September 12, 2014

Mr. Sadique Ahmed
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7012

Re: NYSDEC Standby Engineering Contract D006129-07
WA #7 75-09 Woodhaven Boulevard Off-Site RI
NYSDEC Site #2-41-036
Phase IV - Addendum to Off -Site Remedial Investigation Report

Dear Mr. Ahmed:

Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) is pleased to present this addendum to the June 2012 Remedial Investigation Report for the 75-09 Woodhaven Boulevard off-site RI/FS (D006129-07) and subsequent Phase III Addendum Letter Report from February 2014. This letter provides a summary of the field work and analytical results from Phase IV of the off-site investigation conducted during March through June of 2014, which included installation and sampling of several supplemental soil gas points during March 2014 and the May to June 2014 drilling and sampling of two supplemental intermediate depth monitoring wells in the residential area south of Union Turnpike and west of Woodhaven Boulevard. Phase IV activities also included the sampling of a subset of existing monitoring wells installed during previous phases of the investigation. An updated presentation of recommendations based on the most recent phase of work is included as the final section of the report.

Background

As presented in the June 2012 Remedial Investigation Report and the supplemental February 2014 Addendum Letter Report for the 75-09 Woodhaven Boulevard site (NYSDEC Site # 241036) three phases of an off-site remedial investigation were conducted in 2010-2013 in association with the site at 75-09 Woodhaven Boulevard, which is currently being addressed under the Voluntary Cleanup Program (VCP). Contaminated soil was removed from the subsurface and an on-going containment effort using an SVE system was initiated.

Despite the remedial efforts conducted to target the on-site contamination, concerns remained regarding the potential off-site migration of contaminants of concern (COCs), particularly with the potential for dissolved phases of the chlorinated volatile organic compounds (cVOCs) detected at the site to impact the off-site groundwater quality of the underlying aquifers. To evaluate these potential impacts NYSDEC initiated an off-site RI in 2010, focusing on the areas

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south and southwest of the 75-09 Woodhaven Boulevard site in accordance with the predominant groundwater flow direction evaluated during the on-site RI and remedial activities.

As NYSDEC's standby consultant for the off-site RI work, HDR completed two phases of field work by the end of 2011 and presented a final RI report for the first two phases of work by June 2012 with the understanding that any further investigation related tasks would be presented as an addendum (in letter form) to the NYSDEC upon completion of the additional phases of work.

The first two phases of the off-site RI included the following:

- Installation and 2 rounds of sampling at a total of 30 soil gas locations
- Installation of 7 shallow monitoring wells ("S" designated wells)
- Installation of 6 intermediate monitoring wells ("I" designated wells)
- Installation of 2 deep monitoring wells ("D" designated wells)

Details of the first two phases of field work and sampling completed as part of the off-site RI are discussed and evaluated in-depth in the June 2012 RI Report. Following the evaluation of the data from the first two phases of the investigation, NYSDEC assigned an additional phase of off-site investigation to HDR in an effort to further delineate the areal and vertical extent of the groundwater contaminant plume.

The third phase of the off-site RI included the following:

- Installation and sampling of 15 additional soil gas points
- Installation and sampling of 4 additional monitoring wells

Details regarding the components and results from the Phase III work are summarized in the February 4, 2014 Addendum Letter Report. The primary findings from Phase III of the off-site investigation included confirmation of elevated cVOC levels in soil gas samples and groundwater samples collected in the mixed residential and commercial areas west of the Woodhaven Boulevard site, between Woodhaven Boulevard and 88th Street, and north of Union Turnpike. Significant soil gas results were found to be relatively localized with no discernible directional trend to those locations where significant cVOC concentrations were detected. Elevated levels of contaminants of concern in groundwater samples collected from the newest monitoring wells expanded the known extent of contamination southwestward from the site further downgradient from the previous furthest downgradient wells completed and sampled during Phase II of the investigation.

The Phase IV off-site RI work represents a further focused expansion of the area evaluated for off-site impacts, again using the results from previous phases of work to target those areas not fully delineated to where data gaps appeared to be present. The general components and procedures for the Phase IV field work, the installation and sampling of additional soil gas points and monitoring wells, are described below. Given the localized nature of some of the most significant soil gas detections for COCs from the sampling conducted during Phase III of the investigation, additional co-located soil vapor points were installed at deeper depths in the subsurface to determine whether the contaminants detected during the initial sampling from the shallower depth intervals at these locations were also detectable deeper in the subsurface. Detections of significant concentrations only in the shallow soil horizon would suggest a more

localized shallower source that could likely be attributed to a release of the contaminant(s) in the immediate vicinity of the sampling location. If the results indicated significant contaminant concentrations in the intermediate and deeper soil vapor samples collected during the Phase IV sampling, a more widespread impact due to volatilization and upward migration from the water table into deeper unsaturated portions of the UGA would be suspected. These activities were conducted in accordance with requirements set forth in NYSDEC's DER-10 guidance and were similar to those for Phase I, II and III, as described in the June 2012 RI Report and Addendum Report. The details regarding the Phase IV work are summarized in the sections that follow. Table 1 presents a summary of the intrusive activities (monitoring wells and soil vapor points installed) as part of the project to date. Supporting documentation for this phase of the work including the field logs, analytical data packages, and DUSR are provided on a separate CD.

Off-Site RI - Phase IV Components

Soil Gas Sampling Program

Aquifer Drilling & Testing, Inc. (ADT) completed the installation of soil gas implants as permanent soil gas sampling points at an additional four locations (Figure 1) in the mixed use area west of Woodhaven Boulevard. The additional points were installed as supplemental points co-located with SG-22 and SG-34 from Phase III of the investigation. For sampling purposes the initial points at these locations, set to a shallow depth of approximately 8-ft below grade, were identified as SG-22S and SG-34S, denoting them as the shallowest of the three co-located points at each location. The additional points from the Phase IV sampling were subsequently identified as SG-22D, SG-22I, SG-34D, and SG-34I. The intermediate (I) depth interval points were set at a depth of approximately 20-ft, while the deep (D) points were installed to an approximate depth of 40-ft below grade. Samples were collected in accordance with the standard NYSDOH protocols for soil gas point construction and sampling that have been followed for all previous rounds of soil gas sampling. Prior to sampling, each point was short-circuit tested using helium to test the integrity of the seal between the subsurface and ambient air. Each point was sampled using individually certified 1L canisters fitted with 2-hr sample duration regulators. A duplicate sample (DUP-1) was collected from point SG-22D and an outside air sample of the ambient air at the surface in the vicinity of the sampling location was also collected (AMB-20140310).

Monitoring Well Installation & Sampling

During May 2014, two additional monitoring wells (Figure 2), both of which were installed at an Intermediate depth (115 ft below grade), were installed as part of Phase IV activities. These wells (MW-12I and MW-13I) were placed at locations selected to expand the area of well coverage and further delineate the extent of impacted groundwater. These wells were drilled, constructed, developed, and sampled according to the procedures and specifications outlined for the Phase III drilling, utilizing an ADT rotosonic drill rig to allow for more efficient drilling in the difficult conditions encountered at certain well locations due to the presence of nested cobbles and boulders (moraine deposits).

Drilling and well construction occurred between and May 15th -21st, 2014 with well MW-12I completed to a depth of 130 ft below grade (screened 120-130 ft bgs) along 81st Avenue between Woodhaven Boulevard and 88th Street and well MW-13I completed to a final depth of 140 ft

below grade (screened 130 -140 ft bgs) just west of the intersection of 81st Avenue and 88th Street.

Drilling continued deeper than originally scoped at MW-13I due to ground surface elevation analysis indicating that the originally targeted depth would likely not be deep enough to provide a sufficient water column for representative sampling of the aquifer. To insure that the well penetrated deep enough below the water table it was decided, with NYSDEC's approval, to deepen this particular well in an effort to provide a representative sample from what would be considered an "intermediate" depth interval relative to other wells installed during previous phases of the investigation.

Wells were developed with submersible pump using pump and surge techniques for a maximum of two hours each or until groundwater chemistries (particularly turbidity) had stabilized on May 22, 2014. Development water was contained in 55 gallon drums and staged at the designated staging area for subsequent waste disposal classification sampling and disposal via HDR's contracted IDW management subcontractor.

As was the case for previous phases of monitoring well sampling, YEC, Inc. (YEC) conducted the sampling (in June 2014), submitting samples to Hampton-Clarke / Veritech analytical laboratory for VOC (USEPA Method 8260) analysis. In addition, YEC collected a synoptic round of water level measurements from all of the monitoring wells completed during the three phases of the off-site RI. The water levels were converted to groundwater elevations for use in constructing updated groundwater elevation contour and flow maps. The resultant elevations and flow maps are discussed in more detail in the Phase IV results discussion that follows.

Off-Site RI – Phase IV Subsurface Investigation Results

Soil Gas Results

Elevated soil gas detections of several COCs were observed in the points sampled during Phase IV activities (Figure 1). The highest concentrations were again associated with location SG-34 where both the shallow and intermediate points exhibited similar levels of PCE, TCE, cis 1,2-DCE, and 1,1,1 TCA. Overall, the highest detected concentrations from the sampling program were found in MW-34S and MW-34I, with PCE concentrations of 2200 and 1900 μg/m3, respectively. The PCE concentration from MW-34D was an order of magnitude lower at 230 μg/m3.

TCE was detected in all sampled intervals for SG-34, with consistent concentrations (range 20-33 μg/m3) present for the three depth intervals from which samples were collected. In comparison, only a single, very minor detection of TCE (1.2 μg/m3) was made from the samples collected from the SG-22 soil gas point cluster.

The shallow sample from the MW-22 cluster of soil gas points yielded the only other significant detection of a COC (albeit at an order of magnitude lower concentration relative to the levels from MW-34), with PCE present at a concentration of 280 μg/m3.

Residual level detections of 1,1,1 TCA and breakdown product cis 1,2-DCE were also made but are not considered significant in the context of the previous soil gas results from the project. No vinyl chloride was detected in any of the soil gas samples collected during Phase IV activities.

Elevated levels of various other VOCs not associated with the site, including BTEX compounds, were detected in many of the samples. The highest levels of BTEX compounds were generally detected in the deeper intervals (20 and 40 ft below grade) from SG-22.

A full summary of the analytical data for the March 2014 soil vapor sampling program is presented in Table 2.

Groundwater Results

As shown in Figure 2, the groundwater monitoring well sampling program for Phase IV of the off-site RI again yielded results exhibiting the highest detected concentrations of contaminants in the vicinity of well pair MW-8S and MW-8I near the corner of Woodhaven Boulevard (southbound service lanes) and 79th Avenue. The deeper well of the pair, MW-8I, exhibited the highest concentration of any contaminant of concern detected during this groundwater sampling event, with a PCE concentration of 650 μg/L. Groundwater obtained from MW-8S yielded only a slightly lower PCE concentration of PCE at 600 μg/L. Overall, PCE was detected in six of the eight wells sampled during this phase and the detected levels exceeded the NYSDEC Class GA Standard of 5 μg/L in each case. From the two new intermediate wells that were installed as part of the Phase IV effort (representing the furthest downgradient sampling locations to date), PCE was detected at an elevated concentration of 460 μg/L in MW-12I but was not detected in the sample collected from MW-13I. The other PCE detections (and exceedences) were recorded in wells MW-1S (32 μg/L), MW-9S (140 μg/L), and MW-11S (80 μg/L).

Two wells also exhibited concentrations of TCE that exceeded the NYSDEC Class GA standard of 5 μg/L. The new intermediate well MW-12I yielded groundwater with a detected TCE concentration of 5.7 μg/L and groundwater obtained from MW-9S exhibited a TCE concentration of 9.8 μg/L. The only other significant detection of a chlorinated VOC was 1.7 μg/L of the breakdown product cis 1,2-DCE in the groundwater sample from MW-12I.

No other contaminants of concern (COCs) thought to be derived from the 75-09 Woodhaven Boulevard site, or other breakdown products associated with the primary COCs, were detected in the wells that were sampled as part of the Phase IV activities. The only other notable detection from the groundwater sampling was the presence of benzene, at a concentration of 1.1 μg/L, from well MW-9S. This detection, along with other low level detections of BTEX compounds likely correlates with the presence of BTEX compounds also detected during the various phases of soil gas sampling that have been conducted as part of the investigation. Table 3 contains the full analytical data summary for the 2014 groundwater sampling program.

Based on a synoptic round of water level measurements collected during June 2014, groundwater elevations were determined for all of the wells installed as part of the off-site RI. Using the Phase IV groundwater elevation data, groundwater elevation contour maps (Figures 3 and 4)

were generated to evaluate groundwater flow direction and hydraulic gradient. Based on this most recent set of data, the shallow and intermediate flow patterns appear similar to those determined from previous phases of the investigation. According to the elevations and contours derived from the shallow well measurements, shallow groundwater flow direction appears to be to the south-southeast with a component of flow on the eastern edge of the study area indicating flow in a southwesterly direction (Figure 3). As with previous rounds of water level measurements, the groundwater levels in monitoring wells MW-10S and MW-3S continue to be outliers and considered anomalous so they were not considered when preparing the shallow groundwater contours.

Based on the addition of groundwater elevation data from MW12I and MW13I, flow in the intermediate depth zone (Figure 4) appears to converge from the northeast and northwest in the vicinity of MW-2I and MW-3I, with flow direction consolidated into a more uniformly southeasterly direction further southward in the study area.

Only two deep wells have been installed through Phase IV of the off-site RI so not enough groundwater elevation data exists to fully determine the flow directions components. During groundwater level measurements, YEC, Inc. noted that they were unable to locate well MW-7D and that it appears to have been paved over in the cul-de-sac where it was located. Since Phase IV activities then yielded only a single water level from the deepest interval defined as part of the investigation, no figure was produced to show groundwater elevations for this interval.

As was the case following the Phase III activities, several of the well pairs were analyzed for trends in the vertical gradients for wells set at different depths in the subsurface. This was primarily conducted by comparing groundwater elevations from co-located shallow and intermediate wells. For the Phase IV measurements conducted during June 2014, with the exception of the shallow and intermediate intervals at the MW-7 cluster all of the other shallow and intermediate pairs indicated the presence of an upward gradient, with higher groundwater elevations for the intermediate screened zone relative to the shallower screened interval. This finding was consistent with the results from the same analysis conducted for the same subset of wells using the Phase III groundwater elevation data.

Data Interpretation & Recommendations

The 2014 Phase IV investigation conducted as part of the off-site RI resulted in the following primary interpretations:

- The 2014 soil vapor sampling program concentrated on localized delineation of cVOC soil vapors in the vicinity of two of the previous sampling locations west of Woodhaven Boulevard showing the highest concentrations in the shallow subsurface. For point SG-34, the additional sampling of intermediate and deep intervals at this location indicated that the vapors from contaminants of concern were present but at levels an order of magnitude lower in the deeper subsurface (40 ft bgs) versus the levels in the shallow and intermediate zones. Similar results were present at sampling location SG-22 where the shallow subsurface concentrations were an order of magnitude lower than in the same zone at SG-34 and the deeper intervals were an order of magnitude lower still. There is not conclusive evidence in either case to determine whether the data is indicative of a

deeper source linked to the groundwater table or a more localized source. Results from SG-34 suggest that a more localized source is responsible for the similar concentrations detected in the shallow and intermediate zones but much lower levels in the deeper zone closer to the water table. For SG-22, the low detected concentrations in the intermediate and deep intervals appear to suggest that a deeper source (i.e. groundwater plume) would not be responsible for the elevated levels detected in the shallow subsurface. Soil gas sampling and the distribution of vapor phase contaminants in the subsurface is however impacted by many variables that are not easily accounted for and the exact relationship between the sample results from various depths, the known groundwater plume originating at the 75-09 Woodhaven Boulevard site, and the possibility of other discrete source areas not associated with the site is not clear.

- Groundwater sampling was limited to eight wells, all located west of Woodhaven Boulevard and consisting of a mix of shallow and intermediate depths, including the two new wells installed during Phase IV, MW-12I and MW-13I. Sampling results were relatively consistent when compared to past sampling events for those wells resampled during this round. Results from the new intermediate wells confirm and extend the axis of significant contamination southward from the MW-8 pair, through MW-11S, and south of Union Turnpike to MW-12I. PCE concentrations in MW-12I are significantly elevated, nearing the levels observed in MW-8S/8I. The contamination plume appears to be constrained in the shallow and intermediate zones to the west where results from MW-10S and MW-13I both indicate the presence of only residual level cVOCs. The presence of significant levels of COCs in MW-12I is consistent with the groundwater flow pattern observed during various phases of the investigation, supporting origination of the contamination upgradient in the vicinity of the intersection between Woodhaven Boulevard and the LIRR corridor.

Our recommendations relative to the on-going RI include:

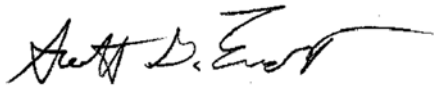
- Given the results of the focused soil vapor sampling program and groundwater sampling conducted during 2014, the NYSDEC, in consultation with the NYSDOH should determine the need for additional soil vapor investigations in this area.

- Results from the Phase IV groundwater sampling program continue to indicate the presence of significant concentrations of cVOCs in the intermediate depth wells south of the site and the inclusion of data from the Phase IV wells extends the area of contamination beyond Union Turnpike. The new data from MW-12I and MW-13I assist in delineating the east-west extent of the plume along the west side at intermediate depths. NYSDEC may consider additional delineation eastward from MW-12I, however access will be a major concern given the likely requirement for drilling in the immediate vicinity of Woodhaven Boulevard. Alternate methods of data collection such as groundwater probe sampling may also be an option however difficulties encountered in drilling during past phases of the investigation may result in deeper probe sampling being infeasible in this particular area. Further southward delineation may also be warranted but geologic conditions (the proximity to significant moraine deposits just south of

currently investigated area) may create increasingly difficult drilling conditions if attempts are made to acquire relatively deep data further to the south.

Please contact me at your earliest convenience if you have questions or comments on this phase of the RI. On your approval of this report our existing scope of work of this assignment will be completed and we will await further guidance regarding future activities associated with the off-site investigation.

Very truly yours,



Scott G. Englert
Project Manager

encl. Supporting Field Documentation (provided on CD)
cc: M. Lehtinen- HDR

Table 1

Soil Vapor Point and Groundwater Monitoring Well Summary Table

75-09 Woodhaven Boulevard Off-Site RI- Queens, NY

NYSDEC Site No. 241036

Off-site RI Phase I

Soil Vapor Points	Date Installed
SG-1	8/19/2010
SG-2	8/19/2010
SG-3	8/19/2010
SG-4	8/29/2010
SG-5	8/29/2010
SG-6	8/29/2010
SG-7	8/29/2010
SG-8	8/31/2010
SG-9	8/31/2010
SG-10	8/31/2010
SG-11	8/18/2010
SG-12	8/18/2010
SG-13	8/18/2010

Monitoring Wells	Date Installed
MW-1S	8/28/2010
MW-2S	8/30/2010
MW-2I	9/8/2010
MW-3S	8/27/2010
MW-3I	9/1/2010
MW-4I	9/10/2010
MW-5I	9/9/2010
MW-6I	9/7/2010

Off-site RI Phase II

Soil Vapor Points	Date Installed
SG-14	10/4/2011
SG-15	10/4/2011
SG-16	10/3/2011
SG-17	10/3/2011
SG-18	10/5/2011
SG-19	10/5/2011
SG-20	10/7/2011
SG-21	10/7/2011
SG-22	10/6/2011
SG-23	10/6/2011
SG-24	10/3/2011
SG-25	10/4/2011
SG-26	10/5/2011
SG-27	10/5/2011
SG-28	10/3/2011
SG-29	10/3/2011
SG-30	10/4/2011

Monitoring Wells	Date Installed
MW-5S	10/12/2011
MW-5D	11/10/2011
MW-6S	10/19/2011
MW-7S	10/14/2011
MW-7I	10/21/2011
MW-7D	12/1/2011
MW-8S	10/25/2011

Off-site RI Phase III & IV

Soil Vapor Points	Date Installed
SG-31	2/26/2013
SG-32	2/26/2013
SG-33	2/28/2013
SG-34	2/28/2013
SG-35	2/28/2013
SG-36	3/20/2013
SG-37	2/28/2013
SG-38	2/27/2013
SG-39	2/27/2013
SG-40	2/27/2013
SG-41	2/26/2013
SG-42	2/27/2013
SG-43	2/26/2013
SG-44	2/27/2013
SG-45	2/27/2013
SG-22I Phase IV	3/6/2014
SG-22D Phase IV	3/6/2014
SG-34I Phase IV	3/6/2014
SG-34D Phase IV	3/6/2014

Monitoring Wells	Date Installed
MW-9S	3/20/2013
MW-10S	3/22/2013
MW-11S	3/26/2013
MW-8I	3/15/2013
MW-12I Phase IV	5/21/2014
MW-13I Phase IV	5/19/2014

NOTE:

See Figures 1 and 2 for locations of Phase IV soil vapor points and monitoring wells

March 2014
Table 2. Phase IV VOC Soil Gas Sampling Data
75- 09 Woodhaven Boulevard Off-Site RI- Queens, NY
NYSDEC Site No. 241036

CLIENT ID:	SG34S	SG34I	SG34D	SG22S	SG22I	SG22D
LAB ID:	14C0276-03	14C0276-01	14C0276-02	14C0276-06	14C0276-05	14C0276-04
COLLECTION DATE:	3/10/2014 14:00	2014/03/10 13:10:00	2014/03/10 13:40:00	2014/03/10 14:55:00	2014/03/10 14:55:00	2014/03/10 14:55:00
SAMPLE UNITS:	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3

Analyte	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1-Trichloroethane	2.9	0.55	3.2	0.55	5.2	0.55	0.96	0.55	2.5	0.55	4.1	0.55
1,1,2,2-Tetrachloroethane	ND	0.69	18	0.69	23 U	23	ND	0.69	ND	0.69	ND	0.69
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.77	1.2	0.77	ND	0.77	ND	0.77	ND	0.77	ND	0.77
1,1,2-Trichloroethane	ND	0.55	ND	0.55	ND	0.55	ND	0.55	ND	0.55	ND	0.55
1,1-Dichloroethane	ND	0.4	ND	0.4	ND	0.4	ND	0.4	ND	0.4	ND	0.4
1,1-Dichloroethene	ND	0.4	1.1	0.4	ND	0.4	ND	0.4	ND	0.4	ND	0.4
1,2,4-Trichlorobenzene	ND	0.74	ND	0.74	ND	0.74	ND	0.74	ND	0.74	ND	0.74
1,2,4-Trimethylbenzene	2	0.49	3.1	0.49	1.4	0.49	0.55 U	0.55	0.96 U	0.96	1.1 U	1.1
1,2-Dibromoethane (Ethylene Dibromide)	ND	0.77	ND	0.77	ND	0.77	ND	0.77	ND	0.77	ND	0.77
1,2-Dichlorobenzene	0.83	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6
1,2-Dichloroethane	ND	0.4	0.54	0.4	ND	0.4	ND	0.4	0.42 U	0.42	0.5	0.4
1,2-Dichloropropane	ND	0.46	ND	0.46	ND	0.46	ND	0.46	ND	0.46	ND	0.46
1,2-Dichlorotetrafluoroethane	ND	0.7	ND	0.7	ND	0.7	ND	0.7	ND	0.7	ND	0.7
1,3,5-Trimethylbenzene (Mesitylene)	0.88	0.49	1.4	0.49	1.2 U	1.2	ND	0.49	0.62 U	0.62	0.55 U	0.55
1,3-Butadiene	3.1	0.22	50 NJ	0.22	6.4 U	6.4	ND	0.22	ND	0.22	ND	0.22
1,3-Dichlorobenzene	ND	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6
1,4-Dichlorobenzene	ND	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6	ND	0.6
1,4-Dioxane (P-Dioxane)	ND	3.6	ND	3.6	ND	3.6	ND	3.6	ND	3.6	ND	3.6
2-Hexanone	ND	0.41	2.4	0.41	2.9 NJ	0.41	ND	0.41	2.4 U	2.4	2.8 U	2.8
4-Ethyltoluene	0.64	0.49	1.1	0.49	0.51 NJ	0.49	ND	0.49	ND	0.49	ND	0.49
Acetone	75	9.5	720	95	880	95	25	9.5	2000	95	4900	95
Benzene	1	0.32	16	0.32	4.6	0.32	ND	0.32	4	0.32	4	0.32
Benzyl Chloride	ND	0.52	ND	0.52	ND	0.52	ND	0.52	ND	0.52	ND	0.52
Bromodichloromethane	ND	0.67	2.3	0.67	7.3 U	7.3	ND	0.67	ND	0.67	ND	0.67
Bromoform	ND	1	ND	1	ND	1	ND	1	ND	1	ND	1
Bromomethane	ND	0.39	ND	0.39	ND	0.39	ND	0.39	ND	0.39	ND	0.39
Carbon Disulfide	12	3.1	160	3.1	34	3.1	ND	3.1	25	3.1	7.9	3.1
Carbon Tetrachloride	ND	0.63	2.1	0.63	ND	0.63	ND	0.63	ND	0.63	ND	0.63
Chlorobenzene	ND	0.46	0.84	0.46	0.99 U	0.99	ND	0.46	0.93 U	0.93	ND	0.46
Chloroethane	ND	0.26	0.65	0.26	ND	0.26	ND	0.26	ND	0.26	ND	0.26
Chloroform	1	0.49	1.2	0.49	0.62	0.49	5.9	0.49	2.3	0.49	3	0.49
Chloromethane	ND UJ	0.41	1 J	0.41	ND UJ	0.41	0.46 UJ	0.46	0.47 NJ	0.41	ND UJ	0.41
Cis-1,2-Dichloroethylene	0.44	0.4	1.4	0.4	0.58	0.4	ND	0.4	ND	0.4	ND	0.4
Cis-1,3-Dichloropropene	ND	0.45	ND	0.45	ND	0.45	ND	0.45	ND	0.45	ND	0.45
Cyclohexane	1.8 U	1.8	9.8	0.34	3.2	0.34	ND	0.34	4.1	0.34	5.6 J	0.34
Dibromochloromethane	ND	0.85	ND	0.85	ND	0.85	ND	0.85	ND	0.85	ND	0.85
Dichlorodifluoromethane	1.8	0.49	1.7	0.49	1.5	0.49	2.2	0.49	1.4	0.49	1.6	0.49
Ethanol	ND	7.5	ND	7.5	24	7.5	ND	7.5	13	7.5	19	7.5
Ethyl Acetate	1.6 NJ	0.36	39	0.36	150 U	150	ND	0.36	300 NJ	0.36	420	3.6
Ethylbenzene	0.87	0.43	3.6	0.43	3.1	0.43	ND	0.43	2.7	0.43	2.6	0.43
Hexachlorobutadiene	ND	1.1	ND	1.1	ND	1.1	ND	1.1	ND	1.1	ND	1.1
Isopropanol	18	9.8	ND	9.8	29	9.8	ND	9.8	ND	9.8	ND	9.8
M And P Xylenes	1.8	0.87	13	0.87	11	0.87	ND	0.87	9.8	0.87	8.9	0.87
Methyl Ethyl Ketone (2-Butanone)	ND	12	27	12	110	12	ND	12	210	12	260	12
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	0.43	0.41	1.5	0.41	2.2	0.41	ND	0.41	ND	0.41	ND	0.41
Methylene Chloride	ND	3.5	43	3.5	15	3.5	ND	3.5	25	3.5	26	3.5
Naphthalene	ND	0.52	2.1	0.52	0.87	0.52	ND	0.52	ND	0.52	ND	0.52
N-Heptane	13	0.41	38	0.41	25	0.41	ND	0.41	26	0.41	33	0.41
N-Hexane	ND	14	170	14	150 NJ	14	ND	14	ND	14	310 NJ	14
O-Xylene (1,2-Dimethylbenzene)	0.9	0.43	4.5	0.43	3.5 NJ	0.43	ND	0.43	3.6 NJ	0.43	3.3 NJ	0.43
Propylene	32	6.9	610	69	19 NJ	6.9	ND	6.9	310	69	ND UJ	6.9
Styrene	1.2 NJ	0.43	1.2	0.43	1.3	0.43	ND	0.43	1.2	0.43	1	0.43
Tert-Butyl Methyl Ether	ND	0.36	0.89 U	0.89	0.88 J	0.36	ND	0.36	0.88 NJ	0.36	1.3 J	0.36
Tetrachloroethylene (PCE)	2200	20	1900	6.8	230	0.68	280	0.68	10	0.68	4.7 J	0.68
Tetrahydrofuran	ND	0.29	2.9	0.29	ND	0.29	ND	0.29	ND	0.29	ND	0.29
Toluene	7.3	0.38	50	0.38	48	0.38	ND	0.38	44	0.38	47	0.38
Trans-1,2-Dichloroethene	ND	0.4	1.7 U	1.7	0.41	0.4	ND	0.4	ND	0.4	ND	0.4
Trans-1,3-Dichloropropene	ND	0.45	ND	0.45	ND	0.45	ND	0.45	ND	0.45	ND	0.45
Trichloroethylene (TCE)	33	0.54	20	0.54	21	0.54	ND	0.54	1.2 NJ	0.54	ND	0.54
Trichlorofluoromethane	5	0.56	6.9	0.56	5.5	0.56	1.5	0.56	1	0.56	1.1	0.56
Vinyl Acetate	ND	7	36 U	36	ND	7	ND	7	ND	7	ND	7
Vinyl Chloride	ND	0.26	ND	0.26	ND	0.26	ND	0.26	ND	0.26	ND	0.26

Note: New York State currently does not have any standard, criteria, or guidance values for concentrations of compounds in soil vapor.

U - The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.

J - The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.

NJ - The detection is tentative in identification and estimated in value.

UJ - The analyte was not detected. The reported quantitation limit is an estimate and may be inaccurate or imprecise.

June 2014
Table 3. Phase IV VOC Groundwater Monitoring Well Sampling Data
75- 09 Woodhaven Boulevard Off-Site RI- Queens, NY
NYSDEC Site No. 241036

CLIENT ID:	NYSDEC	WB-MW-1S-GW-70-0			WB-MW-8S-GW-80-0			WB-MW-8I-GW-115-0			WB-MW-9S-GW-80-0			WB-MW-59S-GW-80-1 *			WB-MW-10S-GW-80-0		
LAB ID:	CLASS GA	AC79282-001			AC79282-002			AC79282-003			AC79282-004			AC79282-005			AC79282-006		
COLLECTION DATE:	STANDARDS (a) AND GUIDANCE VALUES (b) (GV)	6/17/2014			6/17/2014			6/17/2014			6/18/2014			6/18/2014			6/18/2014		
		Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
SAMPLE UNITS:	ug/L	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Analyte		Result		RL	Result		RL	Result		RL	Result		RL	Result		RL	Result		RL
1,1,1-Trichloroethane	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,1,2,2-Tetrachloroethane	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,1,2-Trichloroethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,1-Dichloroethane	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,1-Dichloroethene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2,3-Trichlorobenzene	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2,4-Trichlorobenzene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2-Dibromo-3-chloropropane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2-Dibromoethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2-Dichlorobenzene	4.7	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,2-Dichloroethane	5	ND		0.5	ND		2.5	ND		2.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloropropane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,3-Dichlorobenzene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,4-Dichlorobenzene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
1,4-Dioxane	NA	ND	R	50	ND	R	250	ND	R	250	ND	R	50	ND	R	50	ND	R	50
2-Butanone	50	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
2-Hexanone	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
4-Methyl-2-pentanone	50	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Acetone	50	ND		10	ND		50	ND		50	17		10	19		10	ND		10
Benzene	0.7	ND		0.5	ND		2.5	ND		2.5	**1.1**		0.5	**1**		0.5	ND		0.5
Bromochloromethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Bromodichloromethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Bromoform	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Bromomethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Carbon disulfide	50	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Carbon tetrachloride	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Chlorobenzene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Chloroethane	50	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Chloroform	7	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Chloromethane	NA	ND		1	ND		5	ND		5	1.1	U	1	ND		1	ND		1
cis-1,2-Dichloroethene	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
cis-1,3-Dichloropropene	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Cyclohexane	NA	ND		1	ND		5	ND		5	6.7		1	6		1	ND		1
Dibromochloromethane	50	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Dichlorodifluoromethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Ethylbenzene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Isopropylbenzene	NA	ND		1	ND		5	ND		5	1.6		1	1.5		1	ND		1
m&p-Xylenes	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Methyl Acetate	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Methylcyclohexane	NA	ND		1	ND		5	ND		5	4		1	3.3		1	ND		1
Methylene chloride	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Methyl-t-butyl ether	NA	ND		0.5	ND		2.5	ND		2.5	ND		0.5	ND		0.5	ND		0.5
o-Xylene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Styrene	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Tetrachloroethene	5	**32**		1	**600**		5	**650**		5	**140**		1	**130**		1	ND		1
Toluene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
trans-1,2-Dichloroethene	5	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
trans-1,3-Dichloropropene	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Trichloroethene	5	ND		1	ND		5	ND		5	**9.8**		1	**9.5**		1	ND		1
Trichlorofluoromethane	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Vinyl chloride	2	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1
Xylenes (Total)	NA	ND		1	ND		5	ND		5	ND		1	ND		1	ND		1

(a) NYCRR Part 703, NYSDEC Regulations, Chapter X - Division of Water; Surface Water & Groundwater Quality and Effluent Limitations, Revised January 2008
(b) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), June 1998 and addenda
Note - Numbers in **BOLD** exceed standard or guidance.
NJ - Detection is tentative in identification and estimate in value.
J - Analyte is positively identified but concentraton is approximated.
U - Analyte was analyzed for but not detected above the quantitation limit.
R - Results rejected in accordance with DUSR

* - Sample WB-MW-59S-GW-80-1 is blind duplicate of sample WB-MW-9S-GW-80-0
^ - Equipment Rinsate Blank Sample
** - Trip Blank analysis

June 2014
Table 3. Phase IV VOC Groundwater Monitoring Well Sampling Data
75- 09 Woodhaven Boulevard Off-Site RI- Queens, NY
NYSDEC Site No. 241036

CLIENT ID:	NYSDEC	WB-MW-13I-GW-120-0			WB-MW-12I-GW-130-0			WB-MW-10S-OT-80-2 ^			WB-MW-12I-OT-130-2 ^			WB-MW-11S-OT-80-0			WB-MW-11S-OT-80-3 **		
LAB ID:	CLASS GA	AC79282-007			AC79282-008			AC79282-009			AC79282-010			AC79282-012			AC79282-012		
COLLECTION DATE:	STANDARDS (a) AND GUIDANCE VALUES (b) (GV)	6/18/2014			6/18/2014			6/18/2014			6/19/2014			6/17/2014			6/17/2014		
		Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
SAMPLE UNITS:	ug/L	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Analyte		Result		RL	Result		RL	Result		RL	Result		RL				Result		RL
1,1,1-Trichloroethane	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,1,2,2-Tetrachloroethane	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,1,2-Trichloroethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,1-Dichloroethane	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,1-Dichloroethene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2,3-Trichlorobenzene	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2,4-Trichlorobenzene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2-Dibromo-3-chloropropane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2-Dibromoethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2-Dichlorobenzene	4.7	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,2-Dichloroethane	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloropropane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,3-Dichlorobenzene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,4-Dichlorobenzene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
1,4-Dioxane	NA	ND	R	50	ND	R	50	ND	R	50	ND	R	50	ND	R	50	ND	R	50
2-Butanone	50	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
2-Hexanone	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
4-Methyl-2-pentanone	50	ND		1	ND		1	ND		1	ND		1	ND		1	ND	NJ	1
Acetone	50	ND		10	ND		10	ND		10	ND		10	ND		10	ND	NJ	10
Benzene	0.7	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Bromochloromethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Bromodichloromethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Bromoform	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Bromomethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Carbon disulfide	50	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Carbon tetrachloride	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Chlorobenzene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Chloroethane	50	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Chloroform	7	5.1		1	3.6		1	ND		1	ND		1	ND		1	ND		1
Chloromethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
cis-1,2-Dichloroethene	NA	ND		1	1.7		1	ND		1	ND		1	ND		1	ND		1
cis-1,3-Dichloropropene	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Cyclohexane	NA	6		1	ND		1	ND		1	ND		1	ND		1	ND		1
Dibromochloromethane	50	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Dichlorodifluoromethane	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Ethylbenzene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Isopropylbenzene	NA	1.5		1	ND		1	ND		1	ND		1	ND		1	ND		1
m&p-Xylenes	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Methyl Acetate	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Methylcyclohexane	NA	3.3		1	ND		1	ND		1	ND		1	ND		1	ND		1
Methylene chloride	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Methyl-t-butyl ether	NA	ND		0.5	1.1		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
o-Xylene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Styrene	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Tetrachloroethene	5	ND		1	460		1	ND		1	ND		1	**80**		1	ND		1
Toluene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
trans-1,2-Dichloroethene	5	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
trans-1,3-Dichloropropene	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Trichloroethene	5	ND		1	5.7		1	ND		1	ND		1	ND		1	ND		1
Trichlorofluoromethane	NA	ND		1	1.2		1	ND		1	ND		1	ND		1	ND		1
Vinyl chloride	2	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1
Xylenes (Total)	NA	ND		1	ND		1	ND		1	ND		1	ND		1	ND		1

(a) NYCRR Part 703, NYSDEC Regulations, Chapter X - Division of Water; Surface Water & Groundwater Quality and Effluent Limitations, Revised January 2008
(b) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), June 1998 and addenda
Note - Numbers in **BOLD** exceed standard or guidance.
NJ - Detection is tentative in identification and estimate in value.
J - Analyte is positively identified but concentraton is approximated.
U - Analyte was analyzed for but not detected above the quantitation limit.
R - Results rejected in accordance with DUSR
^ - Equipment Rinsate Blank Sample
** - Trip Blank analysis

	SG-34S	SG-43I	SG-34D
1,1,1 - TCA	2.9	3.2	5.2
Cis 1,2 - DCE	0.44	1.4	0.58
PCE	2200	1900	230
TCE	33	20	21
Trans 1,2 DCE	ND	ND	0.41

	SG-22S	SG-22I	SG-22D
1,1,1 - TCA	0.96	2.5	4.1
PCE	280	10	4.7
TCE	ND	1.2	1.1

GRAPHIC SCALE

0 200 400 800

(IN FEET)

1 inch = 400 ft.

NOTES:

1. BASE AERIAL PHOTOGRAPHY PROVIDED BY THE NYSDEC.
2. SOIL VAPOR SAMPLE LOCATIONS BASED ON A FIELD SURVEY UPDATED BY YEC, INC., JUNE 23, 2014.
3. SAMPLES COLLECTED MARCH 10, 2014 AND ANALYZED FOR TO-15 VOCS.
4. ONLY SIGNIFICANT cVOC CONCENTRATIONS ARE DISPLAYED.
5. BTEX COMPOUNDS ALSO DETECTED AT SEVERAL POINTS.
6. ALL SAMPLE RESULTS ARE REPORTED IN ug/m^3.

HDR

SOIL VAPOR POINT SAMPLING LOCATIONS AND 2014 SAMPLING RESULTS

75-09 Woodhaven Boulevard Off-Site RI
NYSDEC Site #241036
Rego Park – Queens, New York

DATE
09-12-14

FIGURE
1

MW-1S	2010	2011	2013	2014
PCE	27	30	NS	32

MW-9S	2010	2011	2013	2014
PCE	NS	1400	5.9	140
TCE	NS	NS	NS	9.8

MW-8S	2010	2011	2013	2014
PCE	NS	1400	320	600
TCE	NS	NS	1.4	ND
MW-8I	**2010**	**2011**	**2013**	**2014**
PCE	NS	NS	1000	650

MW-11S	2010	2011	2013	2014
PCE	NS	NS	74	80

MW-10S	2010	2011	2013	2014
PCE	NS	NS	ND	ND

MW-12I	2010	2011	2013	2014
PCE	NS	NS	NS	460
TCE	NS	NS	NS	5.7

MW-13I	2010	2011	2013	2014
PCE	NS	NS	NS	ND
TCE	NS	NS	NS	ND

GRAPHIC SCALE

0 200 400 800

(IN FEET)

1 inch = 400 ft.

NOTES:

1. BASE AERIAL PHOTOGRAPHY PROVIDED BY THE NYSDEC.
2. GROUNDWATER WELL LOCATIONS BASED ON A FIELD SURVEY UPDATED BY YEC, INC., JUNE 23, 2014.
3. SAMPLING CONDUCTED JUNE 17–19, 2014.
4. SAMPLES ANALYZED FOR VOCS METHOD 8260.
5. ALL SAMPLE RESULTS ARE REPORTED IN ug/L.
6. SAMPLE RESULTS SHOWN "NS" INDICATE WELLS NOT SAMPLED.

HDR

GROUNDWATER MONITORING WELL LOCATIONS AND 2014 SAMPLING RESULTS – SHALLOW AND INTERMEDIATE WELLS

75–09 Woodhaven Boulevard Off–Site RI
NYSDEC Site #241036
Rego Park – Queens, New York

DATE
09–12–14

FIGURE
2

GRAPHIC SCALE

0 150 300 600

(IN FEET)

1 inch = 300 ft.

NOTES:

1. BASE AERIAL PHOTOGRAPHY PROVIDED BY THE NYSDEC.
2. GROUNDWATER WELL LOCATIONS BASED ON FIELD SURVEY COMPLETED BY YEC, INC., SEPTEMBER 2010.
3. GROUNDWATER CONTOURS SHOWN IN FEET MEAN SEA LEVEL.
4. CONTOUR INTERVAL IS 0.05 FEET.
5. CONTOURS ARE DASHED WHERE INFERRED.
6. STARRED VALUES (*) EXCLUDED FOR INCONSISTENCY.

HDR

GROUNDWATER ELEVATIONS
SHALLOW WELLS – JUNE 17, 2014
75-09 Woodhaven Boulevard Off-Site RI
NYSDEC Site #241036
Rego Park – Queens, New York

DATE
09-12-14

FIGURE
3

GRAPHIC SCALE

0 150 300 600

(IN FEET)
1 inch = 300 ft.

NOTES:

1. BASE AERIAL PHOTOGRAPHY PROVIDED BY THE NYSDEC.
2. GROUNDWATER WELL LOCATIONS BASED ON FIELD SURVEY COMPLETED BY YEC, INC., SEPTEMBER 2010.
3. GROUNDWATER CONTOURS SHOWN IN FEET MEAN SEA LEVEL.
4. CONTOUR INTERVAL IS 0.05 FEET.
5. CONTOURS ARE DASHED WHERE INFERRED.
6. STARRED VALUES (*) EXCLUDED FOR INCONSISTENCY.

HDR

GROUNDWATER ELEVATIONS
INTERMEDIATE WELLS – JUNE 17, 2014
75-09 Woodhaven Boulevard Off-Site RI
NYSDEC Site #241036
Rego Park – Queens, New York

DATE
09-12-14

FIGURE
4

ENGINEERS FIELD BORING LOG

Boring	**MW-12I**
SURFACE ELEV	
DATUM	
SHEET	1 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 20-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft.)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
0	-	-	-	NR	0' - 0.5' Asphalt and Road Base 0.5' - 5' Medium Brown F-C SAND, with Some Silt and M-C Rounded Gravel and Cobbles	Dry No Odors Hand Clear
5	1	5 - 10	2	NR	5' - 10' Medium Brown F-C SAND, with Some Silt and M-C Rounded Gravel and Cobbles	Dry No Odors
10	2	10 - 15	3.5	NR	10' - 15' Medium Brown F-C SAND, with Some Silt and M-C Rounded Gravel and Cobbles	Dry No Odors
15	3	15 - 20	5	NR	15' - 20' Medium Brown F-C SAND, with Some Silt and M-C Rounded Gravel and Cobbles	Dry No Odors
20	4	20 - 25	5	NR	20' - 25' Medium Dark Brown F-M SAND, with Some Silt and F-C Rounded Gravel and Cobbles.	Dry No Odors
25	5	25 - 30	5	NR	25' - 30' Medium Dark Brown F-M SAND, with Some Silt and F-C Rounded Gravel and Cobbles. (Matrix Support: Till-like)	Dry No Odors
30	6	30 - 35	5	NR	30' - 33' Medium Dark Brown F-M SAND, with Some Silt and F-C Rounded Gravel and Cobbles. (Matrix Support: Till-like) 33' - 34' Layers of Medium Brown and Grey Silty F SAND with some banding. 34' - 35' Medium Brown FSAND with Some Course Rounded Gravel and Cobbles.	Dry No Odors
35	7	35 - 40	5	NR	35' - 36' Medium Brown FSAND with Some Course Rounded Gravel and Cobbles. 36' - 40' Medium Dark Brown F-M SAND, with Some Silt and F-C Rounded Gravel and Cobbles. (Matrix Support: Till-like)	Dry No Odors
40	8	40 - 45	5	NR	40' - 45' Medium Dark Brown F-M SAND, with Some Silt and F-C Rounded Gravel and Cobbles. (Matrix Support: Till-like)	Dry No Odors
45	9	45 - 50	4	NR	45' - 50' Medium Brown and Grey M-C SAND and Course Rounded Gravel; Trace Cobbles, F Sand, and Silt.	Dry No Odors
50						

NOTES:

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
S___ - Split Spoon Sample
U___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 10 - Loose
11 - 29 - Med. Compact
30 - 50 - Compact
> 50 - V. Compact
50/6" - Refusal

Pocket Pen. (Clays only)
< 0.5 - Soft
0.5 - 1.0 - Medium
1.0 - 4.0 - Stiff
> 4.0 - Hard

Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (con't)
V
T
D
R

ENGINEERS FIELD BORING LOG

Boring	**MW-12I**
SURFACE ELEV	
DATUM	
SHEET	2 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 20-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft.)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
50	10	50 - 55	5	NR	50' - 52' Medium Brown and Grey C SAND and F Rounded Gravel; Trace F-M Sand and Silt. 52' - 55' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles.	Dry No Odors
55	11	55 - 60	5	NR	55' - 60' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles. (Some Silt at 59' - 60')	Dry No Odors
60	12	60 - 65	5	NR	60' - 65' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles. (Silt beds at 63' and 65')	Dry No Odors
65	13	65 - 70	4	NR	65' - 70' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles. (Silt Layer at 70')	Dry No Odors
70	14	70 - 75	5	NR	70' - 75' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles. (Silt Layer at 73')	Dry No Odors
75	15	75 - 80	5	NR	75' - 80' Medium Brown F-C SAND with Some F-C Rounded Gravel and Cobbles.	Dry No Odors
80	16	80 - 85	4	NR	80' - 85' Medium Brown F-M SAND and Silt, Trace C Sand and Mica Flakes.	21-May-2014 Dry No Odors
85	17	85 - 90	4.5	NR	85' - 90' Medium Brown F-M SAND and Silt, Trace C Sand and Mica Flakes.	Wet at 87' No Odors
90	18	90 - 95	3	NR	90' - 95' Medium Brown F-M SAND and Silt, Trace C Sand and Mica Flakes.	Wet No Odors
95	19	95 -100	4	NR	95' - 100' Medium Brown F-M SAND and Silt, Trace C Sand and Mica Flakes. (Silt Layer at 98')	Wet No Odors
100						

NOTES:

	Proportions	Blows per 1' Compaction	Pocket Pen. (Clays only)	Strata Descriptions	Strata Descriptions (con't)
WOR - Weight of Rods	And - Equal	0 - 10 - Loose	< 0.5 - Soft	F - Fill	V
WOH - Weight of Hammer	Sandy - 31 - 49%	11 - 29 - Med. Compact	0.5 - 1.0 - Medium	O - Organic Deposits	T
BOH - Bottom of Hole	Some - 13 - 30%	30 - 50 - Compact	1.0 - 4.0 - Stiff	S - Predominantly Sand	D
NS - No Split Spoon Sample	Trace - 1 - 12%	> 50 - V. Compact	> 4.0 - Hard	M - Predominantly Silt	R
S___ - Split Spoon Sample		50/6" - Refusal		C - Predominantly Clay	
U___ - Undisturbed Sample					

ENGINEERS FIELD BORING LOG

Boring	**MW-12I**
SURFACE ELEV	
DATUM	
SHEET	3 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 20-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft.)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
100						
	20	100 - 105	4	NR	100' - 104' Medium Brown F-M SAND and Silt, Trace C Sand and Mica Flakes. 104' - 105' Medium Brown F Sandy SILT.	Wet No Odors
105	21	105 - 110	4	NR	105' - 110' Medium Dark Brown F-C SAND and Silt; Trace Mica Flakes.	Wet No Odors
110	22	110 - 115	5	NR	110' - 113' Medium Dark Brown F-C SAND and Silt; Trace Mica Flakes. 113' - 115' Medium Dark Brown C SAND and F-C Rounded Gravel; Trace F Sand, Sitl, and Cobbles	Wet No Odors
115	23	115 -120	5	NR	115' - 116.5' Medium Dark Brown C SAND and F-C Rounded Gravel; Trace F Sand, Sitl, and Cobbles 116.5' - 120' Medium Brown F Silty SAND with some M Sand.	Wet No Odors
120	24	120 - 125	5	NR	116.5' - 120' Medium Brown F Silty SAND with some M Sand.	Wet No Odors
125	25	125 - 130	5	NR	125' - 130' Medium Brown F Silty SAND with some M Sand.	Wet No Odors
130					EOB	
					Well installed at 130' Screen: 10' - 2" PVC Sch40 0.010" Screen 120' - 2" PVC Sch40 Riser	

NOTES:

WOR - Weight of Rods	Proportions	Blows per 1' Compaction	Pocket Pen. (Clays only)	Strata Descriptions	Strata Descriptions (con't)
WOH - Weight of Hammer	And - Equal	0 - 10 - Loose	< 0.5 - Soft	F - Fill	V
BOH - Bottom of Hole	Sandy - 31 - 49%	11 - 29 - Med. Compact	0.5 - 1.0 - Medium	O - Organic Deposits	T
NS - No Split Spoon Sample	Some - 13 - 30%	30 - 50 - Compact	1.0 - 4.0 - Stiff	S - Predominantly Sand	D
S___ - Split Spoon Sample	Trace - 1 - 12%	> 50 - V. Compact	> 4.0 - Hard	M - Predominantly Silt	R
U___ - Undisturbed Sample		50/6" - Refusal		C - Predominantly Clay	

ENGINEERS FIELD BORING LOG

Boring	**MW-13I**
SURFACE ELEV	
DATUM	
SHEET	1 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 15-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft.)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
0	-	-	-	NR	0' - 1' Asphalt and Road Base 1' - 5' Medium Brown and Tan F-C SAND, with some F-C Rounded Gravel.	Dry No Odors Hand Clear
5	1	5 - 10	<1.0	NR	5' - 10' Medium Brown F-C SAND, and F-C Rounded Gravel.	Very Low Recovery Dry No Odors
10	2	10 - 15	0	NR	10' - 15' No Recovery	Rock in Shoe
15	3	15 - 20	3	NR	15' - 20' Dark Brown F-M SAND, with Some F-C Rounded Gravel and Trace C Sand.	Dry No Odors
20	4	20 - 25	4.5	NR	20' - 25' Dark Brown F-M SAND, with Some F-C Rounded Gravel and Trace C Sand. (appears similar to Till)	Dry No Odors
25	5	25 - 30	2.1	NR	25' - 30' Dark Brown F-M SAND, with Some F-C Rounded Gravel and Trace C Sand. (appears similar to Till) Rock in Shoe of Sampler.	Dry No Odors
30	6	30 - 35	5	NR	30' - 35' Dark Brown Silty F-M SAND, with Some F-C Rounded Gravel and Trace C Sand. (appears similar to Till)	Dry No Odors
35	7	35 - 40	5	NR	35' - 40' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt.	Dry No Odors
40	8	40 - 45	5	NR	40' - 45' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt. Gravely at 43' - 44'	Dry No Odors
45	9	45 - 50	5	NR	45' - 50' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt.	Dry No Odors
50						

NOTES:

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
S___ - Split Spoon Sample
U___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 10 - Loose
11 - 29 - Med. Compact
30 - 50 - Compact
> 50 - V. Compact
50/6" - Refusal

Pocket Pen. (Clays only)
< 0.5 - Soft
0.5 - 1.0 - Medium
1.0 - 4.0 - Stiff
> 4.0 - Hard

Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (con't)
V
T
D
R

ENGINEERS FIELD BORING LOG

Boring	**MW-13I**
SURFACE ELEV	
DATUM	
SHEET	2 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 15-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft.)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
50	10	50 - 55	5	NR	50' - 55' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt.	Dry No Odors
55	11	55 - 57	1	NR	55' - 57' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt. Low Recovery - Boulder in Shoe	Dry No Odors Low Recovery
57	11	57 - 60	3	NR	57' - 59' Medium Brown F-C SAND and F-C Rounded Gravel, some Cobbles, Trace Silt. 59' - 60' Medium Brown F-M SAND, Trace F-C Rounded Gravel and Silt.	Dry No Odors
60	12	60 - 65	3.5	NR	60' - 65' Medium Brown F-M SAND, Trace F-C Rounded Gravel and Silt.	Dry No Odors
65	13	65 - 70	5	NR	65' - 70' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt.	Dry No Odors
70	14	70 - 75	4.5	NR	70' - 75' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt.	Dry No Odors
75	15	75 - 80	5	NR	75' - 80' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt.	Damp at 78' No Odors
80	16	80 - 85	5	NR	80' - 83' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt. 83' - 85' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt. (with some intermixed Light to Medium Grey Grains)	Damp No Odors
85	17	85 - 90	5	NR	85' - 90' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt. (more C F Rounded Gravel)	Damp No Odors
90	18	90 - 95	4	NR	90' - 95' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt. (more C F Rounded Gravel)	Damp No Odors
95						

NOTES:

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
S___ - Split Spoon Sample
U___ - Undisturbed Sample

Proportions: And - Equal; Sandy - 31 - 49%; Some - 13 - 30%; Trace - 1 - 12%

Blows per 1' Compaction: 0 - 10 - Loose; 11 - 29 - Med. Compact; 30 - 50 - Compact; > 50 - V. Compact; 50/6" - Refusal

Pocket Pen. (Clays only): < 0.5 - Soft; 0.5 - 1.0 - Medium; 1.0 - 4.0 - Stiff; > 4.0 - Hard

Strata Descriptions: F - Fill; O - Organic Deposits; S - Predominantly Sand; M - Predominantly Silt; C - Predominantly Clay

Strata Descriptions (con't): V; T; D; R

ENGINEERS FIELD BORING LOG

Boring	**MW-13I**
SURFACE ELEV	
DATUM	
SHEET	3 **OF** 3

PROJECT NAME NYSDEC Woodhaven Blvd - OU2

SITE LOCATION Queens, NY **DATE** 19-May-2014 **DRILLER NAME / COMPANY** ADT - Mini-Sonic

MONITORING INSTRUMENTATION Multi-RAE **HDR FIELD INSPECTOR** E. Brandt

Depth (ft)	Sample No.	Sample Depth (ft)	Sonic Sample Core: Recov. (ft.)	Sonic Sample Core: PID	Sample Description	Remarks
95						
	19	95 - 100	5	NR	95' - 99' Medium Brown F-M SAND and F-C Rounded Gravel, some Silt. (more C F Rounded Gravel) 99' - 100' Dark Brown and Grey F-C SAND, Trace Silt and F Rounded Gravel	Damp Wet 99' No Odors
100	20	100 - 105	5	NR	100' - 105' Dark Brown and Grey F-C SAND, Trace Silt (Some slight Banding and Motteled sands)	Wet No Odors
105	21	105 - 110	5	NR	105' - 110' Medium Brown F-C SAND, Trace F Rounded Gravel.	Wet No Odors
110	22	110 - 115	2.5	NR	110' - 115' Medium Dark F-C SAND, Trace Silt and F Rounded Gravel.	19-May-2014 Wet No Odors
115	23	115 -120	5	NR	115' - 120' Medium Dark F-C SAND, Some Silt, Trace F Rounded Gravel.	Wet No Odors
120	24	120 - 125	2.0	NR	120' - 125' Medium Dark F-C SAND, Some Silt, Trace F Rounded Gravel.	Wet No Odors
125	25	125 - 130	5	NR	125' - 130' Medium Dark F-C SAND, Some Silt, Trace F Rounded Gravel. (Layer of Sandy SILT at 127' - 127.5')	Wet No Odors
130	26	130 - 135	5	NR	130' - 135' Med to Dark Brown F-M SAND, Trace Silt and Mica Flakes.	Wet No Odors
135	27	135 - 140	3	NR	135' - 140' Med to Dark Brown F-M SAND, Trace Silt, C Sand, and Mica Flakes.	Wet No Odors
140					EOB Well installed at 140' Screen: 10' - 2" PVC Sch40 0.010" Screen 130' - 2" PVC Sch40 Riser	

NOTES:

WOR - Weight of Rods	Proportions	Blows per 1' Compaction	Pocket Pen. (Clays only)	Strata Descriptions	Strata Descriptions (con't)
WOH - Weight of Hammer	And - Equal	0 - 10 - Loose	< 0.5 - Soft	F - Fill	V
BOH - Bottom of Hole	Sandy - 31 - 49%	11 - 29 - Med. Compact	0.5 - 1.0 - Medium	O - Organic Deposits	T
NS - No Split Spoon Sample	Some - 13 - 30%	30 - 50 - Compact	1.0 - 4.0 - Stiff	S - Predominantly Sand	D
S___ - Split Spoon Sample	Trace - 1 - 12%	> 50 - V. Compact	> 4.0 - Hard	M - Predominantly Silt	R
U___ - Undisturbed Sample		50/6" - Refusal		C - Predominantly Clay	

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 147-135583

PROJECT NAME: NYSDEC Woodhaven Blvd.

WELL No.: **MW-12I**

CLIENT: NYSDEC

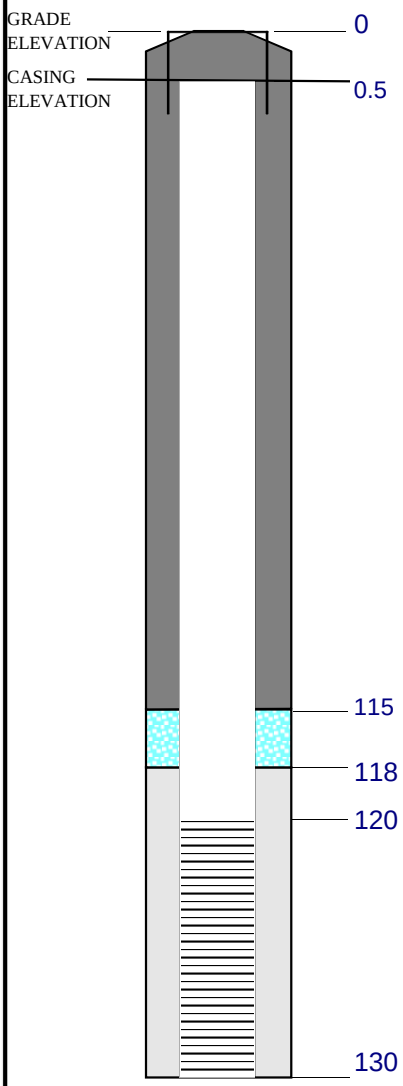
LOCATION: Queens, NY

DATE DRILLED: 20-May-14

DATE DEVELOPED:

CONSTRUCTION COMPLETED: 22-May-14

DEVELOPING METHOD: Over pumping with GrundFos Pump.



NOT TO SCALE

INSPECTOR: E. Brandt

DRILLING CONTRACTOR: ADT

TYPE OF WELL: Overburden

STATIC WATER LEVEL: DATE:

MEASURING POINT: Top of PVC - North Side

TOTAL DEPTH OF WELL: 130 TOTAL DEPTH OF BORING: 131

DRILLING METHOD

TYPE: 5" Sonic

DIAMETER: 5.00" CASING: PVC

SAMPLING METHOD

TYPE:

DIAMETER: WEIGHT:

FALL: INTERVAL:

RISER PIPE LEFT IN PLACE

MATERIAL: PVC

DIAMETER: 2 inch LENGTH: 120 JOINT TYPE: Flush Thread

SCREEN

MATERIAL: PVC

INTERVAL: 120 - 130 DIAMETER: 2 inch

STRATIGRAPHIC UNITS SCREENED: SLOT SIZE: 0.010

FILTER PACK

GRADE:

SAND: #1 GRAVEL: NATURAL:

AMOUNT: INTERVAL: 130 - 118

SEAL(s)

Portland Cement	INTERVAL:		AMOUNT:	
Bentonite Slurry	INTERVAL:	115.0 - 5.0	AMOUNT:	
Bentonite Pellets	INTERVAL:	118.0 - 115.0	AMOUNT:	
Other:	INTERVAL:		AMOUNT:	

LOCKING CASING: ☐ YES ■ NO KEY NO:

NOTES:

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 147-135583

PROJECT NAME: NYSDEC Woodhaven Blvd.

WELL No.: **MW-13I**

CLIENT: NYSDEC

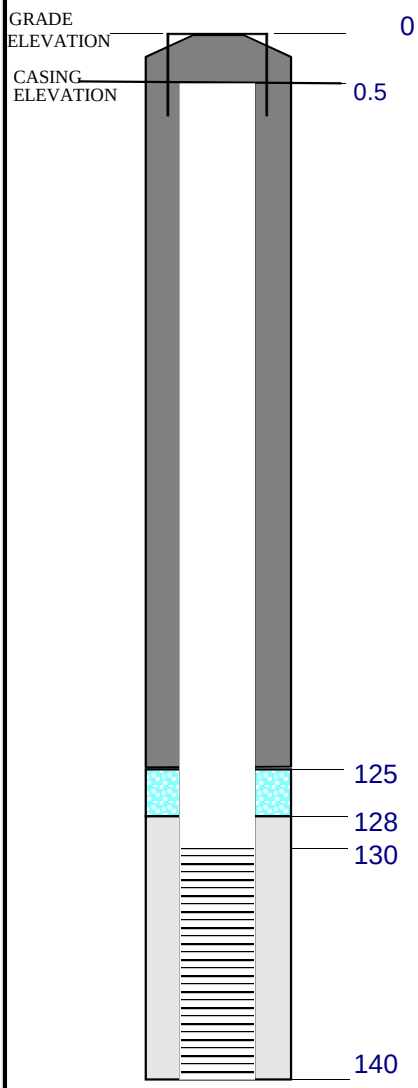
LOCATION: Queens, NY

DATE DRILLED: May 15, 2014

DATE DEVELOPED:

CONSTRUCTION COMPLETED: 19-May-14

DEVELOPING METHOD: Over pumping with Grundfos Pump.



NOT TO SCALE

INSPECTOR: E. Brandt

DRILLING CONTRACTOR: ADT

TYPE OF WELL: Overburden

STATIC WATER LEVEL: DATE:

MEASURING POINT: Top of PVC - North Side

TOTAL DEPTH OF WELL: 140 TOTAL DEPTH OF BORING: 141

DRILLING METHOD

TYPE: Sonic

DIAMETER: 5.0" CASING: PVC

SAMPLING METHOD

TYPE:

DIAMETER: WEIGHT:

FALL: INTERVAL:

RISER PIPE LEFT IN PLACE

MATERIAL: PVC

DIAMETER: 2 inch LENGTH: 130 JOINT TYPE: Flush Thread

SCREEN

MATERIAL: PVC

INTERVAL: 140 - 130 DIAMETER: 2 inch

STRATIGRAPHIC UNITS SCREENED: SLOT SIZE: 0.010

FILTER PACK

GRADE:

SAND: #0 GRAVEL: NATURAL:

AMOUNT: INTERVAL: 141 - 128

SEAL(s)

Portland Cement	INTERVAL:		AMOUNT:	
Bentonite Slurry	INTERVAL:	125 - 0.5	AMOUNT:	
Bentonite Pellets	INTERVAL:	128 - 125	AMOUNT:	
Other:	INTERVAL:		AMOUNT:	

LOCKING CASING: ☐ YES ■ NO KEY NO:

NOTES:

HDR | ONE COMPANY *Many Solutions*®

SOIL VAPOR SAMPLING LOG

Project Name:	Woodhaven Blvd
Client:	NYSDEC
Drilling/Boring Method:	Direct Push
Purging Method:	PAS Pump
Boring Location:	Queens, NY
Monitoring Instrument:	PID

Crew:	EB & JB
Sheet:	1 of 1
Project No.:	147-147461
Date:	3/10/2014 Start Time
	11/19/2013 Finish Time
Pump ID #:	
DTW:	NA
Surf. Elev.:	
Hole Dia.:	1"

Sample ID	Start Time (24 hr)	End Time (24 hr)	Total Time (hr:mins.) / (tot. min.)	Start Vacuum (in Hg)	End Vacuum (in Hg)	Sample Rate (LPM)	Sample Depth (ft above/ below g.s.)	Cannister ID No.	Regulator ID No.	Remarks and Observations
SG22D	1252	1455		-29	-5	0.2	40	1408	3250	
SG22I	1258	1455		-25	-6	0.2	20	1538	3255	
SG22S	1304	1455		-27	-6	0.2	8	1419	3434	
DUP-1	1252	1455		-27	-5	0.2	40	1421	3251	Duplicate of SG22D

General Notes:

1. Start Time end Time refers to Start and end time for sample collection only.
2. All sub-slab sampling locations purged into 1-liter Tedlar bag prior to sampling

HDR | ONE COMPANY *Many Solutions*®

SOIL VAPOR SAMPLING LOG

Project Name:	Woodhaven Blvd
Client:	NYSDEC
Drilling/Boring Method:	Direct Push
Purging Method:	PAS Pump
Boring Location:	Queens, NY
Monitoring Instrument:	PID

Crew:	EB & JB
Sheet:	1 of 1
Project No.:	147-147461
Date:	3/10/2014 Start Time
	11/19/2013 Finish Time
Pump ID #:	
DTW:	NA
Surf. Elev.:	
Hole Dia.:	1"

Sample ID	Start Time (24 hr)	End Time (24 hr)	Total Time (hr:mins.) / (tot. min.)	Start Vacuum (in Hg)	End Vacuum (in Hg)	Sample Rate (LPM)	Sample Depth (ft above/ below g.s.)	Cannister ID No.	Regulator ID No.	Remarks and Observations
SG34I	1130	1310	1:40	-25	-7	0.2	20	1604	3078	
SG34D	1145	1340	1:55	-27	-6	0..2	40	1552	3104	
SG34S	1157	1400	2:03	-26	-6.5	0.2	8	1411	3254	
AMB-20140310	1325	1520	1:55	-29	-7	0.2	Ambient	1407	3435	Ambient Sample

General Notes:

1. Start Time end Time refers to Start and end time for sample collection only.
2. All sub-slab sampling locations purged into 1-liter Tedlar bag prior to sampling

SURVEY AND DRAWING PREPARED UNDER THE SUPERVISION OF LICENSED SURVEYORS. THE NORTHERN PORTION OF THE SITE, SURVEYED IN 2002, WAS PREPARED UNDER THE SUPERVISION OF LICENSED SURVEYOR DONALD STEDGE. THE SOUTHERN PORTION OF THE SITE AND ALL SOIL GAS POINTS, ALL SURVEYED IN 2003, WAS PREPARED UNDER THE SUPERVISION OF LICENSED SURVEYOR JAY GREENWELL.

NOTES:

1.) BASEMAP SURVEY CONDUCTED: JULY 8, 2002, AUGUST 19, 2002, SEPTEMBER 12, 2002, MAY 27, 2003
2.) SAMPLE LOCATION SURVEY CONDUCTED SEPTEMBER 21, 2010, NOVEMBER 29, 2011, MARCH 28, 2013, JUNE 16, 2014
3.) HORIZONTAL DATUM: NEW YORK STATE PLANE SYSTEM NAD 83–96, LONG ISLAND ZONE
4.) VERTICAL DATUM: NAVD 88
5.) DATUMS FROM GPS OBSERVATION FROM YEC 1998 SURVEY OF SPORTS AUTHORITY COORDINATE
6.) CONTOUR INTERVAL: ONE FOOT

LEGEND

Symbol	Description
MW–3I CASING 75.78 PVC 75.23	MONITORING WELL (WITH TOP CASING AND TOP PVC ELEVATION)
SG–9 81.5	SOIL GAS POINT (WITH GROUND ELEVATON)
SMH	SEWER MANHOLE
GV	GAS VALVE
WV	WATER VALVE
HYDRANT	HYDRANT
UP	UTILITY POLE
LP	LIGHT POLE
	EDGE OF PAVEMENT
	WROUGHT IRON FENCE
	METAL FENCE
	WOODEN FENCE
—x—	CHAIN LINK FENCE
76.6 +	SPOT ELEVATION
– –83—	1–FOOT CONTOUR
	SURVEY CONTROL POINT (PK = PK NAIL SET)

REVISIONS

12/15/11 ADDED WELLS MW–5D,5S,6S,7D 7I,7S,8S AND SOIL VAPOR POINTS SG–14 TO SG–30

3/28/12 REVISED MW–3I ELEVATION

4/3/13 ADDED WELLS MW–8I,9S,10S,11S AND SOIL VAPOR POINTS SG–31 TO SG–45

6/23/14 ADDED WELLS MW–12I, 13I AND SOIL VAPOR POINTS SG–22D, 22I, 34D, 34I

VALLEY COTTAGE — YEC, INC. — NEW YORK

7509 WOODHAVEN BLVD SURVEY

GLENDALE
QUEENS COUNTY, NEW YORK

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	JOB NO.
OCT 2010	1" = 50'	MBW	DRS, JG	A0425