FIFTH PERIODIC REVIEW REPORT

for

OLD BETHPAGE LANDFILL
June 1, 2016 through May 31, 2017

Prepared for:

Town of Oyster Bay
Department of Public Works
150 Miller Place
Syosset, NY 11791

Prepared by:

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Syosset, NY 11791

Submitted to:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, Section C
625 Broadway, 12th Floor
Albany, New York 12233-7017

June 30, 2017

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I. Executive Summary

This PRR (Periodic Review Report) for the OBL (Old Bethpage Landfill) covers the period from June 2016 through May 2017. It is being submitted at the request of the NYSDEC (New York State Department of Environmental Conservation) pursuant to a notice dated April 19, 2017 to the Town (Town of Oyster Bay). This is the fifth PRR for the OBL. Its format and content reflect the significant reductions in operation, monitoring and reporting requirements approved by the NYSDEC in 2016, specifically:

1. Effective October 1, 2016, the NYSDEC took over operation of the GTF (Ground Water-Treatment Facility), and Recovery Wells RW-1 and RW-2 were turned off. Accordingly, the Town's period of record for the GTF and the recovery wells ends on September 30, 2016, which is prior to the end of this reporting period.
2. The Town has entered post-termination monitoring of Recovery Wells RW-1 and RW-2, which entails sampling 13 associated monitoring wells semiannually for three years for the established list of parameters, and submission of monitoring reports. The first round of post-termination monitoring was performed in late June 2017. These results will be provided in a separate report. RAP (Remedial Action Plan) reports are no longer required.
3. The frequency of ambient air-quality, soil gas-quality and soil gas-pressure monitoring was reduced from quarterly to annually, effective the second quarter of 2016. The results of the second quarter 2016 monitoring round were included in the Second Quarter 2016 RAP Report, and are summarized in this PRR. The next round of this monitoring will be performed during the third quarter of 2017, after this reporting period ends.
4. The frequency of monitoring perimeter gas wells, and on-site buildings and structures, for methane was reduced from quarterly to annually, effective the second quarter of 2016. The results of the second quarter 2016 monitoring round were included in RTP's 2016 Annual Report, and are summarized in this PRR. The next round of this monitoring will be performed during the third quarter of 2017, after this reporting period ends.
5. The NYSDEC requested that the exhaust from the perimeter LFG (landfill gas) collection system, which is vented directly to the atmosphere, be monitored for VOCs (volatile organic compounds) annually. The first round of this monitoring was performed during the second quarter of 2016. The results were included in RTP's 2016 Annual Report, and are summarized in this PRR. The next round of this monitoring will be performed during the third quarter of 2017, after this reporting period ends.

The other monitoring requirements remained unchanged. They entail weekly monitoring of the perimeter LFG collection system exhaust for methane, semiannual monitoring of effluent from the LTF (Leachate Treatment Jacility) for permit-required parameters, and annual zero gas migration surveys of the OBL perimeter and OBSWDC (Old Bethpage Solid Waste Disposal Complex) property boundary. Semiannual monitoring of

the LTF effluent was performed in September 2016 and June 2017. The 2016 annual zero gas migration survey was performed at the beginning of this reporting period.

The OBL is a 65-acre former MSW (municipal solid waste) landfill located within the OBSWDC in Old Bethpage, NY. The OBL is owned, and was formerly operated by, the Town. In 1988, the Town entered into Consent Decree 83 Civ. 5357 with the State of New York to remediate the OBL. Appendix A of the Consent Decree specifies the RAP to "restore the quality of groundwater and air in the vicinity of the OBSWDC".

The key elements of the RAP necessary to meet the remedial objectives are: 1) remediating the off-site VOC ground-water plume from the OBL utilizing a GTF; 2) completing the landfill cap; 3) collecting the LFG; 4) maintaining zero percent LFG migration at the OBL boundary and in on-site buildings and structures; 5) continuing to operate the existing LTF; and 6) supplemental monitoring of ambient-air quality, soil-gas quality and soil-gas pressure. The thermal oxidizer is no longer in operation, and that supplemental monitoring has been superseded by monitoring of the exhaust from perimeter LFG collection system.

Recovery Wells RW-1 and RW-2 were basically non-detectable for VOCs during the previous reporting period. Accordingly, the fourth PRR concluded that the off-site VOC plume associated with the OBL has been remediated to the extent feasible. It also stated the Town's intention to seek NYSDEC approval to turn off Recovery Wells RW-1 and RW-2, and enter post-termination monitoring for these recovery wells. Approval was granted, and on October 1, 2016 the Town shut off Recovery Wells RW-1 and RW-2, and turned over operation of the other three recovery wells and the GTF to the NYSDEC. The first round of post-termination monitoring for Recovery Wells RW-1 and RW-2 was performed in late June 2017. The results will be submitted in a separate report.

The GTF effluent met SPDES Permit Equivalency discharge limits through September 2016, which is the end date of the Town's period of record. The landfill cap is in good condition. The low-concentration LFG at the OBL perimeter is being collected and is not migrating offsite. It is being vented directly to the atmosphere and is monitored weekly for methane and annually for VOCs. The LTF effluent is permitted and meets County sewer discharge standards. Ambient-air monitoring results continue to indicate that the OBL is not significantly impacting ambient-air quality downwind of the OBL. Soil-gas data continue to be consistent with previous monitoring results. Access-restricting engineering controls remain in place. The deed restriction for the OBL, required as an institutional control under Part 360, has been filed at the Office of the County Clerk.

With NYSDEC approval, on October 1, 2016, the Town turned off Recovery Wells RW-1 and RW-2, and turned over operation of the other three recovery wells and the GTF to the NYSDEC. The Town has also initiated post-termination monitoring for these two recovery wells, which entails semiannual monitoring of 13 wells selected by the NYSDEC for three years. The landfill cap, constructed in several phases between 1983 and 1993, continues to be maintained. The LFG control system, constructed in phases

from 1981 to 1993, is continuing to prevent off-site gas migration. In October 2012, the NYSDEC approved the Town's request to permanently cease operation of the landfill gas thermal oxidizer. The low-concentration LFG collected by the perimeter system is directly vented to the atmosphere via the stack bypass. Monitoring of the exhaust weekly for methane and annually for VOCs is being performed, and shows that emissions are acceptably low.

Annual zero percent LFG migration surveys are being conducted along the OBL boundary and OBSWDC property line. The results continue to demonstrate that subsurface LFG migration is being controlled. The Town also received NYSDEC approval to decrease the frequency of ambient air-quality, soil gas-quality, soil gas-pressure, perimeter well methane and on-site building/structure methane monitoring to annually, beginning in the second quarter of 2016. The LTF, operational since 1983, is permitted and continues to operate. The Town received County approval to bypass the LTF and discharge OBL leachate directly to the sewer system in 2016. A bypass has not yet been constructed.

Access to the OBL is restricted by appropriate engineering controls. Town personnel performed routine maintenance and repairs at the OBSWDC on an as-needed basis in accordance with the O&M (Operation and Maintenance) Plans developed for each of the remedial systems. No changes are recommended at this time. Effective October 1, 2016, the Town is no longer responsible for the GTF. Repairs requiring specialized expertise necessitate hiring outside contractors in accordance with general municipal law requirements.

II. Site Overview

The OBL is located in east-central Nassau County, NY. The physical address of the OBL is 101 Bethpage-Sweet Hollow Road, Old Bethpage, NY 11804. A USGS quad map showing the location of the OBL is provided in Figure 1. The OBL occupies approximately 65 acres of the OBSWDC. The remainder of the OBSWDC is occupied by a guard booth, scale-house facility, MSW transfer station, recyclables transfer facility, yard waste transfer site, vehicle maintenance garage, two contractor-leased parcels used for materials storage and handling, the LFG control system, the LTF, and the GTF. A site plan is provided in Figure 2. The surrounding area is a mixture of commercial and residential properties, and a campground. An aerial photograph of the site showing the use of adjacent properties is provided in Figure 3.

The OBSWDC has been in operation since 1958, and is currently used to transfer and dispose of MSW generated in the Town of Oyster Bay Solid Waste Disposal District. MSW was burned in two on-site incinerators, and the ash was landfilled on-site in the OBL, as was raw MSW generated during incinerator outages. After the last operable incinerator ceased normal operations, and until the OBL closed in April 1986, MSW was compacted utilizing movable compactors, baled utilizing a high-density baler, and landfilled at the OBL. Since May 1986, the Town has shipped the MSW collected that was not recycled off of Long Island.

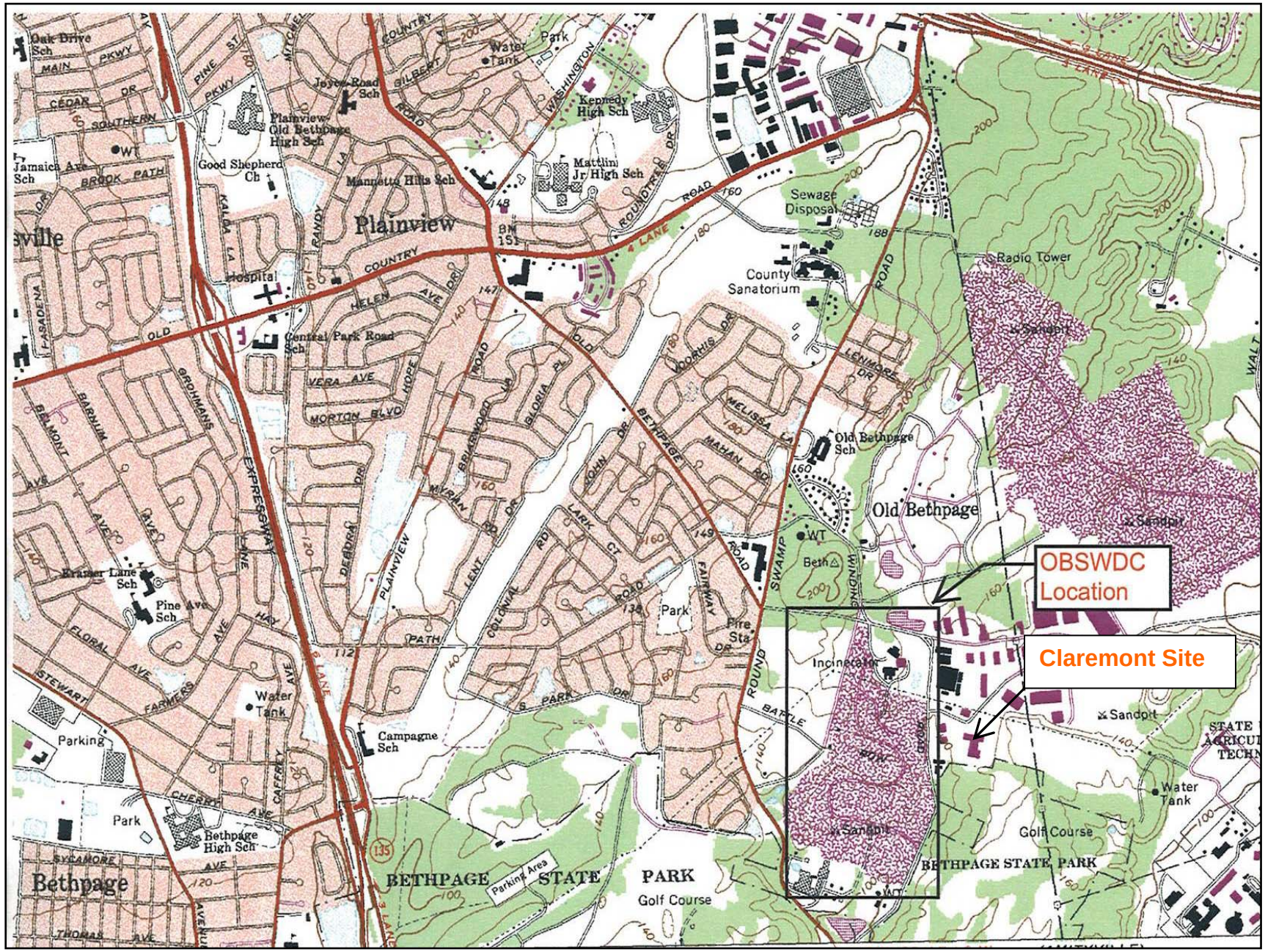
The nature and extent of the contaminated ground-water plume associated with the OBL were defined in a report titled "OBSWDC Offsite Groundwater Monitoring Program, Old Bethpage, Long Island, New York", by Geraghty & Miller, Inc. dated September 1986. The plume extended downgradient (southeast) of the OBL beneath the Bethpage State Park Golf Course. The Town is not aware of any report(s) documenting air-quality conditions prior to capping the OBL.

In June 1988, the Town entered into Consent Decree 83 CIV 5357 with the State of New York. The RAP in the Consent Decree required the Town to:

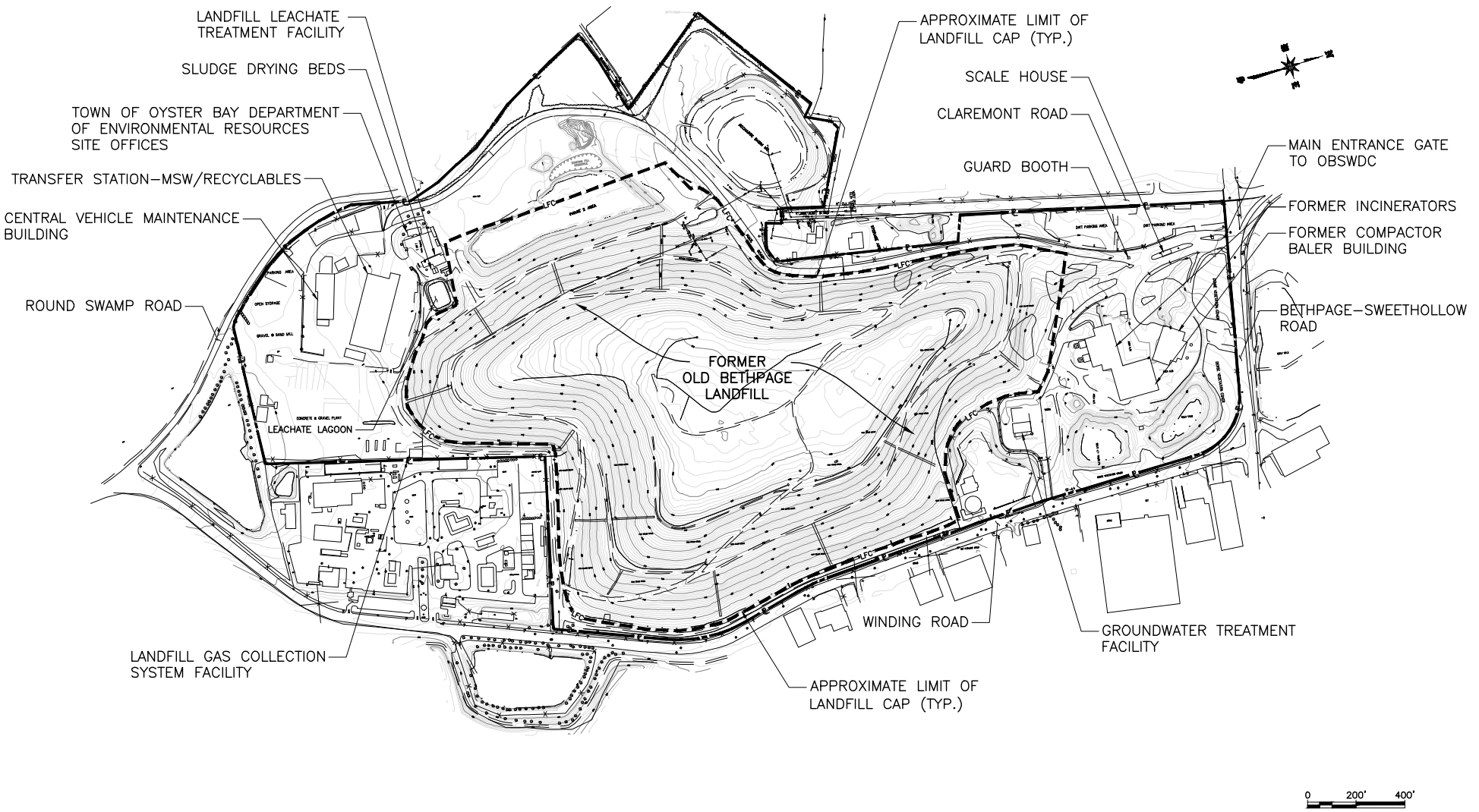
- design, construct and operate the GTF, to contain, recover and remediate the off-site VOC ground-water plume associated with the OBL
- design and construct a Part 360 cap for the OBL
- continue to operate the LFG migration control system
- continue to operate the LTF
- perform various monitoring functions designed to assess the adequacy of the remediation efforts, including ground-water, LFG and ambient-air monitoring

The GTF began operation on April 1, 1992 and continued to operate during this reporting period, except during periods when maintenance or repairs were required. On October 1, 2016, operation of the GTF and Recovery Wells RW-3, RW-4 and RW-5 was turned over to the NYSDEC, and Recovery Wells RW-1 and RW-2 were turned off. The landfill cap was completed in early 1993, and has been maintained in good condition.

FIGURE 1 – SITE LOCATION ON USGS QUAD MAP



Source: Huntington, NY 7.5-Minute Quad



REV.	DATE	REMARKS	BY

CLIENT

TOWN OF OYSTER BAY

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

DRAWING TITLE
OLD BETHPAGE SOLID WASTE DISPOSAL COMPLEX

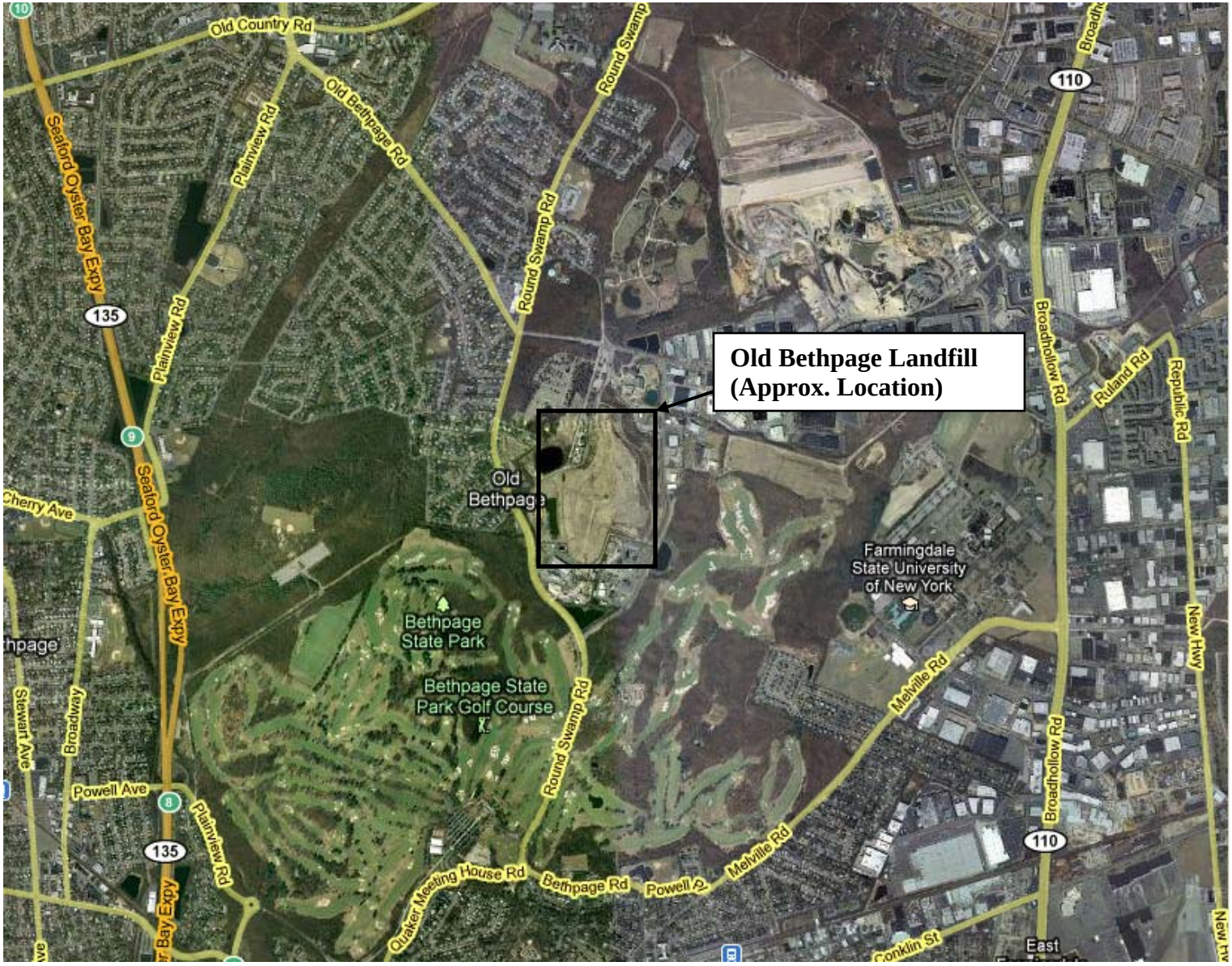
SITE PLAN

DESIGN BY: _
DRAWN BY: F.E.
CHECKED BY: T.H.
DATE: SEPT. 2012
SCALE: AS SHOWN

PROJECT NO.
2403–02

DRAWING NO.
FIGURE 2

FIGURE 3 – SITE AERIAL PHOTO



The perimeter LFG migration control system continued to operate to control migration despite being temporarily off-line in 2017, and the low-concentration LFG collected was vented to the atmosphere. Weekly monitoring of the exhaust for methane, and the first round of annual monitoring of the exhaust for VOCs, were performed. Monitoring of ground water, leachate, zero percent LFG migration, ambient-air and soil-gas quality, soil-gas pressure, perimeter well methane and on-site building and structure methane was performed per the Consent Decree and the reductions in scope approved by the NYSDEC in 2016.

VOC concentrations in Recovery Wells RW-1 and RW-2 remained at non-detectable levels through September 2016, consistent with the off-site VOC plume associated with the OBL being remediated to the extent feasible. In contrast, the concentrations of up to three VOCs in Recovery Wells RW-3, RW-4 and RW-5 continued to exceed their Class GA standards through September 2016. These three recovery wells are capturing a portion of the off-site VOC plume from the Claremont Polychemical Site, and since 2009 are capturing a portion of another high-concentration TCE plume associated with at least one unknown source in the vicinity of the OBL.

The Town operated the GTF through September 2016, and the NYSDEC will reimburse the Town for the costs associated with operating Recovery Wells RW-3, RW-4 and RW-5 under the State Assistance Contract (SAC) No. C303233. On October 1, 2016, the Town turned off Recovery Wells RW-1 and RW-2, and turned over operation of the GTF and the other three recovery wells to the NYSDEC under a Site Transfer Agreement.

The LTF continued to operate, and the effluent discharged to the Nassau County Sewer System continued to meet discharge permit requirements. Over time, the quality of the leachate has improved. Accordingly, the Town requested, and has received, County approval to discharge OBL leachate directly to the sewer system. A bypass system has not yet been installed.

LFG did not migrate offsite. The perimeter LFG collection was off-line temporarily in March and April 2017 to repair a break in the header, and in late June 2017 due to a power supply issue, but subsequent methane concentrations in the exhaust remained basically unchanged. Ambient-air, soil-gas, and building/ structure monitoring results indicate that the OBL is not significantly impacting ambient-air quality. Accordingly, in early 2016 the NYSDEC approved the Town's request to reduce the frequency of ambient air-quality, soil gas-quality, soil gas-pressure, perimeter well methane and on-site building/structure methane monitoring from quarterly to annually. The NYSDEC also requested that the Town monitor the exhaust from the perimeter LFG collection system annually for VOCs. The Town implemented these reductions/modifications in the second quarter of 2016, and the second quarter 2016 monitoring rounds served at the annual monitoring rounds for 2016. The results of these monitoring efforts were included in prior reports, and are summarized in this PRR. The 2017 annual monitoring rounds will be performed during the third quarter of 2017, after this reporting period ends. Access-restricting engineering controls are in place. The deed restriction required by 6NYCRR Part 360 has been filed with the Office of the County Clerk.

III. Evaluate Remedy Performance, Effectiveness and Protectiveness

Ground Water Remediation System

Based on the daily operating reports through September 2016, the GTF was on-line 88 percent of the time and maintained an average daily flow rate of 1.00 MGD (Million Gallons per Day), which equates to 122 million gallons of ground water being remediated through September 2016. Previous analysis has shown that this rate of GTF pumpage is sufficient to contain the off-site VOC plume from the OBL. The actual daily flow data are summarized in Figure 4. As shown in Figure 4, only four notable periods of downtime and changes in flow rate occurred during this reporting period. They are numbered in Figure 4 and identified/explained below:

(1) The GTF remained off-line through June 14, 2016 due to the leak that had developed towards the end of the prior reporting period in the pressure-relief valve on the pipeline that connects the recovery wellfield to the GTF. The valve is a made-to-order item, so it had to be fabricated by the manufacturer prior to being delivered and installed. The new valve was installed on June 15, 2016 and the GTF was then turned back on.

(2) During the period from June 15 through July 14, 2016, only four wells were operated each day as a precaution to prevent "high-water" alarms. Also, the GTF effluent flow rate remained restricted because the strainer in the air stripper influent pipeline was partially clogged.

(3) On July 15, 2016, the GTF was off-line 8 hours to clean the strainer in the air stripper influent pipeline.

(4) During the period from July 16 through September 4, 2016, only four recovery wells were still operated each day as a precaution to prevent "high-water" alarms.

In addition to the notable periods of downtime and changes in flow listed above, there were occasions when individual recovery wells were off-line and/or the GTF was shut down for short periods of time. These minor periods were identified previously in the RAP reports so they are not included in this PRR.

The influent [TVOC] (Total VOC Concentration(s)) data collected during this reporting period are summarized in Figure 5. Review of Figure 5 indicates that the [TVOC] of the GTF influent showed significant fluctuation for approximately one month after the GTF was restarted, but still had an overall downward trend through September 30, 2016. The average influent [TVOC] was 62.7 ug/L (micrograms per Liter). Effluent samples were collected concurrently with the influent samples, and all of them were non-detectable for VOCs. This indicates that the GTF maintained a treatment efficiency of near 100 percent. Since all of influent sample [TVOC] results were non-detectable, they are not shown in Figure 5.

Figure 4 - Temporal Variation in Facility Flow, June 1 - September 30, 2016

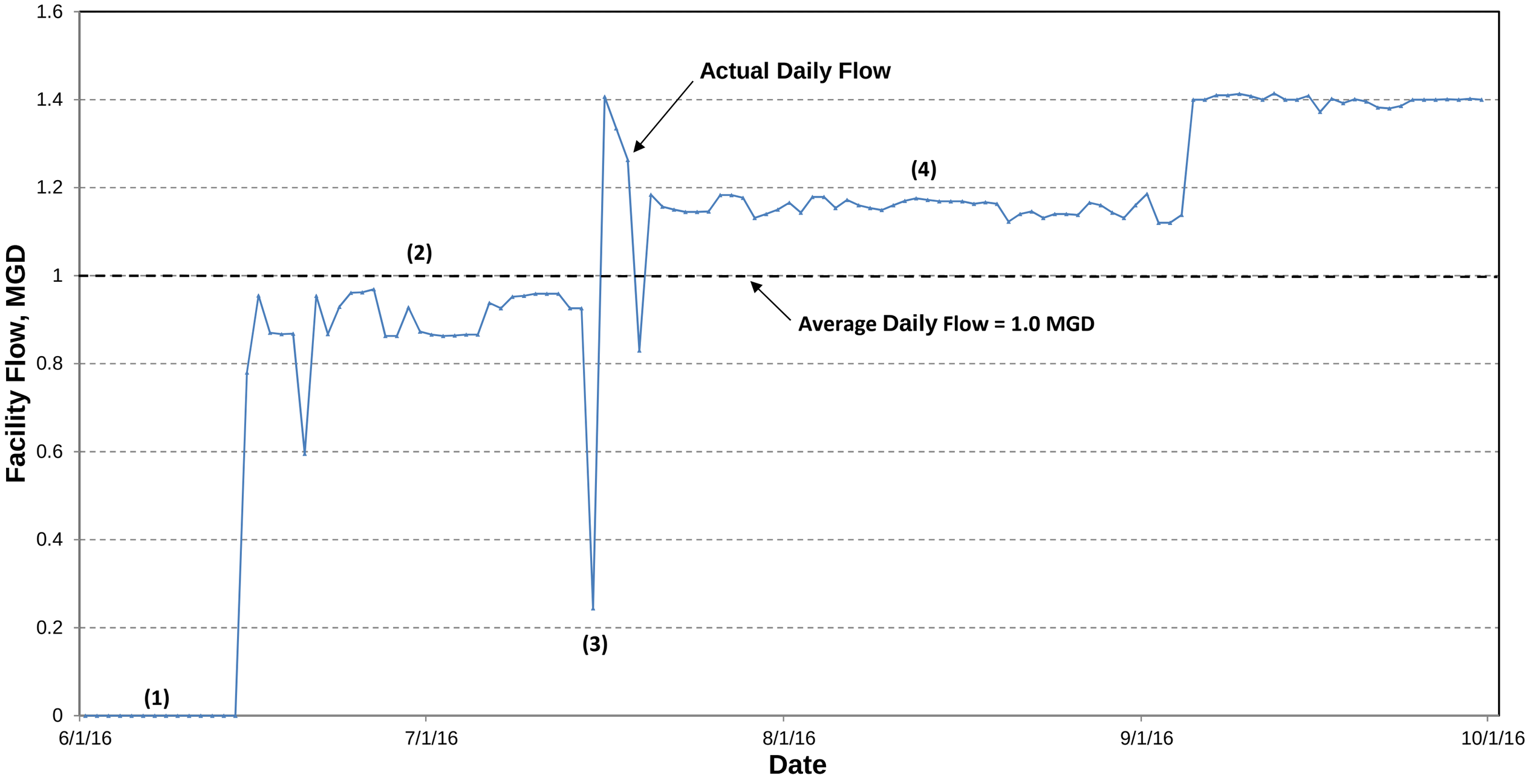
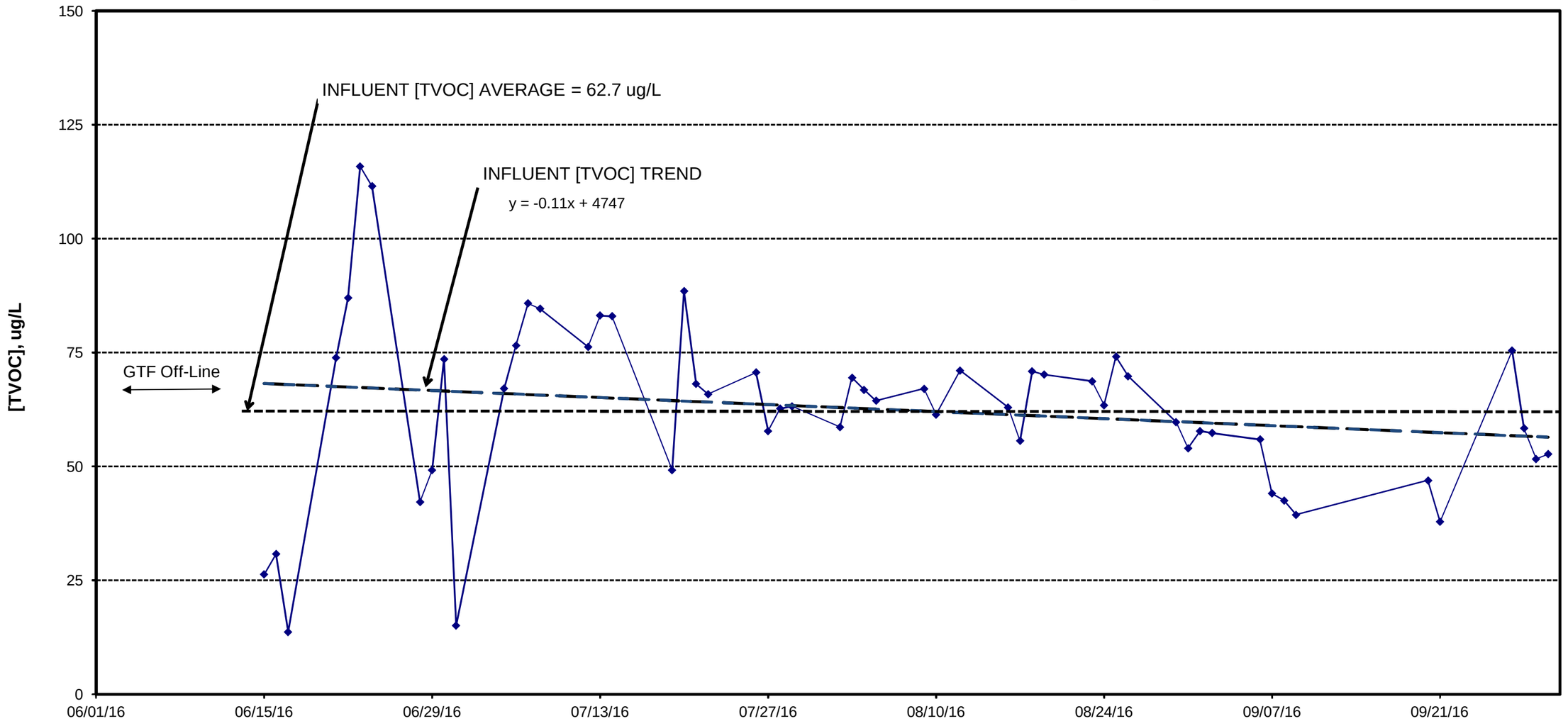


FIGURE 5 - TEMPORAL VARIATION OF INFLUENT TOTAL VOC CONCENTRATIONS [TVOC]



OLD BETHPAGE LANDFILL GROUNDWATER TREATMENT FACILITY

JUNE 1 THROUGH SEPTEMBER 30, 2016

The RAP Reports have consistently documented that the three easternmost recovery wells, specifically Recovery Wells RW-3, RW-4 and RW-5, are intercepting a portion of the off-site VOC plume from the Claremont Polychemical Site, and that this is a key contributor to the higher levels of VOCs in these recovery wells. Based on observed increases in [TCE] since 2009, particularly in Monitoring Well MW-7B-R and Recovery Well RW-4, these three recovery wells also appear to be capturing a portion of a high-concentration TCE plume associated with at least one other unknown source located in the vicinity of the OBL. The presence of such sources was documented in the USEPA's March 4, 2014 Second Five-Year Review Report for the Claremont Corporation Superfund Site, which also stated that the extent of this TCE contamination has not been delineated.

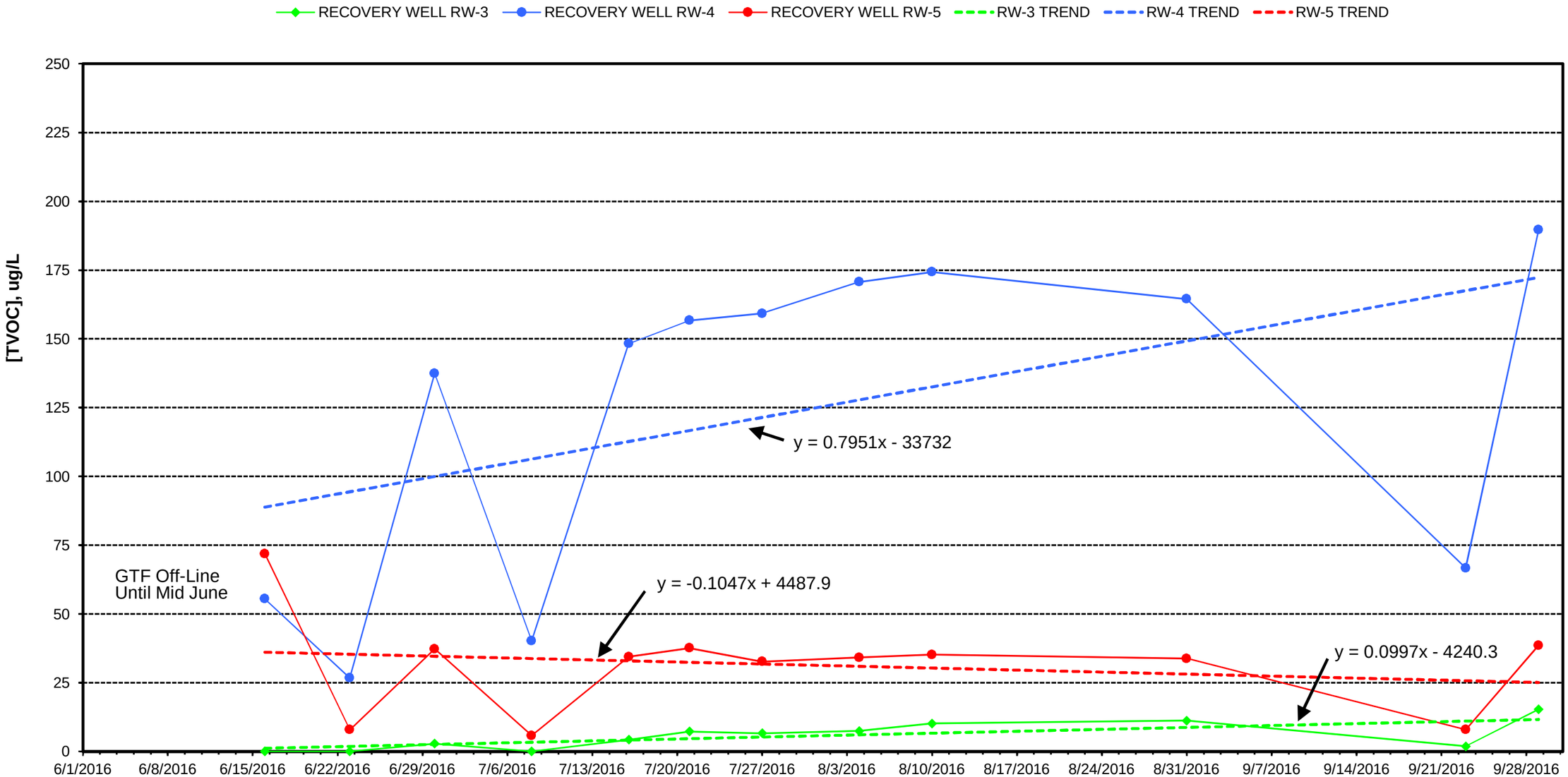
The [TVOC] results for samples from Recovery Wells RW-3, RW-4 and RW-5 collected by the Town during this reporting period are summarized in Figure 6. As shown in Figure 6, [TVOC] were typically highest in Recovery Well RW-4, followed by Recovery Wells RW-5 and RW-3, respectively. [TVOC] in Recovery Wells RW-4 and RW-5 showed significant fluctuation from mid-June through mid-July, which is attributed to the GTF being restarted after being off-line for an extended period of time. [TVOC] in all three wells were then relatively constant through August and then exhibited more fluctuation in September. [TVOC] trend lines for these recovery wells, based on the available data, indicate that overall [TVOC] in Recovery Wells RW-3 and RW-4 showed increasing trends, and that [TVOC] in Recovery Well RW-5 showed a decreasing trend.

Based on the results from the weekly samples collected from the Town's recovery wells during this reporting period, total and individual VOC concentrations in Recovery Wells RW-1 and RW-2 were non-detectable and therefore lower than the NYSDEC Ambient Water Quality Standard or Guidance Values. In Recovery Wells RW-3, RW-4 and RW-5, the concentrations of up to three individual VOCs (TCE, PCE and/or cis-1,2-DCE) exceeded their 5-ug/L Class GA ground water-quality standard in at least one sample.

Specifically, Recovery Well RW-3 exhibited relatively consistent low-magnitude exceedances for TCE during July and August 2016. Recovery Well RW-4 exhibited relatively consistent high-magnitude exceedances for TCE, moderate-magnitude exceedances for PCE and low-magnitude exceedances for cis-1,2-DCE during the reporting period. Recovery Well RW-5 exhibited relatively consistent moderate-magnitude exceedances for TCE, low-magnitude exceedances for PCE, and one minor exceedance for 1,1-DCE (1,1-dichloroethene) during the reporting period.

It should be noted that during long-term continuous operation, due to radial flow of ground water, a portion of the ground water collected by each recovery well includes ground water from the downgradient side of the recovery wellfield. Correspondingly, the VOC concentrations detected in the recovery wells samples reflect dilution associated with recovery of ground water from the downgradient side of the recovery wellfield. This dilution also influences the results for monitoring wells that are located downgradient of the recovery wellfield.

FIGURE 6 - TEMPORAL VARIATION IN RW-3, RW-4 & RW-5
TOTAL VOC CONCENTRATIONS [TVOC]



OLD BETHBAGE LANDFILL GROUNDWATER TREATMENT FACILITY

JUNE 1 THROUGH SEPTEMBER 30, 2016

Per Consent Decree requirements, the Town sampled the required monitoring wells during the second and third quarters of 2016, and analyzed the samples for VOCs and certain Part 360 leachate indicator and inorganic parameters. In addition, the Town analyzed split-samples collected from selected Claremont Site monitoring wells (which include some Town wells that the Town is not required to monitor) and provided to the Town for VOCs.

The most recent VOC results for 15 of the 16 Town-monitored wells, from August 2016, are summarized by well and parameter group below:

Well Number	[TVOC]	[Total VHO]*	[Total Aromatics]	[PCE] / [TCE]
Limits:	50	N/A	N/A	5 / 5
LF-1	ND	ND	ND	ND / ND
M-30B-R	0.6 J	ND	ND	ND / 0.6 J
MW-5B	ND	ND	ND	ND / ND
MW-6B	11.2 J	ND	11.2 J	ND / ND
MW-6C	ND	ND	ND	ND / ND
MW-6E	ND	ND	ND	ND / ND
MW-6F	ND	ND	ND	ND / ND
MW-7B-R	**1,104**	82.0	ND	**51.0** / **971**
MW-8A	4.1	ND	ND	4.1 / ND
MW-8B	ND	ND	ND	ND / ND
MW-9B	ND	ND	ND	ND / ND
MW-9C	ND	ND	ND	ND /ND
MW-11A	70.9	59.6	ND	**6.4** / 4.9
MW-11B	1.3 J	1.3 J	ND	ND / ND
OBS-1	ND	ND	ND	ND / ND

Notes: Results are in micrograms per Liter (ug/L); bold font indicates exceedance of Limit.
VHO = Volatile Halogenated Organics.
*Excluding PCE and TCE.
[PCE] / [TCE] = Tetrachloroethene concentration / Trichloroethene concentration.
N/A = Not Applicable, these standards are compound-specific.
ND = Not Detected.
J = Estimated result.
Well MW-6A could not be sampled during the third quarter of 2016 because it was dry.

Review of the above table indicates that VOCs are currently at non-detectable levels in nine of the 15 wells, and that [TVOC] in four of the six other wells are much lower than the 50-ug/L Consent Decree Limit for ground water. The [TVOC] in Well MW-7B-R is approximately 22 times higher than this limit, primarily due to TCE. The [TVOC] in Well MW-11A is slightly higher than this limit, primarily due to cis-1,2-DCE. In contrast, the low [TVOC] in Well MW-6B is due to aromatic hydrocarbons, and the low [TVOC] in Well MW-8A is due to PCE.

In addition to the exceedances indicated in the table above, the concentrations of 1,1-DCE, cis-1,2-DCE and 1,1,1-TCA in Well MW-7B-R and cis-1,2-DCE in MW-11A exceeded the 5-ug/L Class GA standard during the third quarter of 2016. The VOCs detected in Wells MW-7B-R and MW-11A are not Landfill-related. Overall, these results are consistent with the results for the second quarter 2016 monitoring round.

The most recent VOC results for Claremont Site split-samples, from September 2016, have already been submitted to the NYSDEC in the Third Quarter 2016 RAP Report, and therefore are not included in this PRR.

The Part 360 leachate indicator and inorganic parameter results for the Town's monitoring wells during this reporting period were included in the RAP Reports. Those results indicate that while a number of these parameters are present at detectable concentrations in the monitoring wells located downgradient of the OBL, most concentrations are lower than their respective NYSDEC Class GA ground water-quality standard or guidance value. Exceedances in the August 2016 samples are listed below:

- Ammonia: Wells MW-6B, MW-6C, MW-6E, MW-9C and OBS-1
- Chloride: Wells MW-6B, MW-6C, MW-6E, MW-6F and MW-8B
- Iron: Wells MW-6B, MW-6C and MW-6E
- Manganese: Wells MW-5B, MW-6E, MW-8B, MW-9B and OBS-1
- Phenols: Wells MW-5B, MW-6B, MW-6C, MW-6E, MW-8A, MW-9C and OBS-1
- Sodium: Wells MW-5B, MW-6B, MW-6C, MW-6E, MW-6F, MW-8A, MW-8B MW-9B, MW-9C and OBS-1
- Total Dissolved Solids: Wells MW-6B, MW-6C, MW-6E, MW-6F and MW-8B

It should be noted that the majority of these exceedances were relatively low in magnitude, and that they occurred in wells located upgradient of the Town's recovery wellfield and/or are within its capture zone. Overall, these results are consistent with past results.

The fact that significant concentrations of OBL-related inorganic contaminants have historically not been detected in Wells MW-7B-R and Well Cluster MW-11, which monitor the deeper zones of the aquifer downgradient of the Town's recovery wellfield, is consistent with the capture of the OBL VOC plume by the Town's recovery wellfield.

Based on the second and third quarter 2016 ground water-monitoring results, the GTF contained, collected and treated the VOC portion of the OBL plume, as designed, as well as portions of the off-site VOC plume from the Claremont Site and a high-concentration TCE plume from at least one other source in the vicinity of the OBL. The GTF also appears to be substantially containing the inorganic plume from the OBL through September 2016.

Landfill Capping System

The 6NYCRR Part 360 landfill cap was constructed in phases under several contracts between 1983 through 1993. The cap surface is inspected and maintained on a regular basis by Town personnel. The Landfill Capping System, which consists of a low permeability-soil cap, vegetated soil cover, gas-venting layer, drainage chutes, benches, and patrol roads, are generally in good condition overall. Typical maintenance included regular mowing, removing vegetation from drainage chutes, and repairing eroded benches and/or roads. Recent representative photographs showing the current status of the Landfill Capping System are provided in Figures 7, 8 and 9. Based on the current condition of the landfill cap, it is effective in minimizing infiltration of precipitation, and therefore the amount of leachate being generated. This finding is consistent with the fact that the amount of leachate collected from the lined phases of the OBL has continued to decrease over time.

Landfill Gas Control System

The Landfill Gas Control System currently consists of 36 perimeter gas collection wells installed between 1981-1995, over 9,000 feet of interconnecting fiberglass pipe, and a three-skid blower station with a per-skid flow capacity of 500 or 960 cfm (cubic feet per minute) depending on the dual-blower configuration utilized. This System previously included interior gas collection wells, which have been abandoned; and a landfill gas thermal oxidizer, which ceased operating in May 2008, primarily due to insufficient gas.

With NYSDEC approval, the low-concentration landfill gas collected by the perimeter wells is being vented directly to the atmosphere via the bypass stack at the former thermal oxidizer. The methane concentration of the exhaust is monitored on an approximately weekly basis during normal operation. The results for this reporting period are shown in Figure 10. As shown in Figure 10, the results ranged from 0.9% gas to 1.8% gas, averaged 1.2% gas, and exhibited a basically flat trend based on the available data. The methane concentration of the exhaust was typically in the range of 1-2% gas, which is consistent with the fact that the OBL closed more than 30 years ago and continues to age.

The current average methane concentration of the exhaust is approximately one-fourth the 4.5% - 5.5% concentration in 2008 that was used to determine that direct venting of the exhaust did not exceed permitting or regulatory thresholds or significantly impact ambient air quality. Since current the methane concentration of the exhaust is much lower, and the blower flow rate is the same or less, this assessment is still valid.

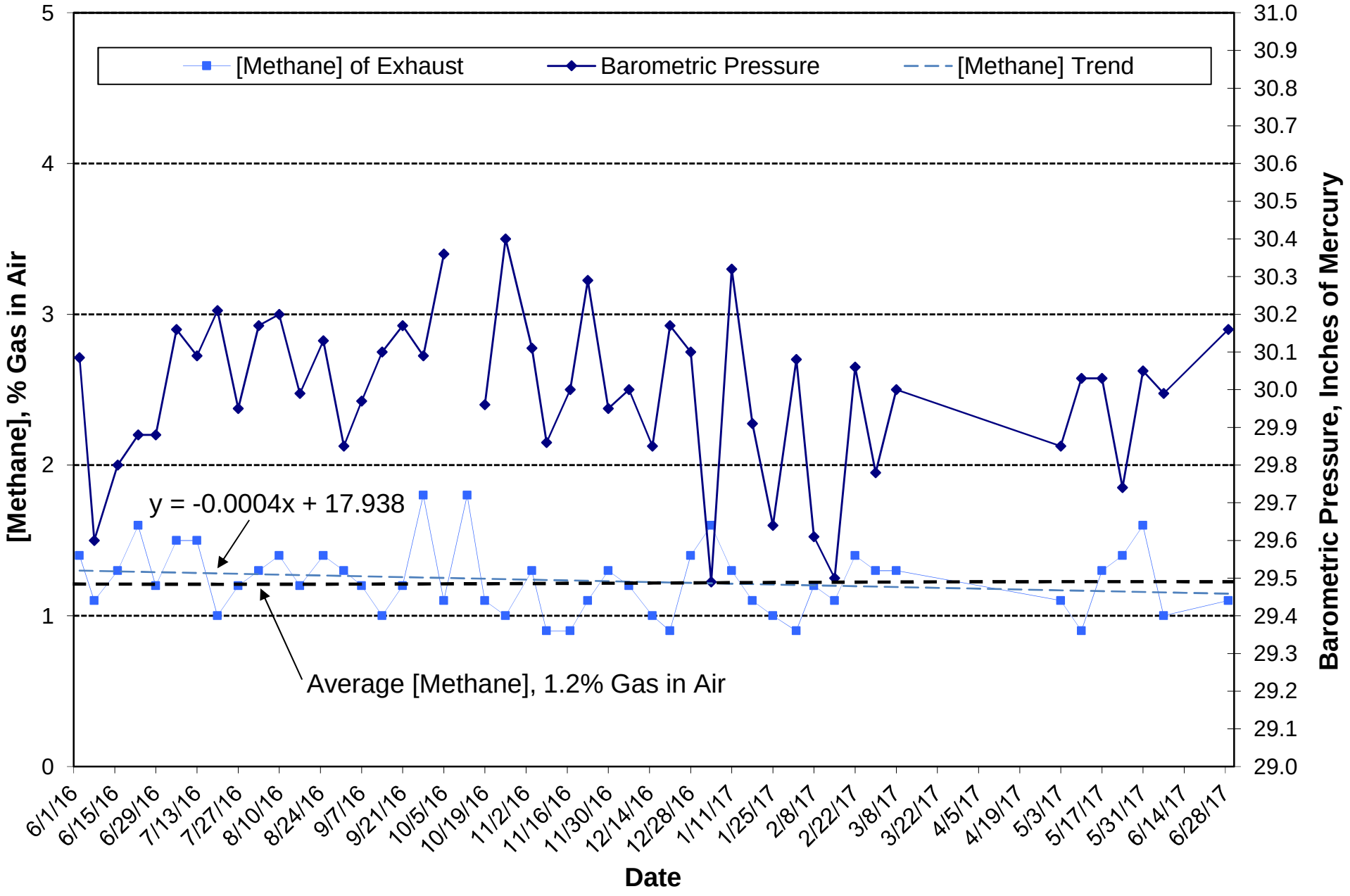
The NYSDEC also requested that the Town monitor the VOC concentration of the exhaust on an annual basis. The first round of this monitoring was performed on June 29-30, 2016 and the results were submitted to the NYSDEC in RTP's 2016 Annual Report. It entailed collecting three one-hour-long samples in Summa canisters, testing the samples for VOCs via EPA Method TO-15, converting the laboratory results to standard conditions, and comparing the results to the NYSDEC DAR-1 short-term and

FIGURE 7 – VIEW OF LANDFILL PLATEAU LOOKING SOUTH

FIGURE 8 – VIEW OF EASTERN SLOPE OF LANDFILL

FIGURE 9 – VIEW OF WESTERN SLOPE OF LANDFILL

Figure 10. [Methane] of Landfill Gas Collection System Exhaust, June 2016 - May 2017



annual guideline concentrations (SGCs and AGCs, respectively) and the Title V permit thresholds. The results indicate that individual VOC concentrations are lower than the NYSDEC DAR-1 SGCs, and total VOC emissions are below permitting thresholds. The concentrations of three VOCs in the exhaust (benzene, vinyl chloride and 1,4-dichlorobenzene) are higher than their NYSDEC DAR-1 AGCs, but are subject to significant downwind dispersion and are therefore not a concern.

Zero Percent LFG Migration Survey

An annual zero percent LFG migration survey was completed at the beginning of this reporting period, on May 31 and June 1, 2016. The results were submitted to the NYSDEC in RTP's 2016 Annual Report. This survey entailed measuring shallow subsurface LFG concentrations at intervals of approximately 50 feet along the entire perimeter of the OBL, and along the OBSWDC property boundary. It should be noted that certain additional monitoring points that were part of the original 1986 scope of work, developed prior to the LFG collection system being completed, are no longer monitored as they are redundant and/or obsolete (e.g., within the former incinerator plant buildings).

The results of the survey were nearly identical to prior surveys and indicate that the zero percent gas contours coincide with, or lie within, the perimeter of the landfill cap, and that no LFG was detected along the OBSWDC property line. This finding indicates that the perimeter LFG collection system is preventing off-site migration of LFG.

Perimeter Well and Building/Structure Interior Methane Monitoring

The second quarter 2016 perimeter well methane monitoring was performed on June 7, 2016, and served as the annual round for 2016. It entailed monitoring a total of 44 wells located along the OBSWDC property near the OBL and on the Nassau County Fire Service Academy, for methane. Methane was not detected during the 2016 survey.

The second quarter 2016 building/structure interior methane monitoring was also performed on June 7, 2016 and served as the annual monitoring round for 2016. The interiors of the on-site buildings that are accessible were surveyed for methane. Methane was not detected during this survey either.

The next rounds of this monitoring will be performed during the third quarter of 2017, after this reporting period ends.

Leachate Treatment Facility

The LTF is permitted to operate 8 hours per day, 5 days per week. The LTF effluent is permitted to discharge to the Nassau County Sewer under Industrial Discharge Permit No. 45. Self-monitoring is performed twice per year for permit-required parameters, and semiannual compliance reports are submitted to the County. These results are not

included in the RAP Reports. Therefore, the most current available self-monitoring results, for the sample collected on September 8, 2016, are provided in Appendix A.

In early 2016 the Town obtained approval from the County to bypass the LTF and discharge OBL leachate directly to the sewer system. The approval was based on sampling and laboratory analysis of raw leachate samples for County parameters, and comparison of the results to County's discharge standards. A copy of the County approval was provided in the Fourth PRR. A bypass has not yet been constructed.

Ambient-Air Quality, Soil-Gas Quality and Soil-Gas Pressure Monitoring Results

Monitoring of ambient-air quality, soil-gas quality and soil-gas pressure was performed on a quarterly basis through the second quarter of 2016, when the frequency was reduced to annually. The second quarter 2016 monitoring round served as the annual monitoring round for 2016. The 2017 annual monitoring round will be performed during the third quarter of 2017, after this reporting period ends.

The results to date have been submitted to the NYSDEC in the RAP Reports. This monitoring continues to indicate that the OBL has little to no impact on ambient air VOC concentrations; and that background air quality is the primary source of most of the VOCs detected in both the upwind and downwind samples. Some VOCs were detected in the soil gas samples, but at concentrations much lower than the NYSDEC DAR-1 SGCs. Soil-gas pressures continue to zero or negative, except for occasional slightly positive readings at one location with the OBSWDC property boundary, indicating proper function of the perimeter LFG collection system. Moreover, this monitoring continues to demonstrate that discontinuing operation of the thermal oxidizer with direct-venting of the low-concentration LFG from the perimeter collection system does not significantly affect air quality in the vicinity of the OBL.

IV. IC/EC Plan Compliance Report

IC/EC Requirements and Compliance

Institutional Controls

The RAP for the OBL specifies the following institutional controls, two of which are only applicable through September 30, 2016 due to the NYSDEC taking over the GTF:

- The air stripper air discharge requirements in Table 1 of the RAP (Not applicable after September 30, 2016)
- The groundwater aquifer requirements in Table 2 of the RAP
- The treated water requirements in Table 2 of the RAP (Not applicable after September 30, 2016)
- The need to operate the LFG collection system in accordance with Part 360
- The need to operate the LTF in accordance with Part 360 and Nassau County requirements
- The analytical methods for ground water listed in Table 6 of the RAP

The average quarterly concentration of individual VOCs in the air stripper exhaust are calculated based on the VOC data for the GTF influent and effluent, and the estimated blower air flow. As reported in the Second and Third Quarter 2016 RAP Reports, the concentrations individual VOCs in the air stripper exhaust were all lower than the limits in Table 1 of the RAP through September 2016. These findings are consistent with second and third quarter 2016 ambient air monitoring results. The Town therefore concludes that air stripper stack emissions were acceptable through September 2016.

The ground water aquifer and treated water requirements in Table 2 of the RAP were used to assess the progress of the ongoing ground-water remediation. These limits are augmented by the NYSDEC Ambient Water Quality Standards and Guidance Values for Class GA (Potable) water in TOGS 1.1.1, and the discharge limits in the GTF's SPDES Permit Equivalency. The influent, effluent and recovery well sample results were compared to the VOC limits in Table 2 of the RAP and TOGS 1.1.1. The effluent results were also compared to the discharge limits in the GTF SPDES Permit Equivalency. The quarterly monitoring well sample results were compared to the VOC and inorganic limits in Table 2 of the RAP and TOGS 1.1.1. Except for noting that the treated water requirements in Table 2 of the RAP and the discharge limits in the GTF SPDES Permit Equivalency are no longer applicable to the Town, no changes are recommended.

The primary goal of Part 360 with respect to LFG is to prevent lateral subsurface migration of LFG. During this reporting period, this was verified by the May 31 and June 1, 2016 zero percent LFG migration survey, and the June 7, 2016 perimeter well and building/structure methane monitoring, which confirmed that LFG is not migrating beyond the perimeter of the landfill cap. These survey results have been previously submitted to the NYSDEC. No changes are recommended at this time.

The Consent Decree required that the Town complete, operate and maintain the gas collection system. The system was constructed between 1981 and 1995 and was designed to control the off-site migration of LFG generated at the OBL. As the OBL aged, the levels of LFG diminished, resulting in a gas-to-energy contractor leaving the site in 2003. In addition, in May 2008, the thermal oxidizer became inoperable, primarily due to low methane levels, as well as equipment problems. The Town began direct-venting of the LFG collected by the perimeter system, which typically has very low LFG concentrations. An assessment by the Town's air monitoring consultant determined that this modification does not result in significant air-quality impacts. Accordingly, in 2011 the Town requested that it be allowed to discontinue operation of the LFG thermal oxidizer permanently, and provided supporting documentation to the NYSDEC. The request was approved in October 2012, and the Town monitors the methane concentration of the exhaust weekly to ensure that it remains acceptably low. In 2016, the Town also began monitoring VOC concentrations in the exhaust annually as requested by the NYSDEC. No changes are recommended at this time.

The LTF effluent is permitted to discharge to the Nassau County sewer system under Industrial Permit No. 45. The current permit is valid through August 31, 2017. Semi-annual reporting and self-monitoring was performed per permit requirements. The LTF effluent complies with permit limits. As noted previously, based on comparison of raw leachate monitoring results to County discharge standards, the Town received County approval to discharge the OBL leachate directly to the sewer system. A bypass has not yet been constructed.

The analytical methods in Table 6 of the RAP are intended to ensure that analyses of ground water and treated water samples are accurate, precise and reproducible. These are the methods that were current when the RAP was developed. They are still followed in principal, but have been updated periodically, as appropriate, to reflect advances in laboratory technology. All ground water and treated water analyses were performed by certified environmental laboratories using current, approved methods. No changes are recommended at this time.

In addition to the above institutional controls, the OBSWDC is surrounded by a fence with a gated entrance to control access. The fence and gate are inspected on a regular basis. The entrance is manned by Town personnel during operating hours, and visitors must sign in. At all other times, the entrance gate is closed and locked. To date, the existing fence and gate have been sufficient to prevent unauthorized access to the OBSWDC. No changes are recommended at this time.

A deed restriction is required under 6NYCRR Part 360 to notify any future land owners of the existence of the former landfill. The document consists of a letter regarding the presence of the OBL, a map showing the boundaries of the OBL, and a statement meeting the regulatory requirements indicating that remedial systems are in place and future site activities shall not compromise these systems. It has recently been filed with the Office of the County Clerk. Copies of the deed restriction and the filing receipt are provided in Appendix B.

Engineering Controls

The RAP for the OBL specified the following engineering controls:

- The five recovery wells in Bethpage State Park
- The GTF and related appurtenances
- The recharge basin with leaching wells located on the west side of the OBL
- The Part 360 landfill cap
- The landfill gas collection system and thermal oxidizer
- The leachate collection and treatment system

The five recovery wells are located offsite, downgradient of the OBL in Bethpage State Park, and are screened in the intermediate and deep zones of the Magothy Aquifer. The purpose of the five recovery wells is to contain and recover the VOC plume from the OBL. Based on the results of post-closure hydraulic and water-quality monitoring for this reporting period, which are discussed in detail in Section III of this report, these objectives appear to have been met. Specifically, Recovery Wells RW-1 and RW-2, which collect the VOC plume from the OBL only, have been basically non-detectable for VOCs for several years. This indicates that the VOC plume from the OBL has likely been remediated to the extent feasible. Accordingly, with NYSDEC approval, the Town shut down Recovery Wells RW-1 and RW-2 on October 1, 2016. The Town has entered post-termination monitoring for these two recovery wells, which entails sampling of 13 associated wells for the RAP parameters semiannually for three years, and reporting.

Recovery Wells RW-3, RW-4 and RW-5 continued to capture a portion of the off-site VOC plume from the Claremont Polychemical Site and a portion of a high-concentration TCE plume from at least one other source in the vicinity of the OBL. Accordingly, the NYSDEC took over operation of the GTF and these three recovery wells on October 1, 2016 under a Site Transfer Agreement. The Town's period of record for the GTF and recovery wells ends on September 30, 2016.

The GTF consists of transmission piping, wet wells, pumps, an air stripper and a recharge basin. The purpose of the GTF is to remove VOCs from the recovered ground water. The NYSDEC issued a SPDES Permit Equivalency for the GTF discharge in a letter dated October 24, 2012. This document expired on May 11, 2016. The Town submitted a renewal application to the NYSDEC on March 31, 2016. It is the Town's understanding that the renewal was accepted by the NYSDEC and remained in effect through September 30, 2016.

The Town replaced the air stripper media in December 2014. This action restored the treatment efficiency to near 100 percent, where it remained through September 2016. Pressure-monitoring ports were also installed on the air stripper tower, and the pressure buildup across the media is monitored on an approximately weekly basis to check for a recurrence of fouling. The accessible portions of the media are also visually examined

on a regular basis. No indications of a reoccurrence of significant media fouling were indicated or observed through September 2016. Therefore no acid rinses were required.

The main recharge basin for the GTF is Recharge Basin No. 1, which is located on the west side of the OBL. A system of diffusion wells was installed in the bottom of this basin to improve percolation, but the basin has always had limited recharge capability. Therefore the Town has historically split the GTF flow between Recharge Basin No. 1 and Town Recharge Basin No. 33, which is located on the east side of the OBL across Winding Road, and although smaller, has good recharge capability. Following discussions with the Town, an agreement was executed between the Town and the NYSOPRHP (New York State Office of Parks, Recreation and Historic Preservation) whereby the NYSOPRHP installed a pump station adjacent to Town Recharge Basin No. 33, and since the spring of 2008 has utilized the treated water in this basin seasonally for golf course irrigation. Under the Site Transfer Agreement, the Town retained ownership of the recharge basins. Therefore, no changes are recommended.

The landfill cap was designed and constructed in accordance with the Part 360 requirements in effect at that time, and consists of an 18-inch-thick low permeability clay cap overlain by a minimum 12-inch-thick vegetated growing medium. Patrol roads provide access, and a system of gabion chutes, benches and ditches collect stormwater runoff which is directed to recharge basins. The purpose of the Part 360 landfill cap is to prevent infiltration of precipitation, thereby minimizing the amount of leachate generated by the OBL. Based on the current condition of the landfill cap, as discussed previously in Section III of this PRR, it is in good condition overall and therefore presumed to be effective in preventing infiltration of precipitation. No changes are proposed at this time.

The LFG collection system consists of 36 perimeter gas collection wells, approximately 9,000 feet of transmission header, and a blower station. Previously, it also had three interior wells, which have been abandoned; and a thermal oxidizer, which is no longer in operation. Since May of 2008, the low-concentration LFG collected by the perimeter wells has been vented directly to the atmosphere. The purpose of the LFG collection system is to prevent lateral subsurface migration of LFG. Based on the most recent zero-percent LFG migration survey, and perimeter well and building/structure monitoring, this objective is being met. Specifically, the survey and monitoring indicated that no gas is present at the OBL boundary, at the OBSWDC property line, or within the accessible, existing on-site buildings and structures.

As reported previously in Section III, the thermal oxidizer became inoperable in May 2008, primarily due to diminishing LFG methane content, and would have required extensive rehabilitation in order to be returned to service. Therefore, to continue preventing off-site gas migration while protecting air quality, the three remaining interior wells were disconnected and the LFG perimeter collection system continues to operate. The low-concentration LFG is directly-vented to the atmosphere. An assessment by the Town's air monitoring consultant determined that this modification does not exceed the permitting threshold or significantly impact ambient-air quality. This finding is supported by the results of subsequent quarterly ambient air monitoring rounds. In 2011, the Town

requested approval to cease operation of the LFG thermal oxidizer permanently and continue direct-venting of the low-concentration LFG collected by the perimeter wells. The NYSDEC approved the Town's request in a letter dated October 17, 2012; and the Town implemented the weekly monitoring for methane requested by the NYSDEC. The results of this monitoring indicate that methane concentrations of the exhaust are currently approximately one-fourth the 2008 values that were used to determine that this modification does not result in air-quality impacts. In 2016, the Town also implemented annual monitoring of the exhaust for VOCs at the request of the NYSDEC. The results of the first round of this monitoring indicate that exhaust VOC concentrations are lower than the NYSDEC DAR-1 SGCs and that total VOC emissions are below permitting thresholds. The concentrations of three VOCs in the exhaust are higher than their NYSDEC DAR-1 AGCs, but will be diluted by dispersion. Therefore, the modification continues to be acceptable and no changes are recommended at this time.

The LTF consists of leachate pumps, an equalization basin, physical/chemical treatment equipment, sludge drying beds, and a storage facility; and is permitted to discharge up to 144,000 gallons of treated leachate per day. The LTF effluent meets permit requirements. The quality of the OBL leachate has improved over time. In early 2016, the Town received County approval to discharge the OBL leachate directly to the sewer system. A bypass has not yet been constructed. The Town's discharge permit expires on August 31, 2017, but will be renewed. No changes are recommended at this time.

IC/EC Certification

The Institutional and Engineering Controls Certification Form provided by the Department has been completed as appropriate and is provided at the end of this section on Pages 17a-e.

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 130001

Site Name Old Bethpage Landfill

Site Address: Bethpage-Sweethollow Road Zip Code: 11804
City/Town: Old Bethpage
County: Nassau
Site Acreage: 65.0

Reporting Period: ~~May 31~~, 2016 to May 31, 2017
June 1

	YES	NO
1. Is the information above correct?	☐	☒
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? *On October 1, 2016, the NYSDEC took over operation of the GTF and Recovery Wells RW-1 and RW-2 were shut down.	☒*	☐
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Industrial	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☒*	☐

* Deed restriction filed with County Clerk's Office on June 30, 2017.

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Not Applicable
Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 130001 Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
47-153-8	TOWN OF OYSTER BAY	

Part 360 Deed Restriction
Monitoring Plan
Site Management Plan (SMP)
O&M Plan (Serves as SMP)

Decision document: Consent Decree signed March 1988. The Consent Decree required the Town to design, construct, operate, maintain, and monitor remedial activities at the Old Bethpage Landfill. Details of the activities are provided in the Consent Decree, but also summarized below:

1. Install a system of groundwater recovery wells;

2. Operate and maintain these groundwater recovery wells to create a hydraulic barrier and to attain specified groundwater criteria;

3. Treat and discharge the extracted and collected groundwater in compliance with the site groundwater and air discharge requirements;

4. Complete, maintain, and monitor the current capping and gas and leachate collection programs as per the closure requirements of New York State Regulation 6 NYCRR Part 360;

5. Carry out and comply with the requirements for sampling, analysis and health and safety.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
47-153-8	Groundwater Treatment System Vapor Mitigation Cover System Groundwater Containment Leachate Collection Fencing/Access Control

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Not Applicable

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 130001

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Richard W. Lenz, PE (print name) at 150 Miller Place, Syosset, NY 11791 (print business address),

am certifying as Commissioner, Town of Oyster Bay DPW (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification — Date: 6/29/17

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Matthew Russo, PE (print name) at 150 Miller Place, Syosset, NY 11791 (print business address),

am certifying as a Professional Engineer for the Town of Oyster Bay DPW (Owner or Remedial Party)

Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

6/30/17

Date

(Required for PE)

V. Monitoring Plan Compliance Report

The current components of the monitoring plan for the OBL are summarized below:

COMPONENT	FREQUENCY OF MONITORING				
	ANNUAL	QUARTERLY	MONTHLY	WEEKLY	OTHER
GTF-RELATED WATER-QUALITY MONITORING					
GTF influent and effluent			X (SPDES)*	3X/Week*	
5 Town recovery wells				X*	
16 Town monitoring wells		X*			
Claremont Site split-samples		X*			
Post-Termination RW-1 and RW-2					X**
LFG COLLECTION SYSTEM MONITORING					
Perimeter collection system exhaust	X (VOCs)			X (Methane)	
Zero percent migration survey	X				
LEACHATE COLLECTION AND TREATMENT SYSTEM MONITORING					
Self-monitoring and reporting					2X/Year
Permit renewal					1X/3 Yrs
SUPPLEMENTAL MONITORING OF AMBIENT AIR AND SOIL GAS					
Ambient air quality at 3 locations	X				
Soil-gas quality at 6 locations	X				
Soil-gas pressure at 3 locations	X				
Perimeter mon. wells for methane	X				
Buildings/structures for methane	X				

* This monitoring ended on September 30, 2016 with NYSDEC takeover of the GTF.
** Semiannual monitoring of 13 wells for RAP parameters for three years, and reporting.

The status of each type of monitoring during the reporting period is summarized below:

- Self-monitoring of the GTF influent and effluent for selected performance-related parameters, such as dissolved oxygen, iron and manganese, was performed on an approximately weekly basis through September 2016. Monitoring of the influent and effluent for VOCs was performed approximately three times per week through September 2016 to assess the treatment efficiency of the air stripper. These inorganic parameter results were provided in the RAP Reports. These VOC results are summarized in Section III of this PRR.
- SPDES permit equivalency monitoring of the GTF influent and effluent by an outside laboratory was performed on a monthly basis through September 2016. The effluent results are discussed and compared to discharge limits in the RAP Reports. The SPDES permit equivalency expired on May 11, 2016. The Town submitted a renewal application to the NYSDEC on March 31, 2016. The Town understands that the renewal was in place through September 2016.
- Self-monitoring of the Town's five recovery wells for VOCs was performed approximately once per week, weather permitting, on an ongoing basis year-round through September 2016. These VOC results are provided in the RAP Reports and are summarized in Section III of this PRR.

- Monitoring of the 16 Town wells specified in the Consent Decree was performed on a quarterly basis for the parameters listed in Table 6 of the RAP through September 2016. The results are provided in the RAP Reports. The most current results for this reporting period, from August 2016, were discussed in Section III of this PRR. Well MW-6A could not be sampled during the third quarter 2016 monitoring round because it was dry.
- VOC analyses of split-samples from additional Town monitoring wells and Claremont Site monitoring wells was performed on a quarterly basis through September 2016. The results are included in the quarterly RAP Reports. The most recent results, from September 7, 2016, were submitted to the NYSDEC in the Third Quarter 2016 RAP Report, and therefore are not included in this PRR.
- The first round of post-termination monitoring for Recovery Wells RW-1 and RW-2 was performed in June 2017. The results will be provided in a separate report.
- The perimeter LFG collection system continued to operate at either 500 or 960 cfm depending on the blower configuration utilized. Monitoring of the exhaust from the perimeter LFG collection system for methane was performed on weekly basis, and indicated that the average methane concentration of the exhaust is currently approximately one-fourth the 2008 value used to determine that direct venting to the atmosphere does not result in air-quality impacts. The first round of annual monitoring of the exhaust for VOCs was performed during this reporting period, and indicates that VOC levels in the exhaust are also suitably low. Therefore, direct-venting of the LFG perimeter collection system exhaust continues to be acceptable.
- The results of the most recent zero gas migration survey, performed at the start of this reporting period, indicate that landfill gas is not migrating beyond the landfill cap boundary. These results are consistent with the results of the annual perimeter well and building/structure monitoring, which did not detect methane.
- Self-monitoring and reporting of the treated LTF effluent was performed semiannually during the reporting period. These results are not included in the RAP Reports. Therefore, the most current available monitoring results, for the sample collected on September 8, 2016, are provided in Appendix A of this PRR. They indicate that the effluent meets permit requirements.
- Monitoring of ambient-air quality, soil-gas quality and soil-gas pressure was performed during the second quarter of 2016. The results were presented in the quarterly and annual RAP Reports. They continue to indicate that the OBL had very little or no impact on ambient air VOC concentrations and that background air quality and/or off-site sources are likely the primary sources of most of the VOCs detected in both the upwind and downwind samples. Some VOCs were detected in the soil gas samples, but at concentrations much lower than the NYSDEC DAR-1 SGCs. Except for occasional slightly positive readings at a location within the OBSWDC property boundary, soil-gas pressures were zero to slightly negative indicating proper function of the perimeter LFG collection

system. These results are consistent with previous quarterly ambient-air and soil-gas monitoring results.

Based on the above information, there were no significant monitoring deficiencies during this reporting period. As noted above, the results from the first round of post-termination monitoring for Recovery Wells RW-1 and RW-2 will be provided in a separate report.

VI. Operation & Maintenance (O&M) Plan Compliance Report

The remedial program for the OBL predates the requirements for the preparation of a site management plan. The requirements of the RAP are stipulated in the Consent Decree. The operation and maintenance requirements for the RAP systems are included in the individual O&M (operation and maintenance) manual for each system. These O&M manuals provide general guidance to resolve issues that could be expected to occur during system operation. The Consent Decree also stipulates reporting and data requirements during the operating period. RAP Reports were prepared and submitted to the NYSDEC quarterly through the third quarter of 2016. With NYSDEC takeover of the GTF on October 1, 2016, RAP reports are no longer required. The results of post-termination monitoring for Recovery Wells RW-1 and RW-2 will be submitted in cumulative and final post-termination monitoring reports. O&M manuals for the GTF were provided to the NYSDEC prior to September 30, 2016.

In addition to the RAP systems, the OBSWDC contains the Town's solid waste management facilities including a municipal solid waste transfer station, a scale-house facility, recyclables facilities, yard waste transfer site, and CVM (Central Vehicle Maintenance) facility. Therefore, the Town has a staff of approximately 20 employees onsite who conduct the operation and maintenance activities. Consequently, visual inspections are typically performed on a daily basis and routine maintenance is subsequently performed by Town forces as necessary. When maintenance requirements are beyond the abilities of Town personnel, contracts are prepared to conduct the maintenance or repair work.

The following paragraphs provide a description of typical operation and maintenance activities for each of the RAP systems, and the activities performed during this reporting period.

Ground Water-Treatment Facility

Typical operation and maintenance activities for the GTF through September 2016 included: inspection and routine maintenance of the recovery well pumps, vaults, appurtenances; GTF influent/effluent pumps; air stripper tower, blower and media; control panel; building facilities and recharge basins. In-house laboratory analysis of GTF influent and effluent for operational purposes was performed on an ongoing basis.

In addition to these routine activities, the following maintenance/repair work was completed by the Town through September 2016:

- The pressure change across the air stripper media, which could be indicative of a renewed buildup of fouling, was monitored on an approximately weekly basis and were lower than the recommended acid-rinse threshold in the O&M Manual.
- The pressure-relief valve on the influent pipeline connecting the recovery wells to the GTF was replaced because it developed a leak.
- The strainer on the influent pipeline to the air stripper was cleaned.

Landfill Capping System

Typical operation and maintenance activities for the landfill cap system include: inspection and routine maintenance of cap surface including mowing vegetation during the growing season; filling in areas where material may have settled or eroded to maintain proper slopes; removing vegetation and/or debris from drainage ditches; and maintaining surface material in access roads and benches. Work during this reporting period included mowing vegetation, ditch maintenance and repair of eroded areas.

Landfill Gas Control System

Typical operation and maintenance activities for the LFG control system include: inspection and routine maintenance of extraction wells; header pipe; blower station, controls and the exhaust. Activities during this reporting period included weekly monitoring of the perimeter collection system exhaust for methane and one round of annual monitoring of the exhaust for VOCs, to ensure that emissions continue to be acceptably low. A break in the header pipe was repaired, and a corroded connection on the power supply line to the facility was replaced.

Leachate Treatment Facility

Typical operation and maintenance activities for the LTF include: inspection and routine maintenance of leachate collection well vaults, pumps, appurtenances; influent/effluent pumps; tanks; building facilities; controls; equalization basin and sludge drying beds. The effluent was also monitoring semiannually for permit-required parameters and is in compliance with discharge limits. The Town has received County approval to discharge leachate directly to the sewer system without treatment, but a bypass has not yet been constructed. The LTF discharge permit expires on August 31, 2017 but will be renewed.

VII. Overall PRR Conclusions and Recommendations

Based on the above information, the Town concludes that during this reporting period it complied with the intent of Consent Decree Civ. 5357, as well as the institutional and engineering requirements that are still applicable to the OBL. This conclusion in based on the following key determinations:

- The Town operated the five recovery wells and GTF to the extent feasible through September 2016, and ground-water quality continued to improve based on the available data.
- The Town performed ground-water monitoring on a quarterly basis through the third quarter of 2016, as per the Consent Decree, to monitor the progress of the ongoing remediation. The Town also voluntarily analyzed quarterly split-samples from selected Claremont Site wells for VOCs through the third quarter of 2016.
- The Town initiated post-termination monitoring for Recovery Wells RW-1 and RW-2 and performed the first round of this monitoring in late June 2017. The results will be submitted to the NYSDEC in a separate report.
- The Town maintained the Part 360 cap in good condition, thereby preventing infiltration of precipitation and minimizing the amount of leachate generated by the OBL.
- The Town operated the perimeter LFG collection system to the extent possible, and maintained a zero percent LFG migration line at the OBL boundary based on the May 31 and June 1, 2016 zero-percent LFG migration survey and June 7, 2016 perimeter gas well and building/structure monitoring results.
- The Town monitored the perimeter LFG collection system exhaust weekly for methane and performed one annual monitoring round for VOCs, and the results continued to indicate that emissions are acceptably low. The Town also repaired the header pipeline and replaced a corroded connection on the power supply.
- The Town operated the LTF, and its current three-year discharge permit does not expire until August 31, 2017. Self-monitoring and reporting was performed twice per year as required, and the LTF effluent continued to meet permit limits. Due to improved leachate quality, the Town recently obtained permission to discharge the leachate untreated to the County sewer system.
- The Town performed regular inspection, and maintenance as appropriate, of the GTF, gas collection system, Part 360 cap, LTF and related appurtenances as required in the respective O&M Manuals for the OBSWDC. During this reporting period the Town replaced the leaking pressure- relief valve on the influent pipeline, and cleaned the partially-clogged strainer on the air stripper influent line.
- The Town performed the supplemental monitoring of ambient-air quality, soil-gas quality and soil-gas pressure, and the results continued to show that the OBL does not significantly impact ambient air quality at the OBSWDC.

- The Town compiled the GTF operational data, and the ground-water and supplemental ambient air and soil gas monitoring data, compared it to Consent Decree limits, termination criteria and discharge limits, and submitted RAP reports to the NYSDEC through the third quarter of 2016. After takeover of the GTF by the NYSDEC on October 1, 2016, RAP reports were no longer required.
- The Town has filed the deed restriction document required under 6NYCRR Part 360 with the Office of the County Clerk.

Accordingly, the Town believes that during this reporting period the RAP was performed adequately and achieved the remedial objectives for the OBL.

APPENDIX A

Laboratory Results for September 8, 2016 LTF Effluent Sample

Pace Analytical
575 Broad Hollow Road , Melville, NY 11747
TEL: (631) 694-3040 FAX: (631) 420-8436
NYSDOH ID#10478 www.pacelabs.com

LABORATORY RESULTS

Results are only for the samples and analytes requested.

The lab is not directly responsible for the integrity of the sample before receipt at the lab and is responsible only for the tests requested.

Town of Oyster Bay
150 Miller Place
Syosset, NY 11791
Attn To : Matt Russo
Collected : 9/8/2016 10:35:00 AM
Received : 9/8/2016 10:55:00 AM
Collected By CLIENT

Lab No. : 1609563-001
Client Sample ID: LTF EFFLUENT

Sample Information:
Type : Aqueous

Origin: Effluent

Analytical Method: SW6010C : Prep Method: SW3005A Prep Date: 9/21/2016 11:00:00 AM Analyst: CGZ

Parameter(s)	Results	Qualifier	D.F.	Units	Analyzed:	Container:
Copper	< 0.025		1	mg/L	09/21/2016 9:34 PM	Container-01 of 01
Lead	< 5.0		1	ug/L	09/21/2016 9:34 PM	Container-01 of 01
Zinc	< 0.020		1	mg/L	09/21/2016 9:34 PM	Container-01 of 01

Analytical Method: SM22 4500-CL-E : Analyst: bka

Parameter(s)	Results	Qualifier	D.F.	Units	Analyzed:	Container:
Chloride	602	D	20	mg/L	09/09/2016 4:10 PM	Container-01 of 01

Analytical Method: E410.4 : Analyst: VaS

Parameter(s)	Results	Qualifier	D.F.	Units	Analyzed:	Container:
Chemical Oxygen Demand	537	D	2	mg/L	09/09/2016	Container-01 of 01

Analytical Method: SM4500-H B : IOC Analyst: J G

Parameter(s)	Results	Qualifier	D.F.	Units	Analyzed:	Container:
pH	8.1	H +	1	pH Units	09/10/2016 2:06 PM	Container-01 of 01
pH Temperature	16.9	H +	1	°C	09/10/2016 2:06 PM	Container-01 of 01

Analytical Method: SM22 2540D : Analyst: SH2

Parameter(s)	Results	Qualifier	D.F.	Units	Analyzed:	Container:
Suspended Solids (Residue, Non-Filterable)	< 10.0		1	mg/L	09/12/2016 5:42 PM	Container-01 of 01

Qualifiers: E = Value above quantitation range, Value estimated.
B = Found in Blank
D.F. = Dilution Factor D = Results for Dilution
c = Calibration acceptability criteria exceeded for this analyte.Value estimated
H = Received/analyzed outside of analytical holding time
J = Estimated value - below calibration range
M-, M+ = Matrix Spike recovery below / above control limit
N = Indicates presumptive evidence of compound
P = Duplicate RPD outside of control limit
r = Reporting limit below calibration range. Value estimated.
S = Recovery outside of control limits for this analyte
+ = NYSDOH ELAP does not offer certification for this analyte / matrix / method

Client Services Manager : Jennifer Aracri

Test results meet the requirements of NELAC unless otherwise noted.

Date Reported : 9/23/2016

APPENDIX B

Documentation of Deed Restriction Filing

Official Receipt for Recording in:

Nassau County Clerk
240 Old Country Road
Mineola, NY 11501

Issued To:
LOCKWOOD KESSLER & BARTLETT
1 AERIAL WAY
SYOSSET NY

Recording Fees

Filing Type / Number Volm Page Time		Recording Amount
D06 - AGREEMENT		
00064425 13527 00197 02:06:36p		80.00
CS Coversheets	5.00	
CU CULTURAL EDUCATION	14.25	
CV CULTURAL ED COUNTY	.75	
FA Flat rate .25	.25	
FI Flat rate 4.75	4.75	
KC Page 1 @ 8.00, 3.00	55.00	
DR-OYSTER BAY TOWN OF		
Blocks - Deeds - $300		
00064425	02:06:36p	300.00
BL Blocks	300.00	
		380.00

Collected Amounts

Payment Type		Amount
Check	24916	380.00
		380.00

Total Received :	380.00
Less Total Recordings:	380.00
Change Due :	.00

Thank You
MAUREEN OCONNELL - County Clerk

By - 001 GJS

DECLARATION OF RESTRICTIVE COVENANTS

TOWN OF OYSTER BAY, a municipal corporation, with a business address of 54 Audrey Avenue, Oyster Bay, New York 11771, fee owner of the property located in Old Bethpage, Town of Oyster Bay, County of Nassau, State of New York (known as the former Old Bethpage Landfill) located within the boundaries of the Old Bethpage Solid Waste Disposal Complex (OBSWDC), said premises constituting 65 acres as more fully shown by a dashed line on the Site Plan attached as Exhibit 1 hereto, and designated as Section 47, Block 153, Lot 3 and portions of Lots 2 and 8 on the Land and Tax Map of Nassau County, does by this Declaration, dated May 31, 2017, declare as follows:

WHEREAS, the former landfill operated between 1958 and 1986 as a municipal solid waste (MSW) landfill. It primarily received ash from two former on-site MSW incinerators, but also received refuse, wastes and garbage from private, municipal, and commercial sources. In addition to these wastes, industrial wastes from local industries, potentially containing hazardous substances, were disposed in the landfill from the late 1960s through the early 1970s. Since closure of the former landfill in 1986, the OBSWDC has been utilized by the Town as a solid waste management facility and public works complex; and

WHEREAS, in 1988, the Declarant entered into Consent Decree CV-83-5357 with the State of New York to remediate the former landfill. The Town implemented a remedial action in accordance with the requirements of the Consent Decree and the Record of Decision (jointly declared by the State of New York and the United States Environmental Protection Agency). In general, this remediation consisted of the construction of a 6 NYCRR Part 360 cap and stormwater management system over the landfilled area; a ground-water plume recovery and treatment system; a landfill gas control system; and a leachate collection and treatment system. The remedial documents have been filed with the New York State Department of Environmental Conservation (NYSDEC) and are publicly available. Copies of the key documents are also archived at the Plainview-Old Bethpage Public Library located at 999 Old Country Road, Plainview, New York 11803; and

Sec. 47
Blk. 153
Lot 3
POL 2 & 8

WHEREAS, certain restrictions have been placed on the use of the above-listed property to protect the integrity of the final cover, cap, or any other components of the containment system, and the function of the monitoring or environmental control systems which shall not be disturbed, unless approved by the NYSDEC. These restrictions are necessary to protect human health and the environment from exposure to residual contamination, landfill gas and/or contaminated ground water; and

WHEREAS, the execution and filing of this Declaration was authorized by the Town Board of the Town of Oyster Bay, by Resolution 490-2016, adopted on September 6, 2016,

NOW, THEREFORE, said Declarant does hereby covenant and declare as follows:

1. Day-to-day activities at the property must not breach the integrity of the landfill cap, cover or any other components of the containment system; or disturb or disrupt the integrity and function of the various monitoring systems unless necessary to comply with the requirements of 6NYCRR Part 360-2.20 or superseding regulation(s); or otherwise increase the potential hazard to human health and the environment posed by the residual contamination, landfill gas and/or contaminated ground water.
2. Due to the presence of a contaminated ground-water plume beneath the former landfill, no water supply wells may be installed on the above-listed property without prior written approval of the NYSDEC (or its successor agency).
3. No structures or buildings of any type may be built on the above-listed property within the footprint of the former landfill without the prior written approval of the NYSDEC (or its successor agency) and the Town of Oyster Bay (if applicable).

The NYSDEC (or its successor agency) shall approve disturbances if the property owner or operator demonstrates that disturbance of the final cover, cap or other components of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment due to exposure to residual contamination and/or landfill gas.

The restrictions and covenants contained in this instrument are to run with the land and shall be binding upon each and every parcel and each and every conveyance in the future. If any future owners of the property set forth above, their heirs or assigns shall violate any of the covenants in this instrument, it shall be lawful for any other person owning real property in the restricted area of the Town of Oyster Bay, County of Nassau or the NYSDEC to prosecute any proceedings at law or in equity against the person or persons violating any of the covenants to either prevent them from so-doing or to recover damages for the violation, or both.

IN WITNESS WHEREOF, the Declarant has hereunto set its hand and seal the day and year first above written.

Joseph S. Saladino

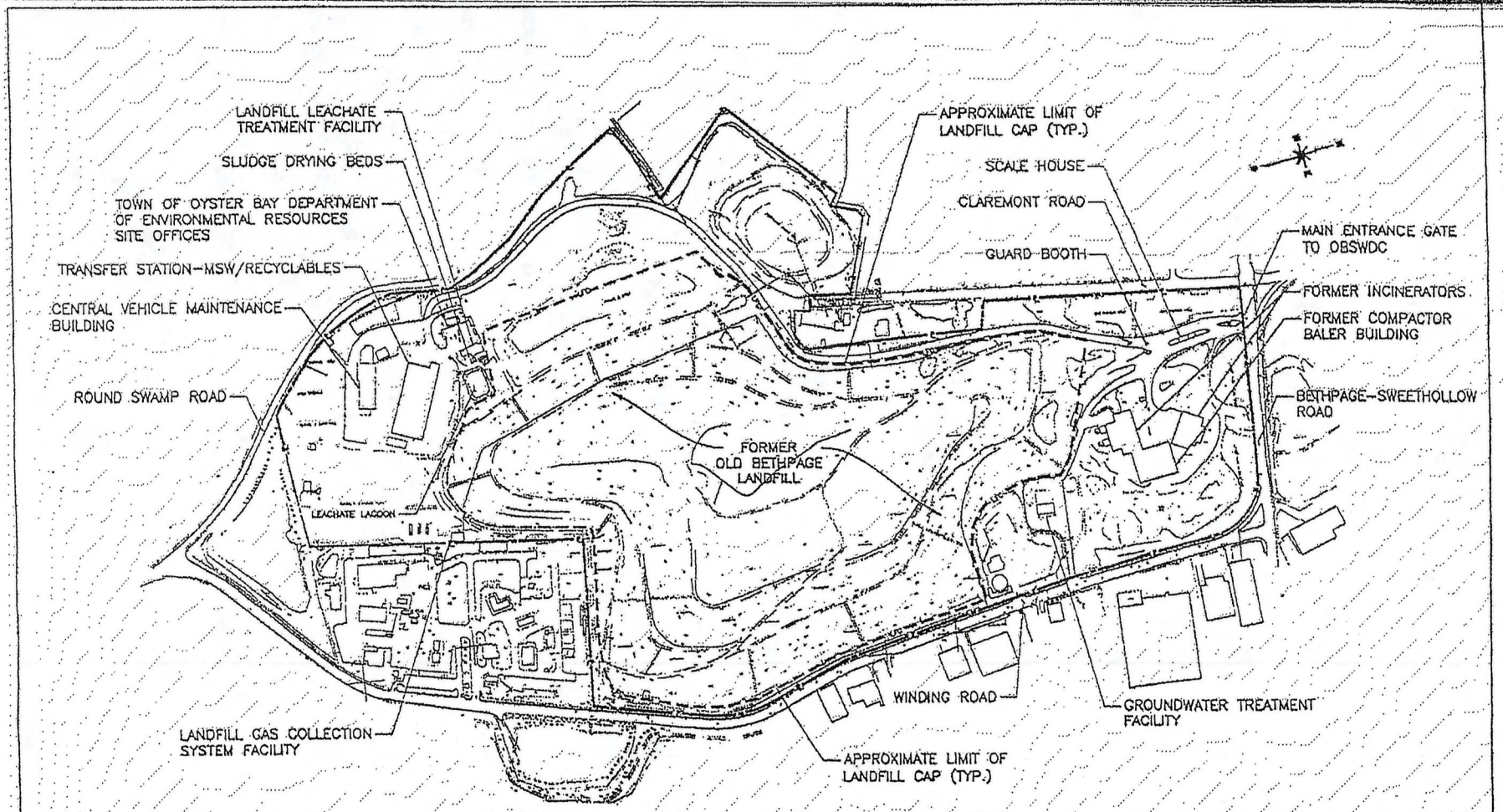
JOSEPH S. SALADINO, Supervisor
Town of Oyster Bay

STATE OF NEW YORK)
COUNTY OF NASSAU) ss.:

On the 31st day of May, in the year 2017 before me, the undersigned, personally appeared JOSEPH S. SALADINO, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

GREGORY W. CARMAN, JR.
Notary Public, State of New York
No. 02CA5000524
Qualified in Nassau County
Commission Expires Aug. 17, 2018



	TOWN OF OYSTER BAY	LKB LOCKWOOD, KESSLER & BARTLETT, INC. CONSULTING ENGINEERS SINCE 1909 SYOSSET, NEW YORK	OLD BETHPAGE SOLID WASTE DISPOSAL COMPLEX	DESIGN BY: - DRAWN BY: F.E. CHECKED BY: T.H. DATE: JULY 20,2010 SCALE: AS SHOWN	PROJECT NO: 8513-00 DRAWING NO: EXHIBIT 1
			SITE PLAN		

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being at Bethpage, Town of Oyster Bay, County of Nassau, State of New York, bounded and described as follows ;

Beginning at the point on the easterly boundary line of Round Swamp Road (Highway from Farmingdale to Syosset), said point being distant 830.83 feet southerly from the intersection of the southerly line of Claremont Street (Smiths Road) with the easterly line of Round Swamp Road (Highway from Farmingdale to Syosset) when measured along the last mentioned boundary Line;

THENCE through the property of Nassau Brick Company and along the proposed southerly line of property to be acquired by the Town of Oyster Bay South 68 degrees 31 minutes 16 seconds east 1152.67 feet to the westerly boundary line of property of Nassau County;

THENCE along said westerly boundary line South 21 degrees 35 minutes 24 seconds West 759.95 feet to the northerly boundary line of property now or formerly Bethpage Park Authority;

THENCE along said northerly property line North 78 degrees 39 minutes 37 seconds West 27.50 feet;

THENCE North 80 degrees 11 minutes 06 seconds West 291.71 feet;

THENCE North 79 degrees 41 minutes 07 seconds West 264.47 feet to the easterly boundary line of Round Swamp Road (Highway from Farmingdale to Syosset);

THENCE along said easterly boundary line North 45 degrees 15 minutes 36 seconds West 19.61 feet;

THENCE along a curve bearing to the right having a radius of 860.52 feet and a length of 21.07 feet;

THENCE North 35 degrees 29 minutes 26 seconds West 205 .73 feet;

THENCE North 37 degrees 42 minutes 21 seconds West 35.09 feet;

THENCE along a curve bearing to the right having a radius of 860.52 and a length of 431.49 feet;

THENCE North 19 degrees 21 minutes 14 seconds East 249 .23 feet;

THENCE North 10 degrees 55 minutes 06 seconds West 136.10 feet;

THENCE North 20 degrees 07 minutes 06 seconds West 19.16 feet to the point and place of beginning, containing 811,964 square feet, 18.640 acres more or less.

DECLARATION OF RESTRICTIVE COVENANTS
for the OLD BETHPAGE LANDFILL
SECTION 47, BLOCK 153, LOT 3 and PORTION OF LOTS 2 & 8

JOSEPH NOCELLA
TOWN ATTORNEY
TOWN OF OYSTER BAY
Attorneys for Defendant Town
54 Audrey Avenue
Oyster Bay, New York 11771
(516) 624-6150
(516) 624-6196 (facsimile)