UPPER MERION TOWNSHIP BOARD OF SUPERVISORS
AUGUST 2, 2018 WORKSHOP MEETING ~ 7:30 PM

AGENDA

1. Meeting Called to Order.
2. Pledge of Allegiance.
3. Roll Call.
4. Chairman's Comments:
5. Discussions:
   A. Development Plan 3500 Horizon Boulevard. Add 32,707 sq ft., 2 - story building addition to existing 67,293 sq ft. building. 100,000 sq ft building will be used for office/research development. 10.23 acres, SM-1 Suburban Metropolitian. *Plan Expiration: 10/1/18*
   B. Development Plan Wright Partners: 243 S. Henderson Road, Construction of a 6,783 sq. ft, auto service building with 8 bays and a 2,572 sq ft fast food drive-thru restaurant w/associated parking, access roads, lighting, landscaping, utilities and stormwater management. 1.96 acres, GC General Commercial**.** *Plan Expiration: 8/17/18* **Tentative**
   C. GSK Termination Agreement of Methane Gas Monitoring
   D. Revising Board Policy re: Citizen Boards
6. Adjournment.

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June 19, 2018

Trimpi Associates, Inc.
1635 Old Plains Rd.
Pennsburg, PA 18073
(215) 679-7134
Fax (215) 679-3661

Ms. Camelia Draghiciu and Mr. Anil Patel
Pennsylvania Department of Environmental Protection
Waste Management Program
2 East Main Street
Norristown, PA 19401

Re: Passive Landfill Gas Monitoring Report
Montgomery County Landfills No. 1 and 2
Upper Merion Township and Borough of West Conshohocken
Montgomery County
Permit Nos. 100355 and 101085

Dear Ms. Draghiciu and Mr. Patel:

Trimpi Associates, Inc. (TAI) prepared this Passive Landfill Gas Monitoring Report to provide the Pennsylvania Department of Environmental Protection (PADEP) with the results of the May 2018 monitoring activities at the referenced property. The monitoring activities were conducted in accordance with the Landfill Gas Monitoring Plan dated September 6, 2012 (Monitoring Plan). A Site Diagram is provided as Figure 1.

1.0 Passive Vent Monitoring

The passive vents were installed and in operation since October 2014. The following current list of gas wells have been retrofitted with passive vents and are monitorable:

Landfill 1: 1, 3, 7, 8, 9, 10, 11, 12, 13, 14, 21, and 22.
Landfill 2: 3, 4, 5, 6, 7, 9, 13, 14, 17, 19, 21, 23, 24, L2-1, L2-2, L2-5, L2-6, and Trap.

1.1 Passive Vent Odor Evaluation

In accordance with the Monitoring Plan, TAI field personnel used olfactory senses to evaluate landfill gas nuisance odors emanating from the passive vent system during seven (7) quarterly site visits completed from October 28, 2016 through May 21, 2018. Table 1 provides the observations for each landfill gas well during the most recent quarterly event (May 21, 2018). Table 2 provides the observations for the most recent quarter for the monitoring wells and landfill boundaries.

Landfill gas odors were noticeable in the immediate vicinity of the following wells:

- Landfill 1: 1, 9, 10 and 12
- Landfill 2: 4, 5, 13, 17, 19, 21, L2-2, L2-5 and L2-6

The landfill gas odors were only detectable within a few feet of the wells and quickly dissipated with increased distance beyond 50 feet. The vents all remain 100% open.

1.2 Passive Vent Gas Monitoring

TAI collected gas measurements from the passive vent system to monitor the gas concentrations over time. The measurements were collected from the headspace of each vent using an RKI Instruments Eagle 2 Multi-Gas Meter during all seven (7) quarterly events. The meter was set up to monitor methane (CH_4), oxygen (O_2), carbon dioxide (CO_2), and lower explosive limit (LEL) on four (4) separate channels. The LEL is monitored with a CH_4 sensor. The Eagle 2 was calibrated in accordance with the manufacturer's instructions. The following wells consistently showed methane concentrations above 0% during the past seven (7) quarterly events:

- Landfill 1: 1, 3, 8, 9, 11 and 12
- Landfill 2: 3, 4, 5, 7, 9, 14, 17, 19, 21, 23, 24 and L2-6

Methane was present during one (1) or more events of quarterly monitoring but not consistently in the following wells:

- Landfill 1: 10, 13 and 22
- Landfill 2: 13, L2-2, L2-5 and Trap

1.3 Passive Vent Maintenance

Landfill cap maintenance is the responsibility of the site owner, GSK. It is essential that GSK and their contractors take the necessary steps to not damage permanently capped and/or functioning passive landfill gas wells. No damaged wells were identified on May 21, 2018.

2.0 Perimeter Landfill Gas Monitoring

In accordance with the Monitoring Plan, TAI monitored the landfill gas around the perimeter of the landfills during the seven (7) quarterly events. No landfill gas odors or detectable methane has been noted along the landfills perimeters.

2.1 Well Monitoring

TAI collected gas measurements from the following wells to monitor the migration of landfill gas:

Perimeter Wells: MW-2R, MW-4, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16,

MW-17, MW-20, V-1, and V-2.

Interior Wells: PZ-18 and PZ-19

Figure 1 shows the well locations. The wells were monitored for nuisance odors using olfactory senses. Then, measurements were collected from the headspace of each well in the same manner described above for the passive landfill gas wells. Table 2 provides the measurements for each well.

During the most recent quarterly event performed on May 21, 2018, MW-16 and PZ-19 had detectable methane concentrations (above 0%) with odors observed in PZ-19. All other monitoring wells did not contain detectable methane concentrations above 0%.

2.2 Boundary Odor Evaluation

TAI personnel used olfactory senses and methane gas readings to identify landfill gas nuisance odors at the north, west, south, and eastern landfill boundaries. No nuisance odors or measureable methane readings were recorded at the boundaries during any of the seven (7) quarterly events completed.

2.3 GSK Methane Barrier System (MBS)

GSK has operated the MBS since 1991. The system borders their facility adjacent to Landfills 1 and 2 and consists of 51 extraction wells. Montgomery County doesn't monitor the MBS. During the February 2018 quarterly event it appeared that the system had been turned back on (after being down during the last quarterly event in October 2017). The system was operational during the May 2018 quarterly event. GSK monitors and maintains the MBS. TAI and Montgomery County have not been provided with recent data from GSK's MBS monitoring. If GSK intends to permanently discontinue use of the MBS, it's anticipated that GSK will petition PADEP in writing and inform Montgomery County.

3.0 Landfill Surface Maintenance

Tall grass and vegetation were observed during the May 2018 quarterly site visit.

4.0 Conclusions

The results of the October 2016 through May 2018 landfill gas monitoring indicate the passive vent system is operating as designed. Nuisance odors and landfill gas were not identified at the landfill boundaries.

Please do not hesitate to contact me with any questions.

Sincerely,
Trimpi Associates, Inc.

Richard D. Trimpi, PG
Environmental Chemist / Hydrogeologist

cc: Ms. Nicole Martin – Montgomery County (by email – pdf)
John DaCosta, Lindsey Walata, Stu Gold, and Veronica Tovar-Careaga – GSK (by email pdf)

Figure 1 – Landfill Well Location Diagram
Table 1 – Passive Vent Landfill Gas Monitoring
Table 2 – Monitoring Well and Perimeter Landfill Gas Monitoring
Table 3. – Passive Landfill Gas, Methane Data, 2016-2018

Table 1
Passive Vent Landfill Gas Monitoring

Montgomery County Landfill
Upper Merion Township and Borough of West Conshohocken

Landfill 1 Gas Wells (Headspace)

Location	Testing Date	LEL %	CH_4 %	O_2 %	CO_2 %	Balance %	Odor	Notes
1	5/21/2018	100	**74.0**	0.1	25.9	0.0	Y	Pooled water near riser pipe approx. 20' away
3	5/21/2018	60	3.5	16.9	2.5	77.1	N	
7	5/21/2018	0	0.0	20.9	0.0	79.1	N	
8	5/21/2018	100	**64.0**	0.6	32.0	3.4	N	
9	5/21/2018	100	**64.0**	0.7	31.4	3.9	Y	Minor odor
10	5/21/2018	0	0.0	18.9	0.7	80.4	Y	Odor noticed initially, but dissipated
11	5/21/2018	100	**63.5**	6.9	3.1	26.5	N	
12	5/21/2018	100	**53.0**	6.1	22.0	18.9	Y	Pooled water near riser pipe approx. 15' away
13	5/21/2018	0	0.0	20.9	0.0	79.1	N	
14	5/21/2018	0	0.0	20.9	0.0	79.1	N	
21	5/21/2018	0	0.0	16.9	0.2	82.9	N	Animal holes near well
22	5/21/2018	100	**7.5**	9.2	10.5	72.8	N	

Landfill 2 Gas Wells (Headspace)

Location	Testing Date	LEL %	CH_4 %	O_2 %	CO_2 %	Balance %	Odor	Notes
3	5/21/2018	100	**40.0**	11.2	6.7	42.1	N	
4	5/21/2018	100	**66.5**	0.7	32.1	0.7	Y	Animal hole adjacent to point.
5	5/21/2018	100	**62.5**	0.0	34.0	3.5	Y	Slight, intermittent landfill odors from point.
6	5/21/2018	6.0	0.0	20.9	0.2	78.9	N	
7	5/21/2018	100	**62.0**	0.7	35.5	1.8	N	
9	5/21/2018	100	**67.0**	0.0	29.2	3.8	N	Intermittent, foul odor near well
13	5/21/2018	77	4.0	20.9	1.4	73.7	Y	Mild intermittent landfill odor in vicinity.
14	5/21/2018	100	**65.0**	0.6	31.0	3.4	N	Vent pipe higher than spec.
17	5/21/2018	100	**66.0**	1.0	30.0	3.0	Y	Intermittent landfill gas odor present from point.
19	5/21/2018	100	**33.0**	1.1	24.9	41.0	Y	Intermittent landfill gas odor near point.
21	5/21/2018	100	**56.5**	0.6	28.9	14.0	Y	
23	5/21/2018	100	**23.0**	15.1	6.6	55.3	N	
24	5/21/2018	100	**50.5**	2.8	29.4	17.3	N	
L2-1	5/21/2018	0.0	0.0	20.9	0.0	79.1	N	
L2-2	5/21/2018	100	**60.0**	0.0	29.0	11.0	Y	Cleared bird nest from inside point
L2-5	5/21/2018	100	**41.5**	0.6	30.7	27.2	Y	Intermittent landfill gas odor, visible gas emanating from point.
L2-6	5/21/2018	100	**77.5**	0.0	22.5	0.0	Y	Landfill gas odor present from point.
Trap	5/21/2018	40	0.0	20.9	0.6	78.5	N	Pooled water around point

1. Gas readings collected with a RKI Instruments Eagle 2 meter
2. Methane readings over 50% are highlighted and bolded
3. Methane readings over 5% are bolded
4. NA = Not Applicable

Table 2

Monitoring Well and Perimeter Landfill Gas Monitoring

Montgomery County Landfill

Upper Merion Township and Borough of West Conshohocken

Monitoring Wells

Location	Testing Date	LEL %	CH_4 %	O_2 %	CO_2 %	Balance %	Odor	Notes
MW-2R	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-4	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace. No expansion cap on well
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-10	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-11	5/21/2018	0	0.0	11.6	5.6	82.8	N	Headspace; readings at 13:30, ALS stopped purging gw at 11:00
	5/21/2018	0	0.5	8.9	8.1	82.5	N	After 60 second purge
MW-12	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace
	5/21/2018	0	0.0	20.8	0.0	79.2	N	After 60 second purge
MW-13	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace, needs label on outside of well.
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-14	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-15	5/21/2018	5	0.0	20.9	0.0	79.1	N	Headspace
	5/21/2018	5	0.0	20.9	0.0	79.1	N	After 60 second purge stagnant odor
MW-16	5/21/2018	100	**21.0**	2.3	17.5	59.2	N	Headspace, mild odor during purge.
	5/21/2018	100	**23.0**	2.4	18.7	55.9	N	After 60 second purge, stagnant odor at well head.
MW-17	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace, stagnant odor initially
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
MW-20	5/21/2018	0	0.0	20.9	0.0	79.1	N	Headspace, needs new label.
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge
PZ-18	5/21/2018	1	0.0	20.9	0.3	78.8	N	Headspace, stagnant odor, needs label.
	5/21/2018	0	0.0	20.9	0.0	79.1	N	After 60 second purge stagnant odor
PZ-19	5/21/2018	100	**25.0**	0.7	21.9	52.4	N	Headspace, stagnant mildew odor, needs label.
	5/21/2018	100	**22.5**	0.5	21.4	55.6	Y	After 60 second purge, minor landfill gas odor during purge.
V-1	5/21/2018	0	0.0	18.9	1.5	79.6	N	Headspace, needs label.
	5/21/2018	0	0.0	18.2	1.9	79.9	N	After 60 second purge
V-2	5/21/2018	0	0.0	19.7	0.7	79.6	N	Headspace, needs label.
	5/21/2018	0	0.0	20.1	0.8	79.1	N	After 60 second purge

Landfill Boundaries

Location	Testing Date	Odor
North	5/21/2018	N
South	5/21/2018	N
East	5/21/2018	N
West	5/21/2018	N

1. Gas readings collected with a RKI Instruments Eagle 2 meter
2. Methane readings over 50% are highlighted and bolded
3. Methane readings over 5% are bolded

Table 3
Passive Landfill Gas
Methane Data, 2016 - 2018

Montgomery County Landfill
Upper Merion Township and Borough of West Conshohocken

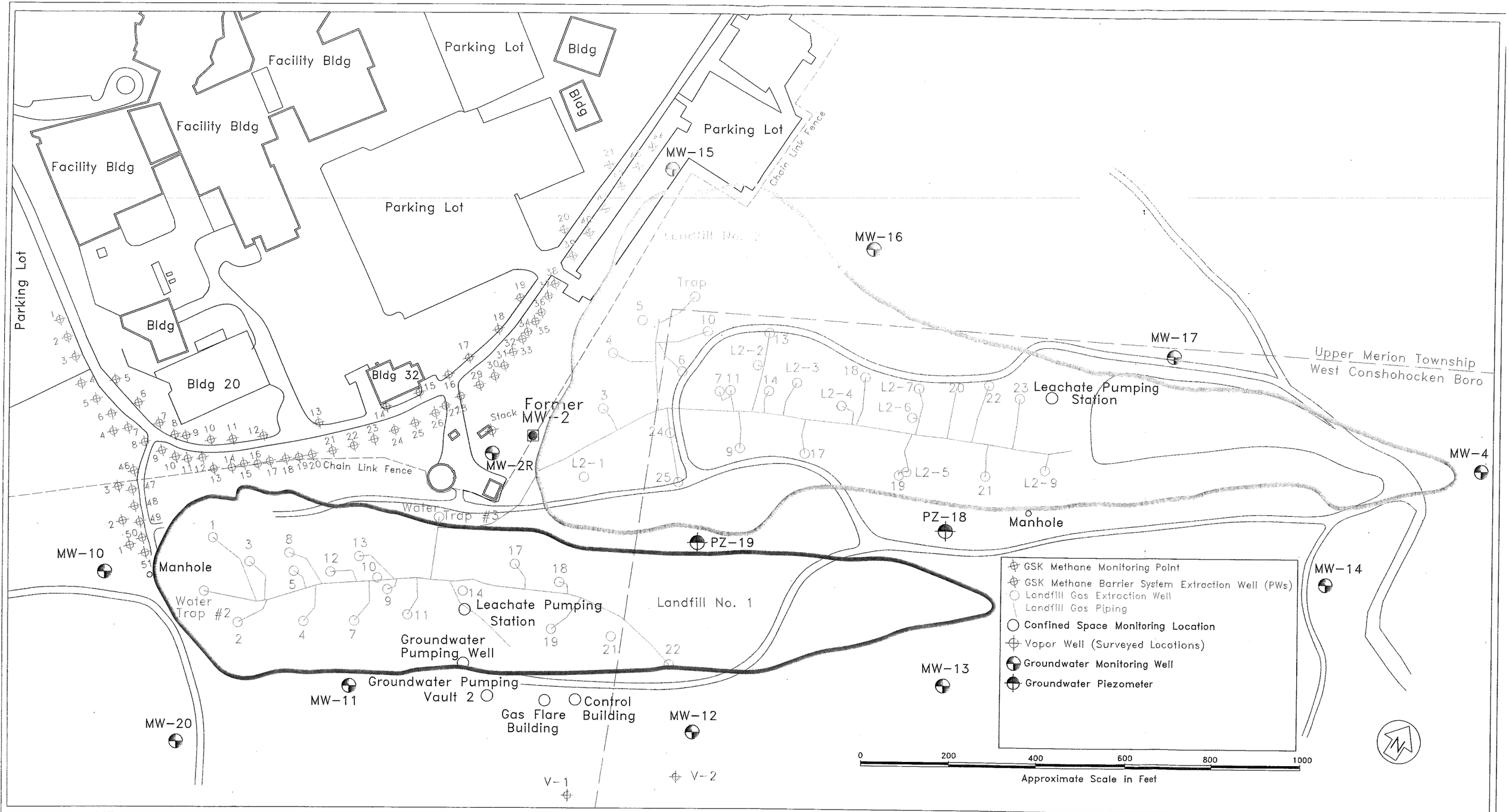
Landfill 1

Location	10/28/2016	1/27/2017	4/19/2017	7/18/2017	10/23/2017	2/22/2018	5/21/2018
1	**70.0**	**50.0**	**70.5**	**70.0**	**70.0**	**42.0**	**74.0**
3	**6.0**	**3.5**	**6.0**	**19.0**	**13.5**	**5.5**	3.5
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	**6.0**	**53.0**	**50.0**	**56.0**	**54.5**	**58.0**	**64.0**
9	**39.0**	**39.0**	**28.0**	**56.0**	**55.0**	**58.0**	**64.0**
10	**15.5**	0.0	0.0	**11.5**	**16.0**	0.0	0.0
11	**16.0**	**25.5**	**68.5**	**57.0**	**56.0**	**53.0**	**63.5**
12	**12.0**	**41.0**	**32.5**	**52.0**	**52.0**	**14.0**	**53.0**
13	0.0	0.0	0.0	0.0	**5.5**	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	**37.5**	**32.5**	**9.0**	**7.5**

Landfill 2

Location	11/1/2016	1/27/2017	4/19/2017	7/18/2017	10/23/2017	2/22/2018	5/21/2018
3	**53.0**	**14.5**	**14.0**	**41.9**	**33.0**	**14.0**	**40.0**
4	**55.0**	**58.0**	**58.5**	**57.5**	**56.0**	**61.0**	**66.5**
5	**53.0**	**45.0**	**58.0**	**56.5**	**56.0**	**58.5**	**62.5**
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	**55.0**	**46.5**	**57.0**	**53.5**	**55.5**	**54.5**	**62.0**
9	**60.0**	**26.5**	**57.0**	**60.5**	**50.0**	**23.0**	**67.0**
13	**7.0**	0.0	6.0	0.0	**11.5**	**6.5**	4.0
14	NM	**23.5**	**17.0**	**15.0**	**54.5**	**20.0**	**65.0**
17	**57.5**	**18.5**	**26.0**	**49.5**	**57.0**	**36.0**	**66.0**
19	**18.0**	**34.0**	**37.0**	**30.0**	**34.0**	**32.0**	**33.0**
21	**54.0**	**37.0**	**55.0**	**19.5**	**50.5**	**52.0**	**56.5**
23	**55.0**	**6.5**	**11.5**	**6.5**	**25.5**	**4.9**	**23.0**
24	**47.0**	**50.0**	**52.0**	**49.5**	**44.5**	**55.5**	**50.5**
L2-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
L2-2	**55.5**	**24.0**	**61.0**	0.0	**56.5**	**52.5**	**60.0**
L2-5	**39.0**	0.0	**40.0**	**36.5**	**38.5**	**40.0**	**41.5**
L2-6	**22.0**	**19.0**	**17.5**	**68.0**	**70.5**	**67.0**	**77.5**
Trap			3.0	0.0	0.0	0.0	0.0

Table Notes
1. Gas readings collected with a RKI Instruments Eagle 2 meter
2. Methane readings over 50% are highlighted and bolded
3. Methane readings over 5% are bolded



Montgomery County Landfill

Montgomery County, PA

Figure 1

Site Diagram

Prepared by: Trimpi Associates, Inc.

Date: 11/3/2017
Init: KL
DWG: Montco Gas Wells