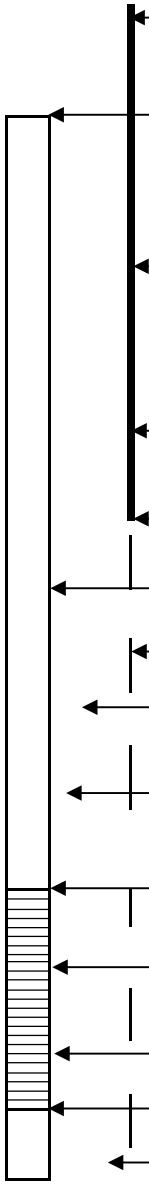
GROUND ELEVATION 6.93

GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Silt, sand and gravel

Silty Sand



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	31.0
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	33.0
DEPTH TOP OF PERVIOUS SECTION	35.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	45.0
DEPTH BOTTOM OF SAND COLUMN (FT)	45.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	45.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	50.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW409

Project	Greenpoint Energy Center	PG. 1 OF 1	
Location	Brooklyn, New York		
Client	National Grid	Boring No.	GPEC-MW409
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	George Holmes	Date Started 3/8/17	
Checked by	Chris Morris	Date Completed 3/8/17	Project No. 125180-3-1302

SURVEY N 688274.2
DATUM E 651085.0

GROUND ELEVATION 6.90

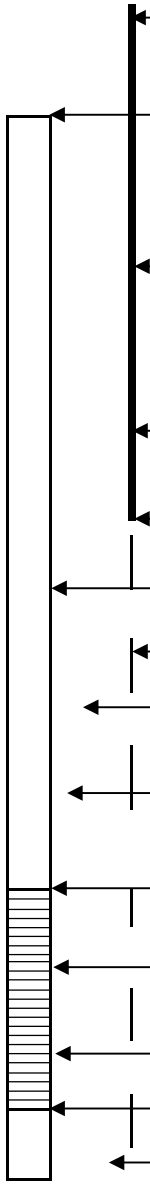
GENERAL SOIL CONDITIONS (Not to Scale)

Fill

Silt, sand and gravel

Silty Sand

Sand and Gravel



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	36.0
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	38.0
DEPTH TOP OF PERVIOUS SECTION	40.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	50.0
DEPTH BOTTOM OF SAND COLUMN (FT)	50.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	50.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	80.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

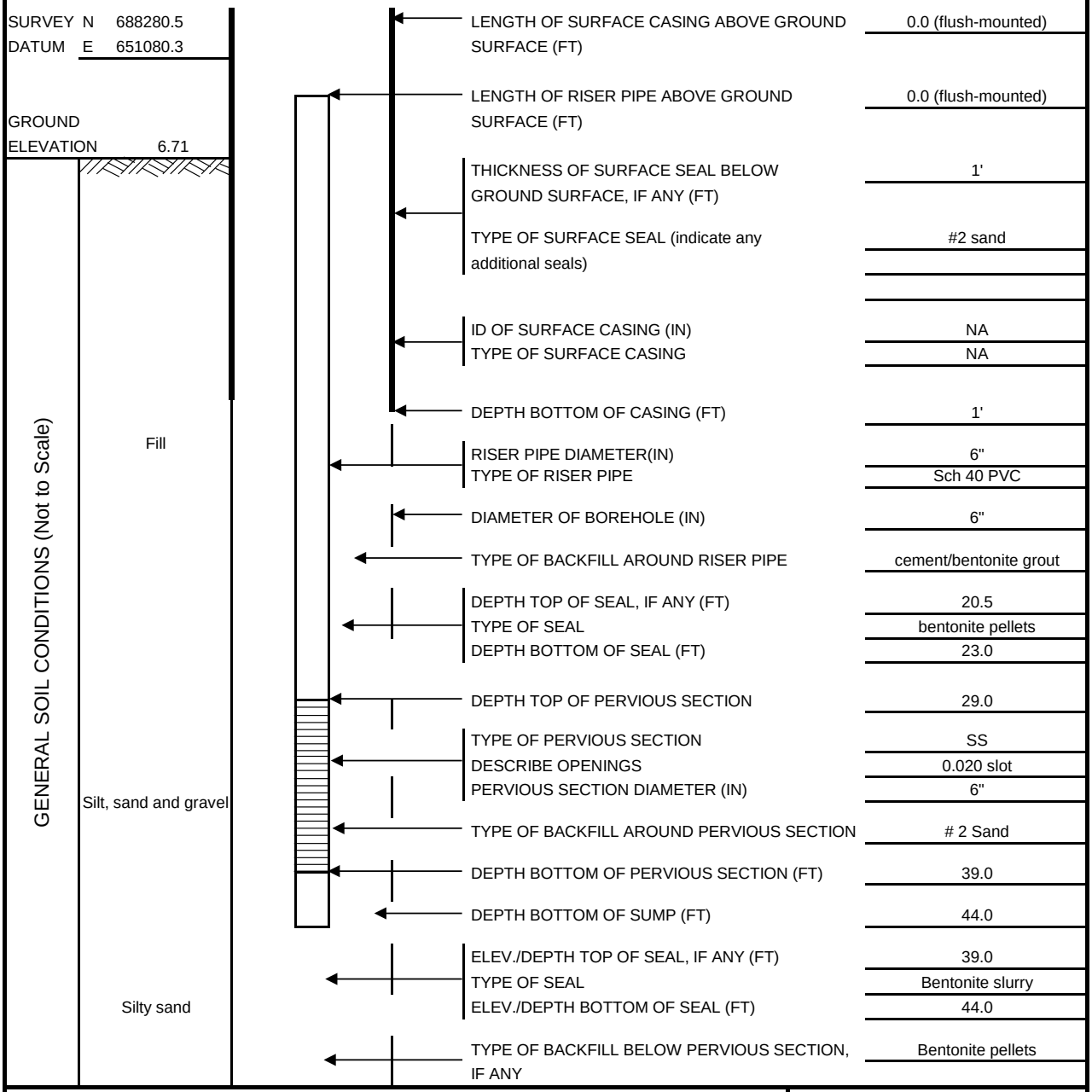
GROUNDWATER OBSERVATION WELL REPORT

GPEC-RW409

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG. 1 OF 1	
Client	National Grid	Boring No.	GPEC-RW409
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	George Holmes	Date Started 3/8/17	
Checked by	Chris Morris	Date Completed 3/8/17	Project No. 125180-3-1302

SURVEY N 688280.5
DATUM E 651080.3

GROUND ELEVATION 6.71



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	6"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	20.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	23.0
DEPTH TOP OF PERVIOUS SECTION	29.0
TYPE OF PERVIOUS SECTION	SS
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	6"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	39.0
DEPTH BOTTOM OF SUMP (FT)	44.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	39.0
TYPE OF SEAL	Bentonite slurry
ELEV./DEPTH BOTTOM OF SEAL (FT)	44.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

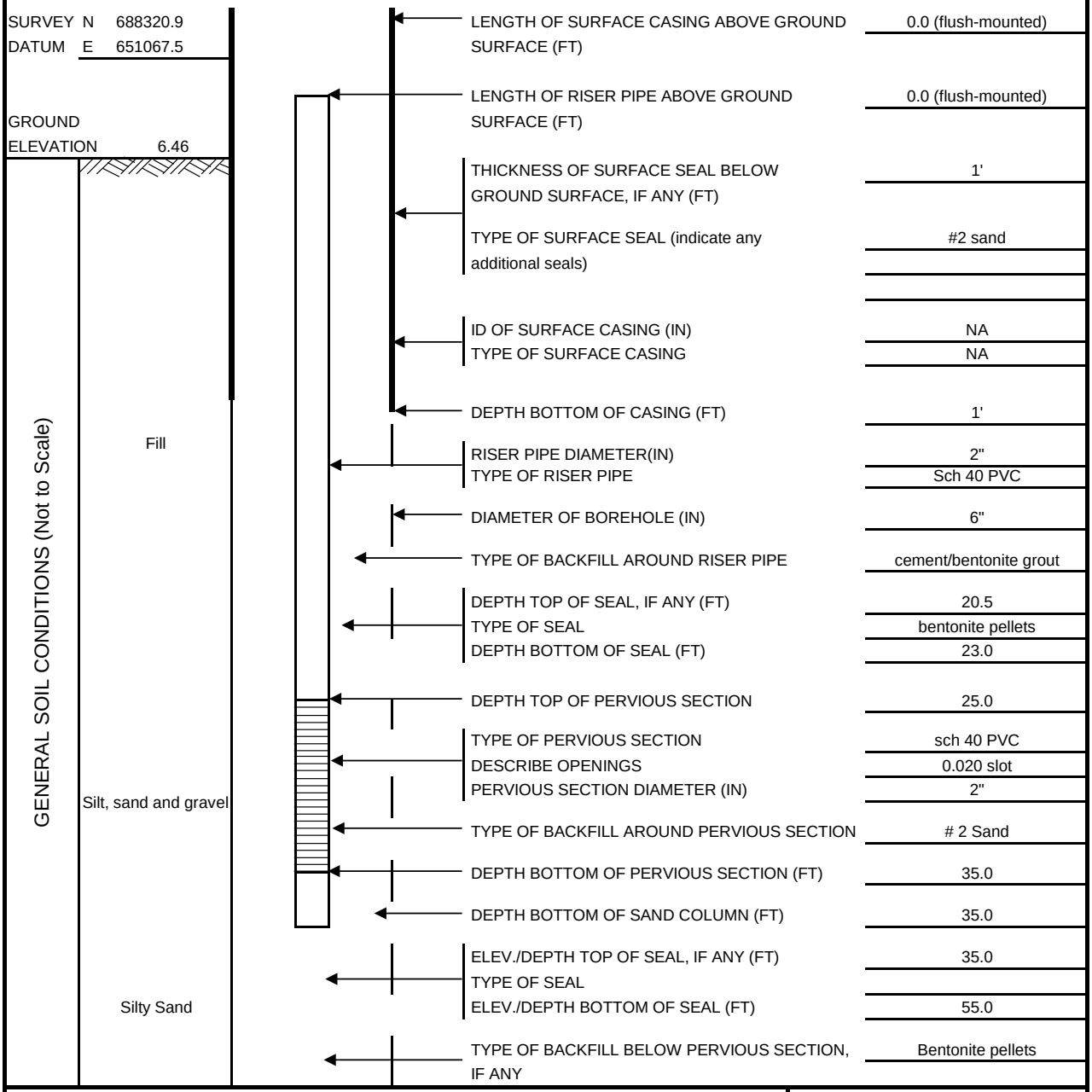
GROUNDWATER OBSERVATION WELL REPORT

GPEC-MW410

Project	Greenpoint Energy Center		
Location	Brooklyn, New York	PG. 1 OF 1	
Client	National Grid	Boring No.	GPEC-MW410
Contractor	Cascade Drilling	Driller Jon Weeks	Location Area 2
Inspected by	George Holmes	Date Started 3/8/17	
Checked by	Chris Morris	Date Completed 3/8/17	Project No. 125180-3-1302

SURVEY N 688320.9
DATUM E 651067.5

GROUND ELEVATION 6.46



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	#2 sand
ID OF SURFACE CASING (IN)	NA
TYPE OF SURFACE CASING	NA
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	2"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	20.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	23.0
DEPTH TOP OF PERVIOUS SECTION	25.0
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	2"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 2 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	35.0
DEPTH BOTTOM OF SAND COLUMN (FT)	35.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	35.0
TYPE OF SEAL	
ELEV./DEPTH BOTTOM OF SEAL (FT)	55.0
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Bentonite pellets

NOTES:

GEI Consultants

Attachment 2

Low-Flow Groundwater Sampling Form

Project number and name: GPEC RI Phase 2/3 Additional Investigation | Sampling personnel: G. Holmes | Sample date: 3/24/17 | Well ID: GPEC-MW403

Well location description: Along bulkhead near saltwater pump house

Well Construction

Well diameter	2"
Well measurement point	Top of casing
Roadbox condition	Good
Well screen interval	33.5-43.5
Well depth	42.85

Sampling Information

Initial depth to water	7.15 Time: 1440
Sample intake depth	38.5'
Pump type and ID	QED MP-50 Bladder Pump
Stabilized flow rate	0.4 L/min

Stabilized flow rate = flow rate with no further drawdown

Samples Collected	
VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time:	1600		Depth to water: 6.90
Sp.Cond.	1.40	mS/cm	
DO	0.50	mg/L	
ORP	-154	mV	
pH	7.06	s.u.	
Temp.	14.93	°C	
Turb.	2.5	NTU	

Cumulative Time (min.)	Volume (gal) L	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
1450	0		11.58	1.07	9.60	7.36	-126	164	0.6
1455	2		13.44	1.43	1.90	7.07	-138	168	0.7
1500	4	7.06	13.88	1.43	1.01	7.06	-149	78.4	0.7
1505	6		13.96	1.43	0.83	7.06	-152	50.8	0.7
1510	8		14.10	1.42	0.71	7.06	-154	33.3	0.7
1515	10	7.01	14.34	1.41	0.66	7.06	-154	24.1	0.7
1520	12		14.43	1.41	0.63	7.06	-154	16.1	0.7
1525	14		14.81	1.40	0.61	7.04	-153	10.2	0.7
1530	16	6.96	14.91	1.40	0.56	7.05	-154	8.8	0.7
1535	18		14.87	1.40	0.55	7.05	-153	6.8	
1540	20		14.89	1.40	0.53	7.06	-153	5.6	
1545	22		14.85	1.40	0.52	7.05	-154	4.1	
1550	24		14.91	1.40	0.51	7.05	-154	3.2	
1555	26	6.90	14.93	1.40	0.50	7.06	-154	2.5	

Sample Information:

Sample ID: GPEC-MW403

Sample Time: 1600

Color: clear

Turbidity: low

Field Filtered YES / NO Analyses:

Filter type:

Odor/Sheen/NAPL: NLO

Duplicate Collected YES / NO

If yes, duplicate ID:

Purge water disposal? to ground drummed other: frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume =
3.14 x (r)^2 x 7.48 gal/ft
where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC RI Phase 2/3 Additional Investigation | Sampling personnel: G. Holmes | Sample date: 3/28/17 | Well ID: GPEC-MW404

Well location description: Along bulkhead to SE of Stores Bldg

Well Construction

Well diameter: 2"
Well measurement point: Top of casing
Roadbox condition: Good
Well screen interval: 35-45
Well depth: 44.89

Sampling Information

Initial depth to water: 6.35 Time: 0718
Sample intake depth: 40'
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.5 L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time: 0835 Depth to water: 6.35
Sp.Cond. 1.51 mS/cm
DO 1.41 mg/L
ORP -133 mV
pH 7.30 s.u.
Temp 12.49 °C
Turb. 5.6 NTU

Cumulative Time (min.)	Volume (gal) L	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
0725	0		10.72	1.02	5.60	6.76	-118	341	0.6
0730	2.50		12.75	1.60	2.34	7.32	-168	660	0.8
0735	5.00	6.35	12.74	1.61	1.69	7.36	-182	345	0.8
0740	7.50		12.74	1.58	1.46	7.35	-170	161	0.8
0745	10.00		12.77	1.56	~~1.56~~ 1.41	7.35	-162	93.0	0.8
0750	12.50	6.35	12.85	1.55	1.35	7.33	-154	59.9	0.8
0755	15.00		12.82	1.52	1.29	7.32	-144	21.4	0.8
0800	17.50		12.89	1.52	1.29	7.32	-141	15.0	0.8
0805	20.00	6.35	12.91	1.52	1.29	7.31	-141	12.6	0.8
0810	22.50		12.77	1.52	1.24	7.30	-140	8.5	0.8
0815	25.00		12.69	1.51	1.31	7.31	-136	8.3	0.8
0820	27.50	6.35	12.63	1.51	1.33	7.30	-136	5.7	0.8
0825	30.00		12.63	1.51	1.36	7.30	-134	5.9	0.8
0830	32.50		12.49	1.51	1.41	7.30	-133	5.6	0.8

Notes:

Sample Information:

Sample ID: GPEC-MW404
Sample Time: 0835
Color: clear
Turbidity: Low
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: slight NLO
Duplicate Collected YES / NO
If yes, duplicate ID:
Purge water disposal? to ground drummed other: frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume = 3.14 x (r)^2 x 7.48 gal/ft where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval
2 Minimize drop in water level and purge until parameters are stable
3 Disconnect flow thru cell during sampling
4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).
5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Low-Flow Groundwater Sampling Form

Project number and name: GPEC R1 Phase 2/3 Additional Investigation | Sampling personnel: G. Holmes | Sample date: 3/28/17 | Well ID: GPEC-MW405

Well location description: Along Bulkhead to E of stores bldg

Well Construction

Well diameter: 2"
Well measurement point: Top of Casing
Roadbox condition: Good
Well screen interval: 40-50
Well depth: 49.46

Sampling Information

Initial depth to water: 6.46 Time: 0856
Sample intake depth: 45'
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.4 L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time: 1025
Sp.Cond. 2.07 mS/cm
DO 0.58 mg/L
ORP -178 mV
pH 7.27 s.u.
Temp. 13.18 °C
Turb. 21.3 NTU
Depth to water: 6.31

Cumulative Time (min.)	Volume (gal) L	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
0900	0		12.69	2.38	9.09	7.34	-202	71,000	1.2
0905	2	6.38	12.77	2.19	2.28	7.29	-190	964	1.1
0910	4		12.86	2.14	1.78	7.28	-178	462	1.1
0915	6		12.98	2.09	1.34	7.26	-171	179	1.1
0920	8		12.97	2.06	1.29	7.27	-166	78.5	1.0
0925	10	6.28	13.11	2.06	1.23	7.26	-166	62.0	1.0
0930	12		13.07	2.06	1.19	7.27	-166	53.8	1.0
0935	14		13.09	2.05	1.30	7.26	-162	38.1	1.0
0940	16	6.25	13.17	2.05	1.18	7.26	-164	32.2	1.0
0945	18		13.14	2.05	1.03	7.25	-166	26.9	1.0
0950	20		13.18	2.08	0.90	7.26	-170	22.0	1.1
0955	22		13.17	2.08	0.78	7.26	-174	24.6	1.1
1000	24	6.29	13.17	2.08	0.70	7.27	-175	36.2	1.1
1005	26		13.09	2.08	0.66	7.27	-175	38.7	1.1
1010	28		13.13	2.07	0.63	7.27	-176	21.4	1.1
1015	30		13.17	2.07	0.60	7.27	-177	22.9	1.0
1020	32		13.18	2.07	0.58	7.27	-178	21.3	1.1

Sample Information:

Sample ID: GPEC-MW405
Sample Time: 1025
Color: clear
Turbidity: Low
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: NLO
Duplicate Collected YES / NO
If yes, duplicate ID:
Purge water disposal? to ground drummed other: Frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume =
3.14 x (r)^2 x 7.48 gal/ft
where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC Phase 2/3 RI Additional Investigation Sampling personnel: G. Holmes Sample date: 3/27/17 Well ID: GPEC-MW406

Well location description: Along bulkhead to NE of stores Bldg

Well Construction

Well diameter: 2"
Well measurement point: Top of Casing
Roadbox condition: Good
Well screen interval: 55-60
Well depth: 59.10

Sampling Information

Initial depth to water: 5.02 Time: 0738
Sample intake depth: 57.5'
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.5L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time: 0840 Depth to water: 4.94
Sp.Cond. 2.31 mS/cm
DO 1.48 mg/L
ORP -123 mV
pH 7.14 s.u.
Temp. 11.59 °C
Turb. 0.0 NTU

Cumulative Time (min.)	Volume (gal) L.	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
0755	0		7.48	1.58	5.06	~~7.54~~ 6.49	-23	162	0.9
0800	2.5		10.31	2.27	2.46	7.04	-129	161	1.1
0805	5.0	4.96	10.69	2.30	1.84	7.14	-139	51.6	1.2
0810	7.5		10.89	2.31	1.75	7.14	-136	26.6	1.2
0815	10.00		11.21	2.31	1.70	7.14	-132	9.6	1.2
0820	12.50	4.92	11.21	2.31	1.63	7.14	-128	0.1	1.2
0825	15.00		11.40	2.31	1.60	7.15	-125	0.0	1.2
0830	17.50		11.71	2.31	1.56	7.13	-123	0.0	1.2
0835	20.00		11.59	2.31	1.48	7.14	-123	0.0	1.2

Sample Information:

Sample ID: GPEC-MW406
Sample Time: 0840
Color: clear
Turbidity: None
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: NLO
Duplicate Collected YES / NO
If yes, duplicate ID:
Purge water disposal? to ground drummed other: frac tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume = 3.14 x (r)^2 x 7.48 gal/ft where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval
2 Minimize drop in water level and purge until parameters are stable
3 Disconnect flow thru cell during sampling
4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).
5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC R1 Phase 2/3 Additional Investigation Sampling personnel: G. Holmes Sample date: 3/27/17 Well ID: GPEC-MW407

Well location description: Along bulkhead to E of storage yard

Well Construction

Well diameter: 2"
Well measurement point: Top of casing
Roadbox condition: Good
Well screen interval: 60-70
Well depth: 69.61

Sampling Information

Initial depth to water: 5.07 Time: 0918
Sample intake depth: 65'
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.4 L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time: 1045
Sp.Cond. 2.62 mS/cm
DO 1.28 mg/L
ORP -141 mV
pH 7.32 s.u.
Temp. 10.12 °C
Turb. 3.3 NTU

Depth to water: 5.01

Cumulative Time (min.)	Volume (gal)	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
0925	0		8.68	2.49	14.23	7.42	-131	424	1.3
0930	2		9.12	2.80	2.40	7.39	-153	324	1.4
0935	4		9.36	2.76	1.74	7.39	-155	175	1.4
0940	6	5.13	9.50	2.75	1.58	7.40	-151	102	1.4
0945	8		9.54	2.70	1.60	7.42	-148	60.8	1.4
0950	10		9.96	2.69	1.48	7.37	-148	41.7	1.4
0955	12		9.74	2.68	1.38	7.36	-146	32.7	1.4
1000	14	5.21	10.00	2.67	1.40	7.36	-145	24.2	1.4
1005	16		10.03	2.68	1.22	7.37	-146	17.9	1.4
1010	18		10.01	2.67	1.19	7.38	-147	13.1	1.4
1015	20		9.90	2.67	1.19	7.37	-146	10.9	1.4
1020	22	5.11	10.08	2.66	1.20	7.37	-145	7.9	1.4
1025	24		10.07	2.66	1.25	7.37	-145	6.4	1.4
1030	26		10.02	2.65	1.27	7.36	-144	4.7	1.4
1035	28		10.08	2.65	1.24	7.36	-143	4.3	1.4
1040	30		10.12	2.62	1.28	7.32	-141	3.3	1.3

Sample Information:

Sample ID: GPEC-MW407
Sample Time: 1045
Color: clear
Turbidity: low
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: NO
Duplicate Collected YES / NO
If yes, duplicate ID:
Purge water disposal? to ground drummed other: Frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume = 3.14 x (r)^2 x 7.48 gal/ft where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC 121 Phase 2/3 Additional Investigation | Sampling personnel: G. Holmes | Sample date: 3/27/17 | Well ID: GPEC-MW408

Well location description: Along bulkhead to E of storage yard

Well Construction

Well diameter: 2"
Well measurement point: Top of casing
Roadbox condition: Good
Well screen interval: 35-45
Well depth: 44.00

Sampling Information

Initial depth to water: 5.38 Time: 1143
Sample intake depth: 40
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.5 L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time: 1345
Sp.Cond. 1.15 mS/cm
DO 0.45 mg/L
ORP -161 mV
pH 7.59 s.u.
Temp. 12.97 °C
Turb. 0.0 NTU
Depth to water: 5.77

Cumulative Time (min.)	Volume ~~(gal)~~ L	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
1150	0		9.45	4.78	11.58	7.42	-97	300	2.7
1155	2.50		11.07	5.96	2.19	7.49	-147	227	3.2
1200	5.00	5.47	11.17	5.89	1.66	7.50	-151	155	3.2
1205	7.50		11.52	5.75	1.15	7.49	-155	61.4	3.1
1210	10.00		12.13	5.58	0.91	7.47	-157	13.4	3.0
1215	12.50	5.55	12.08	5.49	0.81	7.47	-158	2.7	2.9
1220	15.00		12.22	5.38	0.78	7.47	-158	0.0	2.9
1225	17.50		12.59	5.19	0.71	7.46	-158	0.0	2.8
1230	20.00	5.60	12.78	4.97	0.69	7.46	-157	0.0	2.6
1235	22.50		12.81	4.64	0.61	7.45	-157	0.0	2.5
1240	25.00		12.82	4.25	0.60	7.45	-157	0.0	2.2
1245	27.50		12.74	3.70	0.56	7.46	-156	0.0	1.9
1250	30.00	5.71	12.85	3.24	0.54	7.48	-157	0.0	1.7
1255	32.50		12.79	2.88	0.55	7.50	-158	0.0	1.5
1300	35.00		12.91	2.43	0.51	7.52	-159	0.0	1.2
1305	37.50	5.80	12.94	1.88	0.50	7.55	-161	0.0	0.9
1310	40.00		12.91	1.63	0.49	7.57	-161	0.0	0.8
1315	42.50		12.97	1.50	0.48	7.58	-160	0.0	0.8
1320	45.00		12.99	1.36	0.48	7.58	-161	0.0	0.7
1325	47.50	5.79	12.87	1.21	0.47	7.59	-160	0.0	0.6
1330	50.00		12.88	1.17	0.47	7.55	-161	0.0	0.6
1335	52.50		12.95	1.16	0.46	7.58	-160	0.0	0.6
1340	55.00		12.97	1.15	0.45	7.59	-161	0.0	0.6

Sample Information:

Sample ID: GPEC-MW408
Sample Time: 1345
Color: clear
Turbidity: None
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: NLO
Duplicate Collected YES / NO
If yes, duplicate ID:
Purge water disposal? to ground drummed other: Frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume = 3.14 x (r)^2 x 7.48 gal/ft where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC Phase 2/3 RI Additional Investigation Sampling personnel: G. Holmes Sample date: 3/24/17 Well ID: GPEC-MW409

Well location description: Along Bulkhead in storage area

Well Construction

Well diameter: 2"
Well measurement point: Top of casing
Roadbox condition: Good
Well screen interval: 40-50
Well depth: 49.53

Sampling Information

Initial depth to water: 5.70 Time: 0956
Sample intake depth: 45'
Pump type and ID: QED MP-50 Bladder Pump
Stabilized flow rate: 0.4 L/min
Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	X

Field values at time of sample collection:

Time:	1105	
Sp.Cond.	0.823	mS/cm
DO	0.44	mg/L
ORP	-254	mV
pH	7.52	s.u.
Temp.	13.25	°C
Turb.	0.0	NTU

Depth to water: 5.86

Cumulative Time (min.)	Volume (gal)	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity PPT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
1005	0		11.04	1.21	8.75	8.19	-216	145	0.6
1010	2	5.83	12.07	0.944	2.11	7.71	-222	24.4	0.5
1015	4		12.67	0.859	1.33	7.63	-224	5.0	0.4
1020	6	5.87	12.88	0.841	1.04	7.60	-227	1.3	0.4
1025	8		13.03	0.835	0.87	7.58	-230	1.1	0.4
1030	10		12.99	0.829	0.73	7.56	-234	0.2	0.4
1035	12		13.15	0.827	0.63	7.55	-240	0.0	0.4
1040	14	5.86	13.21	0.825	0.58	7.54	-243	0.0	0.4
1045	16		13.15	0.824	0.53	7.54	-248	0.0	0.4
1050	18		13.27	0.825	0.48	7.53	-250	0.0	0.4
1055	20	5.87	13.23	0.824	0.46	7.53	-252	0.0	0.4
1100	22		13.25	0.823	0.44	7.52	-254	0.0	0.4

Sample Information:

Sample ID: GPEC-MW409
Sample Time: 1105
Color: clear
Turbidity: None
Field Filtered YES / NO Analyses:
Filter type:
Odor/Sheen/NAPL: slight NLO
Duplicate Collected YES / NO
If yes, duplicate ID: GPEC-MW-XX-032417
Purge water disposal? to ground drummed other: Frac Tank

Well Volume Conversion:	
Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume =
3.14 x (r)^2 x 7.48 gal/ft
where r = 1/2 diameter in ft

Stabilization Criteria:
Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

Notes:

Low-Flow Groundwater Sampling Form

Project number and name: GPEC R1 Phase 2/3 Additional Investigation — Sampling personnel: G. Holmes — Sample date: 3/27/17 — Well ID: GPEC-MW410

Well location description: Along bullhead just S of LNG fence

Well Construction

Well diameter	2"
Well measurement point	Top of casing
Roadbox condition	Good
Well screen interval	25-35
Well depth	34.53

Sampling Information

Initial depth to water	6.58 Time: 1353
Sample intake depth	30'
Pump type and ID	QED MP-50 Bladder-Pump
Stabilized flow rate	0.5 L/min → 0.4 L/m

Stabilized flow rate = flow rate with no further drawdown

Samples Collected

VOCs 8260	X
SVOCs 8270	X
VPH	
EPH	
Metals	X
PCBs	X
Other	

Field values at time of sample collection:

Time:	~~1600~~ 1500	Depth to water: 8.41
Sp.Cond.	19.2	mS/cm
DO	0.41	mg/L
ORP	-322	mV
pH	7.09	s.u.
Temp.	13.22	°C
Turb.	0.0	NTU

Cumulative Time (min.)	Volume (~~gal~~) L	Water depth (ft)	Temp. (°C)	Sp.Cond. (mS/cm)	D.O. (mg/L)	pH (s.u.)	ORP (mV)	Turb. (NTU)	Salinity > PT
Typical Groundwater Values			5 to 15	0.05 to 5	0 to 4	5 to 7	-100 to +500	aim for <10	
1400	0		12.95	9.87	5.82	7.34	-72	876	6.8
1405	2.50		12.79	19.2	1.14	7.09	-181	122	11.3
1410	5.00	7.53	12.76	20.4	0.83	7.13	-211	24.6	12.0
1415	7.50		12.75	20.3	0.71	7.16	-235	6.8	11.9
1420	~~10.00~~ 9.50	7.67	12.62	19.8	0.63	7.15	-257	0.0	11.7
1425	11.50		12.68	19.9	0.58	7.14	-284	0.0	11.7
1430	13.50	7.73	12.78	20.3	0.52	7.13	-306	0.0	11.9
1435	15.50		12.88	20.2	0.46	7.12	-313	0.0	11.9
1440	17.50		13.11	19.7	0.46	7.11	-318	0.0	11.6
1445	19.50	8.07	13.15	19.5	0.41	7.10	-320	0.0	11.5
1450	21.50		13.18	19.6	0.39	7.09	-323	0.0	11.5
1455	23.50		13.22	19.2	0.41	7.09	-322	0.0	11.3

Notes: Dropped down pumping rate to 0.4 L/m @ 1415

Sample Information:

Sample ID: GPEC-MW410

Sample Time: GH ~~1600~~ 1500

Color: clear

Turbidity: None

Field Filtered YES / NO — Analyses:

Filter type:

Odor/Sheen/NAPL: Strong odor

Duplicate Collected YES / NO

If yes, duplicate ID:

Purge water disposal? to ground drummed other: frac Tank

Well Volume Conversion:

Diam. (in)	Factor (gal/ft)
1	0.04
1.5	0.09
2	0.16
4	0.65
6	1.50

well volume = 3.14 x (r)^2 x 7.48 gal/ft where r = 1/2 diameter in ft

Stabilization Criteria:

Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM