August 27, 2015

Reference No. 038443-70

Ms. Jenny Davison
Remedial Project Manager
United States Environmental Protection Agency
Region V
77 West Jackson Boulevard
Mail Code SR-6J
Chicago, Illinois
60604

Original Sent via Email

Dear Ms. Davison:

Re: Groundwater Sampling Results
South Dayton Dump and Landfill
Moraine, Ohio

This letter provides a summary of the results of groundwater sampling conducted at the South Dayton Dump and Landfill (SDDL) Site and vicinity in May and June 2015. GHD has prepared this letter on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) for Remedial Investigation/Feasibility Study (RI/FS) of the Site, Docket No. V-W-06-C-852 (Respondents). The Respondents include Hobart Corporation (Hobart), Kelsey Hayes Company (Kelsey-Hayes), and NCR Corporation (NCR). These three Respondents are and have been performing the Work required by the ASAOC under the direction and oversight of the United States Environmental Protection Agency (USEPA).

The sampling event involved collection of groundwater samples from select monitoring wells where previous results indicated presence of volatile organic compounds (VOCs) at concentrations greater than specific criteria values[1] in order to characterize current conditions, as described in an e-mail to USEPA (Leslie Patterson) dated May 4, 2015. This included monitoring wells at the SDDL Site and at the adjacent Dayton Power and Light (DPL) site. Following USEPA approval, groundwater samples were collected from a total of 25 monitoring wells and analyzed for VOCs as outlined below.

- GHD initiated field activities on May 8, 2015. Groundwater levels were measured at all accessible monitoring wells and provided in Table 1. Well locations are shown on Figures 1 and 2.
- Groundwater samples were collected from 20 monitoring wells from May 11 to 15, 2015. Due to access considerations, sampling of 5 monitoring wells at the DPL site was postponed and subsequently completed from June 23 to 24, 2015.

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1 The criteria values applied for this purpose are USEPA Regional Screening Levels (RSLs) for tap water: Maximum Contaminant Levels (MCLs), from RSL tables last updated June 2015.

- Three monitoring wells that were originally proposed for sampling could not be sampled due to difficulties with access or well construction, including:
  - GW-6, located at the south end of DPL, is damaged (bent well casing) preventing pump placement
  - MW-223B, located in the central part of DPL, was not found and appears to be covered with asphalt paving
  - MW-228, located on Valley Asphalt property, is damaged due to the presence of concrete rubble around the well casing
- Low-flow well purging was conducted at a rate of 150 to 200 millilitres per minute (mL/min) using a bladder pump with dedicated Teflon tubing, and with the pump intake at the middle of the screen interval. Field parameters were recorded to determine stabilization before sampling. The field parameters include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, temperature, conductivity and turbidity. Well purging records are provided in Attachment 1.
- GHD submitted groundwater samples (32 total including 2 field duplicate sets, 3 trip blanks, and 2 equipment blanks) to Test America Laboratories in North Canton, Ohio for VOC analysis using USEPA SW-846 Method 8260B. Laboratory reports are available on request.
- Sampling and analysis activities were conducted consistent with the project-specific Field Sampling Plan and Quality Assurance Project Plan.
- Purge water was containerized for management as investigation-derived waste (IDW) and is temporarily stored at the SDDL Site pending characterization and off-site disposal.

GHD's data validation determined that the analytical results are acceptable for use with qualifications as noted in the memoranda provided in Attachment 2. The validated analytical results are shown in Table 2 attached with corresponding USEPA RSL MCLs for comparison. The detected VOCs and the corresponding maximum detected concentration are summarized in the following table.

VOC parameter	MCL (µg/L)	SDDL wells maximum detected value (µg/L)	DPL wells maximum detected value (µg/L)
1,1-Dichloroethane	--	1.2 J	ND
1,4-Dichlorobenzene	75	0.37 J	ND
2-Butanone (Methyl ethyl ketone) (MEK)	--	ND	9.9 J
Acetone	--	ND	53
Benzene	5	390	250
Chlorobenzene	100	1.7	ND
cis-1,2-Dichloroethene	70	480	290
Cyclohexane	--	0.58 J	200
Ethylbenzene	700	0.48 J	600
Isopropyl benzene	--	0.71 J	38

VOC parameter	MCL (µg/L)	SDDL wells maximum detected value (µg/L)	DPL wells maximum detected value (µg/L)
Methyl cyclohexane	--	1.8	87
Tetrachloroethene	5	0.45 J	ND
Toluene	1000	0.25 J	64
Trichloroethene	5	85	ND
Vinyl chloride	2	350	110
Xylenes (total)	10000	ND	1100

Notes:

-- - MCL not established
ND - not detected
J - estimated concentration

As shown above, the VOCs detected in at least one sample at concentrations greater than the MCL (where established) are: benzene; cis-1,2-dichloroethene; trichloroethene; and vinyl chloride.

The results from this sampling event will be incorporated into the project database for inclusion in future submittals and RI/FS work plan development.

Should you have any questions on the above, please do not hesitate to contact us.

Sincerely,

GHD

Julian Hayward

JH/ks/1

Encl.

cc: Leslie Patterson, USEPA
Ken Brown
Bryan Heath
Wendell Barner
Jim Campbell
Valerie Chan

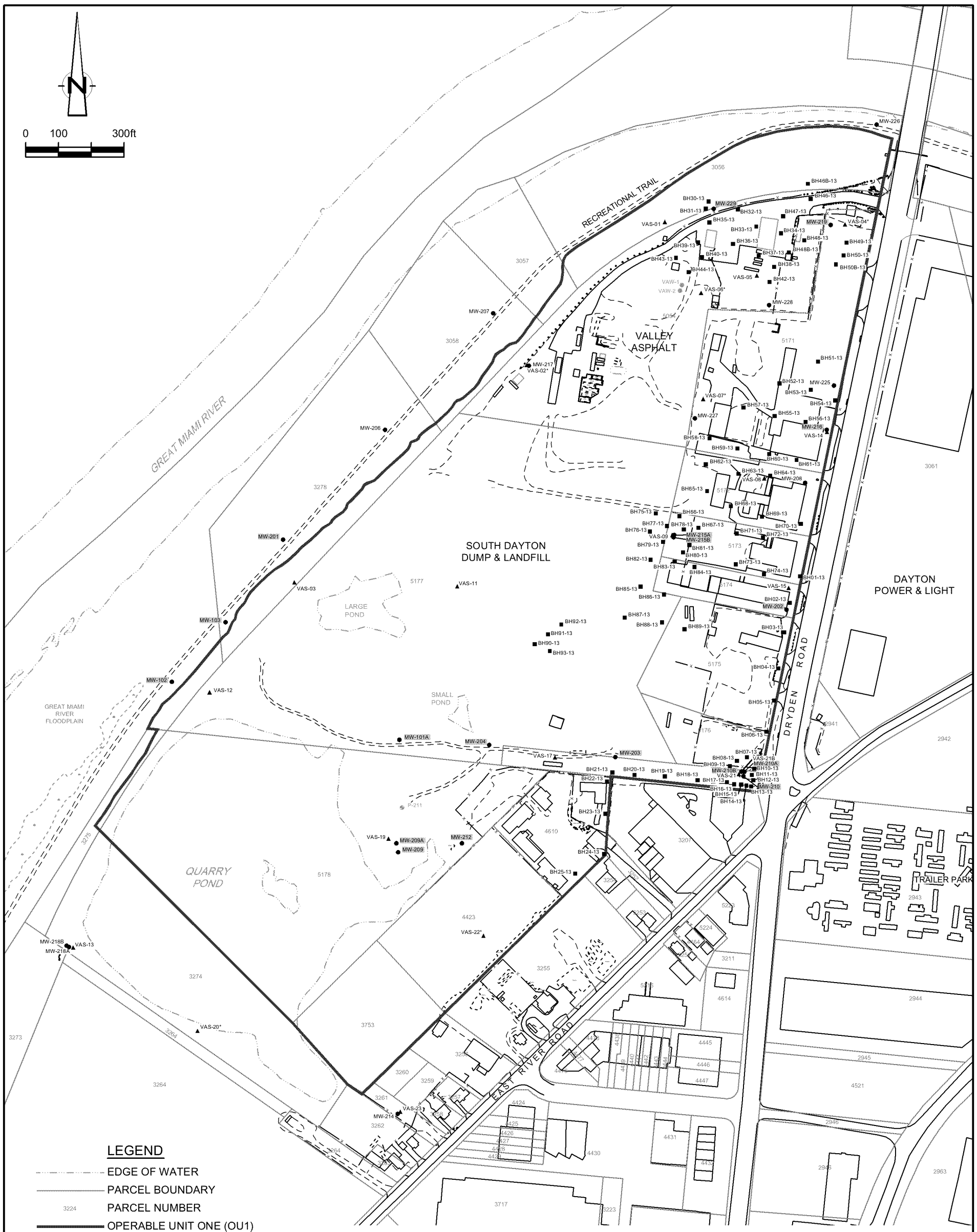

figure 1

GROUNDWATER SAMPLE LOCATIONS
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

GHD

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

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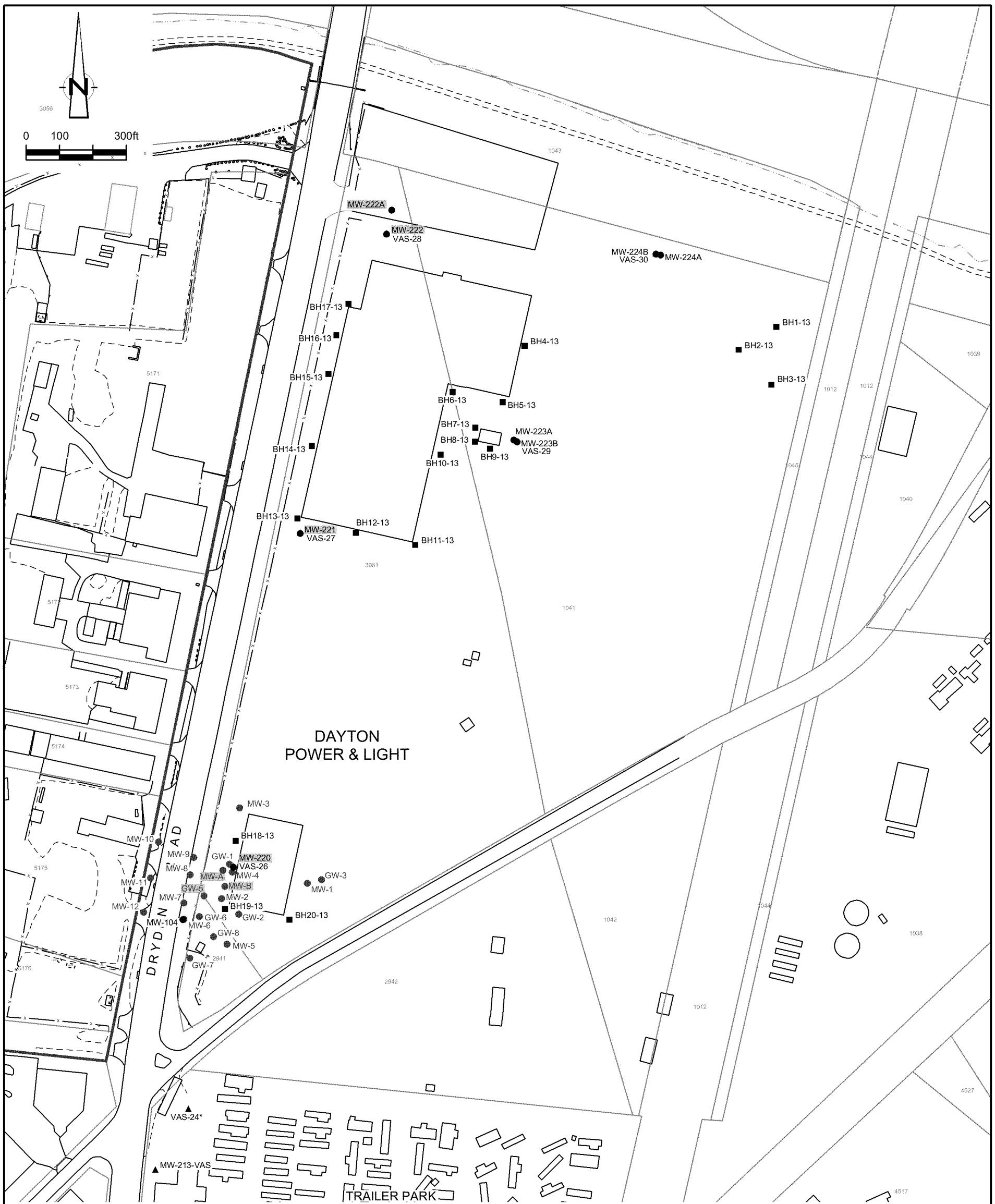


LEGEND

- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT ONE (OU1) BOUNDARY (APPROXIMATE)
- MW-206 ● MONITORING WELL LOCATION
- MW-1 ● HISTORIC DP&L MONITORING WELL LOCATION
- VAS-01 ▲ VERTICAL AQUIFER SAMPLING LOCATION
- BH1-13 ■ BOREHOLE LOCATION (DPL 2013)
- * VAS LOCATION COMPLETED TO 70 FEET BELOW GROUND SURFACE OR LESS
- WELLS SAMPLED IN 2015

GHD

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 2

GROUNDWATER SAMPLE LOCATIONS
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-70(DAVI001)GN-WA002 AUG 19/2015

Table 1

Groundwater Elevation Data
South Dayton Dump and Landfill Site
Moraine, Ohio

Location	Ground Surface Elevation	Top of Casing Elevation	5/8/2015	
			Depth	Elevation
Shallow				
MW-101A	722.2	725.00	14.79	710.21
MW-102	714.5	717.63	7.66	709.97
MW-103	714.8	716.50	6.43	710.07
MW-104	728.7	728.30	NM	
MW-201	713.2	715.25	5.27	709.98
MW-202	730.9	733.08	22.23	710.85
MW-203	728.3	730.11	19.38	710.73
MW-204	720.7	722.69	12.07	710.62
MW-206	714.2	716.08	5.56	710.52
MW-207	714.6	716.33	5.58	710.75
MW-208	731.9	733.82	22.88	710.94
MW-209	712.5	714.26	4.19	710.07
MW-210	730.6	732.50	21.63	710.87
MW-215A	731.7	734.63	23.65	710.98
MW-217	737.0	736.65	NM	
MW-218A	720.2	722.70	13.07	709.63
MW-219	735.6	735.34	24.4	710.94
MW-222A	735.7	735.42	24.46	710.96
MW-223A	735.7	735.38	24.28	711.10
MW-224A	736.0	735.60	24.66	710.94
MW-225	731.5	731.14	20.1	711.04
MW-226	721.4	721.09	10.36	710.73
MW-227	736.2	739.10	28.13	710.97
MW-228	735.9	738.57	NM	
MW-229	737.3	736.68	25.93	710.75
MW-1	735.8	735.13	NM	
MW-3	736.0	735.87	24.13	711.74
MW-4	735.7	735.37	24.46	710.91
MW-5	736.0	735.55	24.02	711.53
GW-2	735.8	735.36	NM	
GW-3	736.0	735.58	NM	
GW-5	734.7	734.51	23.52	710.99
GW-6	734.7	734.42	NM	
GW-7	735.6	735.07	24.07	711.00
GW-8	735.4	734.92	23.55	711.37
MW-A	735.4	735.12	NM	
MW-B	735.7	735.43	NM	
Staff Gauge 1 Small Pond	710.0	709.32	NM	
Staff Gauge 2 Large Pond	709.7	708.21	2.46	710.67
Staff Gauge 3 Quarry Lake	709.4	706.07	4.84	710.91

Table 1

Groundwater Elevation Data
South Dayton Dump and Landfill Site
Moraine, Ohio

Location	Ground Surface Elevation	Top of Casing Elevation	5/8/2015	
			Depth	Elevation
Deep				
MW-209A	712.3	714.64	4.59	710.05
MW-210A	730.5	733.54	23.19	710.35
MW-210B	730.3	733.65	23.25	710.40
MW-212	726.3	728.83	19.5	709.33
MW-214	723.8	723.96	14.16	709.80
MW-215B	731.7	734.69	24.01	710.68
MW-216	732.4	732.08	21.39	710.69
MW-218B	720.1	722.97	13.48	709.49
MW-220	735.8	735.40	NM	
MW-221	736.2	735.84	25.21	710.63
MW-222	736.5	736.26	25.47	710.79
MW-223B	735.5	735.04	NM	
MW-224B	736.0	735.48	24.59	710.89

Notes:

Survey datum: SPC OH South, NAVD 88, US Survey Ft.
Depth to Groundwater is measured in feet below top of casing
Staff guage water level is added to reference Zero Mark Elevation value
NM- not measured

Table 2
Summary Of Analytical Results
Groundwater Sampling - May/June 2015
South Dayton Dump And Landfill Site
Moraine, Ohio

Sample Location:			GW-5	GW-5	MW-101A	MW-102	MW-102	MW-103	MW-201	MW-202	MW-203
Sample ID:			GW-38443-062415-JC-029	GW-38443-062415-JC-030	GW-38443-051315-GL-012	GW-38443-051115-GL-002	GW-38443-051115-GL-003	GW-38443-051115-GL-004	GW-38443-051515-AS-024	GW-38443-051215-GL-007	GW-38443-051315-GL-011
Sample Date:			6/24/2015	6/24/2015	5/13/2015	5/11/2015	5/11/2015	5/11/2015	5/15/2015	5/12/2015	5/13/2015
				Duplicate			Duplicate				
Parameters	**Units**	**MCL**									
Volatiles											
1,1,1-Trichloroethane	µg/L	200	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	-	1.0 U	1.3 U	**0.44 J**	1.0 U	1.0 U	**0.48 J**	1.0 U	1.0 U	**0.32 J**
1,1-Dichloroethene	µg/L	7	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	70	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	2.0 U	2.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	600	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	75	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	-	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	-	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	-	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	5	35	35	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	80	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	80	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	-	1.0 UJ	1.3 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ
Carbon disulfide	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	100	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.4**
Chloroethane	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	80	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	70	1.0 U	1.3 U	**1.8**	1.0 U	1.0 U	**0.38 J**	1.0 U	1.0 U	**5.0**
cis-1,3-Dichloropropene	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	-	**14**	**11**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	80	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	700	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	-	**0.75 J**	**0.68 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	-	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	-	**4.6**	**3.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	100	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	5	1.0 U	1.3 U	1.0 U	1.0 U	**0.31 J**	1.0 U	**0.45 J**	1.0 U	1.0 U
Toluene	µg/L	1000	**0.25 J**	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	100	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	5	1.0 U	1.3 U	1.0 U	**1.8**	**1.9**	**0.54 J**	**1.4**	**2.3**	**1.1**
Trichlorofluoromethane (CFC-11)	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	-	1.0 U	1.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	2	1.0 U	1.3 U	**1.7**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.6**
Xylenes (total)	µg/L	10000	**0.56 J**	2.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
Detected values shown with bold font and values above MCL shown with color font and border.

The individual trihalomethanes (bromodichloromethane; bromoform; dibromochloromethane, chloroform) all have the MCL of 80 µg/L listed in the RSL table.
However, 80 µg/L is the MCL for Total Trihalomethanes.

Table 2
Summary Of Analytical Results
Groundwater Sampling - May/June 2015
South Dayton Dump And Landfill Site
Moraine, Ohio

Sample Location:			MW-204	MW-209	MW-209A	MW-210	MW-210A	MW-210B	MW-212	MW-215A	MW-215B	MW-216
Sample ID:			GW-38443-051115-GL-001	GW-38443-051215-GL-008	GW-38443-051315-AS-016	GW-38443-051515-AS-023	GW-38443-051515-AS-021	GW-38443-051515-AS-022	GW-38443-051215-GL-006	GW-38443-051315-AS-014	GW-38443-051315-AS-015	GW-38443-051415-AS-020
Sample Date:			5/11/2015	5/12/2015	5/13/2015	5/15/2015	5/15/2015	5/15/2015	5/12/2015	5/13/2015	5/13/2015	5/14/2015
Parameters	**Units**	**MCL**										
Volatiles												
1,1,1-Trichloroethane	µg/L	200	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,1,2,2-Tetrachloroethane	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,1,2-Trichloroethane	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,1-Dichloroethane	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	**1.2 J**	17 U
1,1-Dichloroethene	µg/L	7	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,2,4-Trichlorobenzene	µg/L	70	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	29 U	2.0 U	2.0 U	3.3 U	33 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,2-Dichlorobenzene	µg/L	600	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,2-Dichloroethane	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,2-Dichloropropane	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,3-Dichlorobenzene	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
1,4-Dichlorobenzene	µg/L	75	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	**0.37 J**	1.7 U	17 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	-	10 U	10 U	10 U	25 U	10 U	140 U	10 U	10 U	17 U	170 U
2-Hexanone	µg/L	-	10 U	10 U	10 U	25 U	10 U	140 U	10 U	10 U	17 U	170 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	10 U	10 U	10 U	25 U	10 U	140 U	10 U	10 U	17 U	170 U
Acetone	µg/L	-	10 U	10 U	10 U	25 U	10 U	140 U	10 U	10 U	17 UJ	170 UJ
Benzene	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	390	1.0 U	**2.8**	1.7 U	17 U
Bromodichloromethane	µg/L	80	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Bromoform	µg/L	80	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Bromomethane (Methyl bromide)	µg/L	-	1.0 UJ	1.0 UJ	1.0 UJ	2.5 U	1.0 U	14 U	1.0 UJ	1.0 UJ	1.7 U	17 U
Carbon disulfide	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Carbon tetrachloride	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Chlorobenzene	µg/L	100	**0.31 J**	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	**1.7**	1.7 U	17 U
Chloroethane	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Chloroform (Trichloromethane)	µg/L	80	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Chloromethane (Methyl chloride)	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
cis-1,2-Dichloroethene	µg/L	70	1.0 U	1.0 U	**1.9**	**14**	1.0 U	14 U	1.0 U	**0.93 J**	**35**	480
cis-1,3-Dichloropropene	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Cyclohexane	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	**0.58 J**	1.7 U	17 U
Dibromochloromethane	µg/L	80	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Dichlorodifluoromethane (CFC-12)	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Ethylbenzene	µg/L	700	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	**0.48 J**	1.7 U	17 U
Isopropyl benzene	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	**0.71 J**	1.7 U	17 U
Methyl acetate	µg/L	-	10 U	10 U	10 U	25 U	10 U	140 U	10 U	10 U	17 U	170 U
Methyl cyclohexane	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Methyl tert butyl ether (MTBE)	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Methylene chloride	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Styrene	µg/L	100	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Tetrachloroethene	µg/L	5	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Toluene	µg/L	1000	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
trans-1,2-Dichloroethene	µg/L	100	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
trans-1,3-Dichloropropene	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Trichloroethene	µg/L	5	1.0 U	1.0 U	1.0 U	78	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Trichlorofluoromethane (CFC-11)	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Trifluorotrichloroethane (Freon 113)	µg/L	-	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U	14 U	1.0 U	1.0 U	1.7 U	17 U
Vinyl chloride	µg/L	2	1.0 U	**1.0**	9.3	2.5 U	32	14 U	1.0 U	**0.31 J**	5.4	350
Xylenes (total)	µg/L	10000	2.0 U	2.0 U	2.0 U	5.0 U	2.0 U	29 U	2.0 U	2.0 U	3.3 U	33 U

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
Detected values shown with bold font and values above MCL shown with color font and b

The individual trihalomethanes (bromodichloromethane; bromoform; dibromochlorometha
chloroform) all have the MCL of 80 µg/L listed in the RSL table.
However, 80 µg/L is the MCL for Total Trihalomethanes.

Table 2
Summary Of Analytical Results
Groundwater Sampling - May/June 2015
South Dayton Dump And Landfill Site
Moraine, Ohio

Sample Location:			MW-219	MW-220	MW-221	MW-222	MW-222A	MW-229	MW-229	MW-A	MW-B
Sample ID:			GW-38443-051315-GL-013	GW-38443-062315-JC-027	GW-38443-062415-JC-028	GW-38443-051215-GL-010	GW-38443-051215-GL-009	GW-38443-051415-AS-018	GW-38443-051415-AS-019	GW-38443-062315-JC-026	GW-38443-062315-JC-025
Sample Date:			5/13/2015	6/23/2015	6/24/2015	5/12/2015	5/12/2015	5/14/2015	5/14/2015	6/23/2015	6/23/2015
									Duplicate		
Parameters	**Units**	**MCL**									
Volatiles											
1,1,1-Trichloroethane	µg/L	200	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,1,2,2-Tetrachloroethane	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,1,2-Trichloroethane	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,1-Dichloroethane	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,1-Dichloroethene	µg/L	7	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,2,4-Trichlorobenzene	µg/L	70	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	2.0 U	2.9 U	20 U	2.0 U	2.0 U	8.0 U	5.0 U	6.7 U	67 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.05	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,2-Dichlorobenzene	µg/L	600	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,2-Dichloroethane	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,2-Dichloropropane	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,3-Dichlorobenzene	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
1,4-Dichlorobenzene	µg/L	75	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	-	10 U	14 U	100 U	10 U	10 U	40 U	25 U	**9.9 J**	330 U
2-Hexanone	µg/L	-	10 U	14 U	100 U	10 U	10 U	40 U	25 U	33 U	330 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	-	10 U	14 U	100 U	10 U	10 U	40 U	25 U	33 U	330 U
Acetone	µg/L	-	10 U	14 U	100 U	10 U	10 U	40 U	25 UJ	**53**	**34 J**
Benzene	µg/L	5	1.0 U	38	10 U	1.0 U	1.0 U	4.0 U	2.5 U	80	250
Bromodichloromethane	µg/L	80	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Bromoform	µg/L	80	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Bromomethane (Methyl bromide)	µg/L	-	1.0 UJ	1.4 UJ	10 UJ	1.0 UJ	1.0 UJ	4.0 UJ	2.5 U	3.3 UJ	33 UJ
Carbon disulfide	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Carbon tetrachloride	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Chlorobenzene	µg/L	100	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Chloroethane	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Chloroform (Trichloromethane)	µg/L	80	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Chloromethane (Methyl chloride)	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
cis-1,2-Dichloroethene	µg/L	70	1.0 U	**40**	290	**17**	1.0 U	**9.8**	**8.7**	3.3 U	33 U
cis-1,3-Dichloropropene	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Cyclohexane	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	**67**	**200**
Dibromochloromethane	µg/L	80	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Dichlorodifluoromethane (CFC-12)	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Ethylbenzene	µg/L	700	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	**8.2**	**600**
Isopropyl benzene	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	**21**	**38**
Methyl acetate	µg/L	-	10 U	14 U	100 U	10 U	10 U	40 U	25 U	33 U	330 U
Methyl cyclohexane	µg/L	-	**1.8**	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	**40**	**87**
Methyl tert butyl ether (MTBE)	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Methylene chloride	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Styrene	µg/L	100	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Tetrachloroethene	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Toluene	µg/L	1000	**0.25 J**	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	**2.8 J**	**64**
trans-1,2-Dichloroethene	µg/L	100	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
trans-1,3-Dichloropropene	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Trichloroethene	µg/L	5	1.0 U	1.4 U	10 U	1.0 U	1.0 U	85	73	3.3 U	33 U
Trichlorofluoromethane (CFC-11)	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Trifluorotrichloroethane (Freon 113)	µg/L	-	1.0 U	1.4 U	10 U	1.0 U	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Vinyl chloride	µg/L	2	1.0 U	33	110	5.6	1.0 U	4.0 U	2.5 U	3.3 U	33 U
Xylenes (total)	µg/L	10000	2.0 U	2.9 U	20 U	2.0 U	2.0 U	8.0 U	5.0 U	**3.9 J**	**1100**

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
Detected values shown with bold font and values above MCL shown with color font and b

The individual trihalomethanes (bromodichloromethane; bromoform; dibromochloromethane
chloroform) all have the MCL of 80 µg/L listed in the RSL table.
However, 80 µg/L is the MCL for Total Trihalomethanes.

Attachment 1 - Well Purging Records

GW-38443-051115-GL-001 (1240)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15
Date: 5/11/15
Personnel: G. Lewis, A. Schwartz

Monitoring Well Data:

Well No.: MW-204
Vapour PID (ppm): 0.0 ppm
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 33'
Measured Well Depth (m/ft): 33.95
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'
Depth to Pump Intake (m/ft)[1]: 27.75'
Well Diameter, D (cm/in): 2" PVC
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 12.25

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1155 BEGIN PURGING @ 150 mL/min											
1200	150 mL/min	12.26	0.01	15.17	1.231	39.3	1.52	8.79	-48.7	750 mL	
1205	"	12.25	⊖	15.02	1.225	28.5	0.94	9.01	-72.3	1500 mL	
1210	"	12.25	⊖	15.01	1.229	24.2	0.89	9.06	-79.7	2,250	
1215	"	12.25	⊖	15.19	1.228	19.4	0.80	9.07	-88.9	3,000 mL	
1220	200 mL/min	12.25	⊖	15.14	1.235	19.1	0.73	9.06	-91.8	4,000 mL	
1225	200 mL/min	12.25	⊖	14.92	1.237	13.9	0.65	9.05	-94.8	5,000 mL	
1230	200 mL/min	12.25	⊖	15.10	1.235	13.4	0.63	9.03	-98.4	6,000 mL	
1235	200 mL/min	12.25	⊖	15.13	1.235	13.8	0.60	9.01	-97.4	7,000 mL	

.45 .45 1.227 1235 24 1.54 .08 0.07

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW - 38443 - 051115 - GL - 002 (1435)
GW - 38443 - 051115 - GL - 003 (1440)
DUPLICATE

MONITORING WELL RECORD FOR LOW-FLOW PURGING

~~1 of 2~~

Project Data:

Project Name: South Dayton Dump
Ref. No.:
Date: 5/11/15
Personnel: G. Lewis, A. Schwartz

Monitoring Well Data:

Well No.: MW-102
Vapour PID (ppm): 0.0 ppm
Measurement Point:
Constructed Well Depth (m/ft): 30'
Measured Well Depth (m/ft): 31.56
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'
Depth to Pump Intake (m/ft)[1]: 24.97
Well Diameter, D (cm/in): 2" PVC
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 7.91

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1320	Begin Purging @ 200 mL/min										
1325	200 mL/min	7.91	~~0~~	13.82	0.855	33.0	1.80	7.31	2.7	750 mL	
1330	200 mL/min	7.91	~~0~~	12.51	0.867	40.2	0.90	7.21	6.5	1500 mL	
1335	200 mL/min	7.91	~~0~~	12.01	0.868	79.5	0.85	7.24	6.2	2250 mL	
1340	200 mL/min	7.91	~~0~~	11.87	0.869	59.7	1.40	7.25	10.7	3000 mL	
1345	200 mL/min	7.91	~~0~~	12.10	0.870	35.5	1.61	7.27	11.8	3750 mL	
1350	200 mL/min	7.91	~~0~~	12.21	0.870	26.0	1.73	7.28	13.2	4500 mL	
1355	200 mL/min	7.91	~~0~~	12.27	0.871	21.2	1.62	7.29	13.3	5250 mL	
1400	200 mL/min	7.91	~~0~~	12.49	0.872	15.5	1.33	7.31	12.1	6000 mL	
1405	200 mL/min	7.91	~~0~~	12.33	0.872	13.0	1.19	7.29	12.6	6750 mL	
1410	200 mL/min	7.91	~~0~~	12.40	0.875	9.94	0.98	7.30	9.6	7500 mL	
1415	200 mL/min	7.91	~~0~~	12.12	0.875	8.44	0.86	7.26	8.9	8250 mL	
1420	200 mL/min	7.91	~~0~~	12.35	0.876	7.94	0.88	7.26	4.8	9000 mL	
1425	200 mL/min	7.91	~~0~~	12.45	0.877	7.77	0.63	7.27	3.6	9750 mL	
1430	200 mL/min	7.91	~~0~~	12.47	0.877	7.81	0.72	7.26	3.3	10500 mL	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051115-GL-004 (1555)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

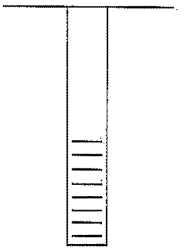
Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15
Date: 5/11/15
Personnel: Glenn, A Schwartz

Monitoring Well Data:

Well No.: MW-103
Vapour PID (ppm): 0.0
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 32
Measured Well Depth (m/ft): 33.99
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10ft
Depth to Pump Intake (m/ft)[1]: 26.84
Well Diameter, D (cm/in): 2" PVC
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 6.69



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1450 begin purge @ 200mL/min											
1455	200	6.71	.02	12.78	0.854	380	1.40	8.22	-96.7	1,000 mL	
1500	200	6.71	.02	12.29	.856	325	1.08	8.25	-102.4	2,000 mL	
1505	200	6.74	.05	12.18	.865	231	.78	8.24	-103.2	3,000 mL	
1510	200	6.75	.06	12.08	.872	162	.68	8.27	-106.1	4,000 mL	
1515	200	6.75	.06	12.08	.885	99.5	.48	8.25	-104.7	5,000 mL	
1520	200	6.75	.06	12.23	.899	84.9	.39	8.25	-106.4	6,000 mL	
1525	200	6.75	.06	12.08	.909	59.8	.36	8.23	-105.8	7,000 mL	
1530	200	6.74	.07	12.13	.916	56.7	.31	8.20	-103.5	8,000 mL	
1535	200	6.74	.07	11.97	.925	46.1	.29	8.13	-99.3	9,000 mL	
1540	200	6.73	.08	12.00	.930	41.1	.28	8.11	-98.3	10,000 mL	
1545	200	6.73	.08	11.95	.935	43.5	.29	8.08	-98.1	11,000 mL	
1550	200	6.73	.08	11.93	.934	44.6	.30	8.06	-96.7	12,000 mL	

.31 .36 .35 .858 .900 .932 31.2 8.13 4.35 .10 .03 165.

Notes:
(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW - 38443 - 051215 - GL - 006 (0945)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dufton
Ref. No.: 038443 - 70 - 15
Date: 5/12/15
Personnel: G. Lewis
A. Schwartz

Monitoring Well Data:

Well No.: MW-212
Vapour PID (ppm): 0.0 ppm
Measurement Point:
Constructed Well Depth (m/ft): 58.0
Measured Well Depth (m/ft): 58.26
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.69
Initial Depth to Water (m/ft): 18.51

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
0850 BEGIN			Precision Required[5]:	±3 %	±0.005 or 0.01[b]	±10 %	±10 %	±0.1 Units	±10 mV		
0855	200 mL/min	18.86	0.35'	13.36	0.698	27.0	1.65	8.05	-28.9	1000 mL	LOWER TO 150 mL/min
0900	150 mL/min	18.85	0.34'	13.40	0.719	10.6	1.34	8.10	-34.6	1750 mL	
0905	150 mL/min	18.85	0.34'	13.62	0.724	5.35	1.21	8.15	-40.7	2500 mL	
0910	150 mL/min	18.85	0.34'	13.44	0.725	4.39	1.19	8.19	-46.1	3250 mL	
0915	150 mL/min	18.84	0.33'	13.82	0.738	3.72	1.05	8.39	-64.6	4000 mL	
0920	150 mL/min	18.84	0.33'	13.86	0.747	2.81	0.25	8.61	-84.1	4750 mL	
0925	150 mL/min	18.82	0.31'	13.64	0.752	5.58	0.26	8.75	-96.1	5500 mL	
0930	150 mL/min	18.82	0.31'	13.43	0.749 ✓	2.01	0.35 ✓	8.77	-100.5	6250 mL	
0935	150 mL/min	18.82	0.31'	13.40	0.748 ✓	1.52	0.39 ✓	8.78 ✓	-104.0 ✓	7000 mL	
0940	150 mL/min	18.81	0.30'	13.45 ✓	0.747 ✓	1.24	0.40 ✓	8.73 ✓	-99.8 ✓	7750 mL	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051215-GL-007 (1105)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15
Date: 5/12/15
Personnel: G. Lewis, A. Schwartz

Monitoring Well Data:

Well No.: MW-202
Vapour PID (ppm):
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 41.00
Measured Well Depth (m/ft): 40.97
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'
Depth to Pump Intake (m/ft)[1]: 36.12'
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.6 g
Initial Depth to Water (m/ft): 22.46

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1015 Begin Purging @ 150 mL/min											
1020	150 mL/min	22.47	0.01	15.98	1.642	7.61	5.28	6.79	64.4	750 mL	
1025	150 mL/min	22.46	⊖	15.91	1.691	4.86	4.04	6.62	77.7	1500	
1030	150 mL/min	22.46	⊖	15.87	1.714	1.64	3.93	6.53	88.2	2250	
1035	150 mL/min	22.46	⊖	15.93	1.721	0.87	4.42	6.46	94.0	3,000	
1040	150 mL/min	22.46	⊖	15.91	1.724	0.53	3.87	6.43	98.4	3,750	
1045	150 mL/min	22.46	⊖	15.90	1.725	0.45	3.58	6.39	101.9	4500	
1050	150 mL/min	22.46	⊖	15.95	1.726	0.45	3.73	6.38	103.5	5250	
1055	150 mL/min	22.46	⊖	15.94	1.726	0.34	3.64	6.35	106.5	6,000	
1100	150 mL/min	22.46	⊖	15.95	1.725	.30	3.63	6.34	108.6	6,750	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051215-GL-008 (120)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038442
Date: 5/12/15
Personnel: A. Schwartz, G. Lewis

Monitoring Well Data:

Well No.: MW-209
Vapour PID (ppm): 0.0
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 26 ft
Measured Well Depth (m/ft): 28.13
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 8.0 ft
Depth to Pump Intake (m/ft)[1]: 23.50
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.28
Initial Depth to Water (m/ft): 4.40

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1120 begin purge @ 200 mL/min											
1125	200 mL/min	4.61	0.21'	13.28	0.780	207	1.39	8.43	-70.6	1000	lower to 150 mL/min
1130	150 mL/min	4.53	0.13'	13.61	0.781	229	1.46	8.30	-64.3	1750	
1135	150 mL/min	4.52	0.12'	13.71	0.784	194	1.16	8.25	-63.5	2250	
1140	150 mL/min	4.52	0.12'	13.80	0.784	160	1.15	8.23	-63.5	3000 mL	
1145	150 mL/min	4.51	0.11'	13.92	0.784	128	1.18	8.21	-63.0	3750 mL	
1150	150 mL/min	4.51	0.11	13.84	0.783	103	1.27	8.15	-57.9	4500 mL	
1155	150 mL/min	4.52	0.12'	13.90	0.785	91.3	1.37	8.10	-55.3	5250 mL	
1200	150 mL/min	4.52	0.12	13.96	0.785	82.6	1.55	8.05	-53.5	6000 mL	
1205	150 mL/min	4.52	0.12	13.89	0.784	74.4	1.57	8.02	-51.9	6750	
				.92		9.23	.13				

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

GW- 38443-05125-GL-009 (1415)

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15

Date: 5/12/15
Personnel: G. Lewis, A. Schwartz, K. Neugent

Monitoring Well Data:

Well No.: MW-222A
Vapour PID (ppm): 0.0 ppm
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 30'
Measured Well Depth (m/ft): 30.12
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'
Depth to Pump Intake (m/ft)[1]: 28.20
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.6
Initial Depth to Water (m/ft): 24.67

29.85
.27
30.12

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
1320	Below Purge @ 200 mL/min		Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1325	200 mL/min	24.69	0.02'	15.43	1.572	90.4	0.33	6.50	109.5	1000 mL	
1330	200 mL/min	24.70	0.03'	15.51	1.530	70.3	0.50	6.45	113.1	2000 mL	
1335	200 mL/min	24.70	0.03'	15.56	1.495	41.4	0.64	6.43	114.9	3,000	
1340	200 mL/min	24.71	0.04'	15.55	1.476	23.0	2.27	6.36	119.2	4,000	
1345	200 mL/min	24.71	0.04	15.55	1.467	16.8	2.21	6.33	121.8	5,000	
1350	200 mL/min	24.71	0.04	15.66	1.467	11.7	0.32	6.30	125.8	6,000	
1355	200 mL/min	24.71	0.04	15.76	1.454	9.10	0.46	6.28	125.5	7,000	
1400	200 mL/min	24.71	0.04	15.77	1.443	7.24	0.48	6.26	128.9	8,000	
1405	200 mL/min	24.71	0.04	15.73	1.445	5.55	0.47	6.22	130.0	9,000	
1410	200 mL/min	24.71	0.04	15.72	1.439	4.84	0.47	6.22	131.5	10000 mL	

.46 .47 1.478 1.454 1.441 2.70 .47 .047 .98 .042 .72

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051215-GL-010 (~~17~~ 15)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443
Date: 5/12/15
Personnel: A Schwartz, K Nugent

Monitoring Well Data:

Well No.: MW-222
Vapour PID (ppm): 0.0
Measurement Point: T.O.R
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft): 104.40
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5ft
Depth to Pump Intake (m/ft)[1]: 102ft
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 25.71

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1440 Begin Purge @ 200 mL/min											
1445	200 mL/min	25.71	0	16.18	1.050	73.3	2.04	8.31	-68.0	1,000 mL	
1450	200 mL/min	25.71	0	16.31	1.049	61.6	1.75	8.24	-63.7	2,000 mL	
1455	200 mL/min	25.70	.01	16.60	1.043	44.3	0.65	8.17	-62.5	3,000 mL	
1500	200 mL/min	25.68	.03	16.32	1.044	25.3	0.60	8.11	-58.1	4,000 mL	
1505	200 mL/min	25.68	.03	16.95	1.042	19.1	0.62	8.05	-55.6	5,000 mL	
1510	200 mL/min	25.68	.03	16.69	1.046	14.9	0.67	8.00	-51.8	6,000	
1515	200 mL/min	25.68	.03	16.63	1.040	~~12.93~~ 10.7	0.63	8.01	-51.7	7,000	
1520	200 mL/min	25.68	.03	16.63	1.041	8.79	0.62	8.01	-52.9	8,000	
1525	200 mL/min	25.68	.03	16.63	1.042	9.74	0.63	8.00	-52.8	9,000	
1530	200 mL/min	25.68	.03	16.42	1.045	8.40	0.61	8.02	-54.6	10,000	
1535	200 mL/min	25.68	.03	16.54	1.045	6.10	0.67	8.03	-57.6	11,000	
1540	200 mL/min	25.68	.03	16.52	1.042	6.39	0.63	8.02	-55.3	12,000 mL	

AR 1.044 1.07

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051315-GL-011 (0845)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15
Date: 5/13/15
Personnel: G. Lewis, A. Schwartz

Monitoring Well Data:

Well No.: MW-203
Vapour PID (ppm): 0.0 ppm
Measurement Point: T.O.P.
Constructed Well Depth (m/ft): 37'
Measured Well Depth (m/ft): 39.67
Depth of Sediment (m/ft): —

Saturated Screen Length (m/ft): 10.0'
Depth to Pump Intake (m/ft)[1]: 34.87'
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.6 g.
Initial Depth to Water (m/ft): 19.65

39.40
+.27
39.67

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
0800 BEGIN PURGING @ 150 mL/min											
0805	150 mL/min	19.65	-0-	12.88	1.548	49.5	2.51	7.01	34.8	750 mL	ADJUST TO 200 mL/min
0810	200 mL/min	19.63	+.02	13.26	1.543	30.3	1.40	7.26	17.1	1750 mL	
0815	200 mL/min	19.65	-0-	13.37	1.541	17.4	1.03	7.27	16.6	2750 mL	
0820	200 mL/min	19.64	+.01	13.47	1.542	10.9	0.90	7.24	18.2	3750 mL	
0825	200 mL/min	19.65	-0-	13.51	1.543 ✓	9.70	0.88	7.23	18.7	4750 mL	
0830	200 mL/min	19.65	-0-	13.55 ✓	1.544 ✓	8.25	0.86 ✓	7.23 ✓	19.0 ✓	5750 mL	
0835	200 mL/min	19.64	+0.01	13.54 ✓	1.545 ✓	6.03	0.84 ✓	7.23 ✓	18.5 ✓	6750 mL	
0840	200 mL/min	19.65	-0-	13.59 ✓	1.546 ✓	4.68 ✓	0.83 ✓	7.23 ✓	18.2 ✓	7750 mL	✓

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

(GW-38443-051315-GW-002 (0935))

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443

Date: 5/13/15
Personnel: [illegible]
A. Schwartz

Monitoring Well Data:

Well No.: MW-101A
Vapour PID (ppm): 0.0
Measurement Point: T.O.R
Constructed Well Depth (m/ft): 35ft
Measured Well Depth (m/ft): 34.90
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10ft
Depth to Pump Intake (m/ft)[1]: 29.56
Well Diameter, D (cm/in): 2" PVC
Well Screen Volume, V_s (L)[2]: 1.6
Initial Depth to Water (m/ft): 15.08

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
0855 begin purge @ 150mL/min											
0900	150mL/min	15.08	0	11.39	0.932	79.6	2.88	7.75	-13.5	750mL	
0905	200mL/min	15.08	0	11.19	0.934	74.0	1.49	8.20	-50.0	1,750mL	
0910	200mL/min	15.08	0	11.23	0.936	37.6	0.77	8.31	-60.8	2,750mL	
0915	200mL/min	15.08	0	11.22	0.936	26.3	0.60	8.33	-63.8	3,750mL	
0920	200mL/min	15.08	0	11.26	0.936	19.7	0.50	8.35	-66.5	4,750mL	
0925	200mL/min	15.08	0	11.25	0.936	12.3	0.45	8.35	-68.3	5,750mL	
0930	200mL/min	15.08	0	11.25	0.936	10.5	0.46	8.34	-69.1	6,750mL	

.33 2.9 1.82 .06 .05

Notes:
(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051315-GL-012 (1055)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

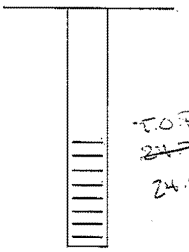
Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443
Date: 5/13/15
Personnel: G. Lewis, A. Schwab

Monitoring Well Data:

Well No.: MW-21
Vapour PID (ppm): 0.0
Measurement Point: T.O.P.
Constructed Well Depth (m/ft): 36'
Measured Well Depth (m/ft): 31.70
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10 ft
Depth to Pump Intake (m/ft)[1]: 29.30
Well Diameter, D (cm/in): 2" PVC
Well Screen Volume, V_s (L)[2]: 1.6
Initial Depth to Water (m/ft): 24.73



T.O.P. pulls ~~24.76~~ 24.99

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
0955	Begin Purge @ 150 mL/min										
1000	150 mL/min	T.O.P.	.26	13.42	1.186	>1000	5.46	6.80	75.0	750 mL	
1005	150 mL/min	T.O.P.	.26	13.41	1.180	>1000	5.75	6.76	83.5	1500	— Sheen on H2O
1010	150 mL/min	T.O.P.	.26	13.26	1.182	>1000	6.06	6.65	94.5	2,250	
1015	150 mL/min	T.O.P.	.26	13.37	1.193	>1000	6.45	6.61	99.7	3,000 mL	
1020	150 mL/min	T.O.P.	.26	13.51	1.203	~1000	6.50	6.89	76.2	3,750	
1025	150 mL/min	T.O.P.	.26	13.77	1.216	261	6.37	7.17	52.3	4,500	
1030	150 mL/min	T.O.P.	.26	13.88	1.225	174	6.33	7.20	54.6	5,250	
1035	150 mL/min	T.O.P.	.26	13.99	1.232	139	6.27	7.28	43.5	6,000	
1040	150 mL/min	T.O.P.	.26	14.02	1.245	118	6.27	7.36	36.1	6,750	
1045	150 mL/min	T.O.P.	.26	14.08	1.261	116	6.23	7.45	30.4	7,500	
1050	150 mL/min	T.O.P.	.26	14.21	1.270	118	6.14	7.41	34.2	8,250	

.26 1.246 12.43 .62

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Light Sheen upon sampling in VOA

1.23
1.271

GW- 38443-051315-AS-Co-014 (1301)

MS/MSD

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump

Ref. No.: 038443

Date: 5/13/15

Personnel: A. Schmeck, K. Wagoner

Monitoring Well Data:

Well No.: MW-215A

Vapour PID (ppm): 0.0

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): 29'

Measured Well Depth (m/ft): 31.31

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10'

Depth to Pump Intake (m/ft)[1]: 28.5

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]: 1.6

Initial Depth to Water (m/ft): 24.00

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1230 begin purge @ 200 mL/min											
1235	200 mL	24.04	.04	15.92	1.545	36.3	1.51	7.80	-7.5	1,000 mL	
1240	200 mL	24.04	.04	15.62	1.516	18.0	0.88	7.80	-10.0	2,000 mL	
1245	200 mL	24.04	0.04	15.62	1.502	6.67	1.05	7.75	-12.4	3,000 mL	
1250	200 mL	24.04	0.04	15.71	1.496	5.71	1.12	7.69	-6.3	4,000 mL	
1255	200 mL	24.04	0.04	15.64	1.464	5.16	1.36	7.65	-7.9	5,000 mL	
1300	200 mL	24.04	0.04	15.63	1.479	4.99	1.34	7.61	-7.3	6,000 mL	
				~~.47~~	~~1.527~~	~~6.899~~	0.11	~~7.48~~	-3		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L*$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

~~.047~~ -.47 ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~

MW-38443-051315-AS-015
(1410)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SOUTH PAXTON DUMP
Ref. No.: 038443
Date: 5/13/15
Personnel: A. SCHWARTZ
K. NUGENT

Monitoring Well Data:

Well No.: MW-215 B
Vapour PID (ppm): 0.0
Measurement Point: T.O.R
Constructed Well Depth (m/ft): 57'
Measured Well Depth (m/ft): 55.18
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: .8
Initial Depth to Water (m/ft): 24.22

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1320 begin purge @ 200 mL/min											
1335	200mL	24.22	0	15.98	1.231	15.6	5.20	7.58	9.0	1,000 mL	
1340	200mL	24.18	.04	15.72	1.344	7.28	1.63	7.60	7.3	2,000	
1345	200mL	24.18	0.04	15.64	1.398	2.80	0.94	7.56	9.6	3,000	
1350	200mL/min	24.18	.04	16.62	1.398	2.44	0.87	7.53	10.2	4,000	
1355	200 mL	24.18	.04	15.69	1.401	1.47	0.80	7.51	9.8	5,000	
1400	200mL	24.18	.04	15.69	1.399	1.38	0.76	7.49	10.1	6,000	
1405	200mL	24.18	0.04	15.69	1.400	1.17	0.74	7.49	9.9	7,000mL	
				~~0.4795~~	~~1.399~~	~~2.34~~	~~0.87~~	~~7.53~~	~~9.86~~		

Notes:
(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

0.48 1.399 0.81

GW-38443-051315-AS-016 (1.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Rinse Blank

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443

Date: 5/13/15
Personnel: A. Schwarb
K. Magers

Monitoring Well Data:

Well No.: MW-209A
Vapour PID (ppm): 0.0
Measurement Point: T.O.R
Constructed Well Depth (m/ft): 57'
Measured Well Depth (m/ft): 59.40
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5'
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: .8
Initial Depth to Water (m/ft): 4.76

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1430 begin Purge	200 mL/min										
1435	200	4.76	0	16.69	1.116	>1000	0.64	7.99	-20.9	1,000 mL	
1440	200	4.76	0	16.63	1.121	>1000	0.39	8.06	-26.6	2,000 mL	
1445	200	4.76	0	16.67	1.122	>1000	0.31	8.07	-28.8	3,000	
1450	200	4.76	0	16.70	1.123	>1000	0.28	8.01	-26.6	4,000	
1455	200	4.76	0	16.62	1.128	>1000	0.67	8.00	-26.1	5,000	
1500	200	4.76	0	16.30	1.126	>1000	0.48	8.00	-27.1	6,000	
1505	200	4.76	0	16.05	1.163	83.4	1.76	7.99	-27.5	7,000 mL	
1510	200	4.76	0	15.94	1.120	74.3	0.09	8.01	-28.1	8,000 mL	
1515	200	4.76	0	15.86	1.124	54.2	0.50	8.03	-29.8	9,000 mL	
1520	200	4.76	0	16.04	1.124	38.5	0.67	8.01	-29.2	10,000 mL	
1525	200	4.76	0	16.06	1.127	28.7	0.44	8.01	-29.7	11,000 mL	
1530	200	4.76	0	16.16	1.127	35.7	0.38	8.06	-30.0	12,000 mL	
1535	200	4.76	0	16.07	1.126	32.5	0.36	8.00	-28.8	13,000 mL	
				4.83	1.26	34.3	0.50	8.04			

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051415-AS-018 (1525)
GW-38443-051415-AS-019 (1530)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

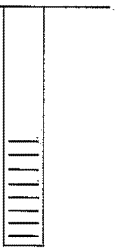
Project Data:

Project Name: South Dayton Dump
Ref. No.: 38443
Date: 5/14/15
Personnel: A. Schmidt, G. Lewis

Monitoring Well Data:

Well No.: MW-229
Vapour PID (ppm): 0.0
Measurement Point: T.O.P.
Constructed Well Depth (m/ft): 35
Measured Well Depth (m/ft): 31.25
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10 ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.6
Initial Depth to Water (m/ft): 26.32



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1450 Begin Purge @ 150 ml/min											
1455	150 ml/min	26.32	0	15.69	1.167	68.5	3.35	5.96	181.8	750 ml/min	
1500	200 ml/min	26.32	0	15.23	1.177	63.8	2.17	5.88	185.9	1,750 ml/min	
1505	200 ml/min	26.32	0	15.13	1.182	48.6	1.23	5.86	186.9	2,750 ml/min	
1510	200 ml/min	26.32	0	14.94	1.185	41.9	1.35	5.86	185.7	3,750	
1515	200 ml/min	26.32	0	14.90	1.187	33.8	1.32	5.86	185.3	4,750	
1520	200 ml/min	26.32	0	14.87	1.189	30.2	1.35	5.86	184.0	5,750	
				.94	1.184	4.14	.13				

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

1.184

GW-38443-051415-AS-026 C1635

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 38443
Date: 5/14/15
Personnel: G. Lewis, A. Schwab

Monitoring Well Data:

Well No.: MW-216
Vapour PID (ppm): 0.0
Measurement Point: T.O.R.
Constructed Well Depth (m/ft): 66 ft
Measured Well Depth (m/ft): 61.70 ft
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5 ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: .8
Initial Depth to Water (m/ft): 21.67

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1540 Begin Purge @ 150 mL/min											
1545	150 mL/min	21.67	⊖	17.72	0.758	22.8	2.80	8.55	-57.4	750 mL	
1550	200 mL/min	21.67	⊖	17.68	0.869	17.5	1.46	8.63	-66.6	1,750 mL	
1555	200 mL/min	21.67	⊖	17.88	0.917	17.3	1.34	8.61	-67.2	2,750 mL	
1600	200 mL/min	21.67	⊖	18.00	0.934	18.1	1.23	8.58	-68.3	3,750 mL	
1605	200 mL/min	21.67	⊖	18.06	0.941	16.3	1.24	8.52	-66.9	4,750	
1610	200 mL/min	21.67	⊖	17.86	0.944	10.4	1.24	8.52	-67.7	5,750	
1615	200 mL/min	21.67	⊖	17.51	0.943	9.23	1.22	8.52	-68.0	6,750	
1620	200 mL/min	21.67	⊖	17.48	0.941	9.06	1.23	8.50	-67.3	7,750	
1625	200 mL/min	21.67	⊖	17.45	0.943	7.53	1.23	8.51	-67.4	8,750	
1630	200 mL/min	21.67	⊖	17.46	0.942	8.36	1.24	8.49	-70.6	9,750 mL	

.53 .52 .730 .942 .95 .30 .123

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

.935

GW-38443-051515-AS-021 (0905)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443-70-15
Date: 5/15/15
Personnel: A. Schwab, G. Lewis

Monitoring Well Data:

Well No.: MW-210R
Vapour PID (ppm): 6.0
Measurement Point: T.O.R
Constructed Well Depth (m/ft): 86 ft
Measured Well Depth (m/ft): 87.91
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: .8
Initial Depth to Water (m/ft): 23.45

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
0810 Begin Purge @ 150											
0815	150mL/min	23.45	0	15.51	0.820	337	4.01	7.48	71.1	750mL	
0820	150mL/min	23.46	.01	15.54	0.922	142	3.97	7.57	48.3	1,500mL	
0825	200mL/min	23.46	.01	15.39	0.967	168	2.05	8.06	0.3	2,500mL	
0830	200mL/min	23.46	.01	15.35	0.989	66.9	1.65	8.08	-0.6	3,500mL	
0835	200mL/min	23.46	.01	15.35	0.999	34.0	1.41	8.03	2.2	4,500mL	
0840	200mL/min	23.46	.01	15.34	1.003	27.9	1.25	8.05	-1.2	5,500mL	
0845	200mL/min	23.46	.01	15.35	1.006	23.5	1.21	8.05	-2.8	6,500mL	
0850	200mL/min	23.46	.01	15.38	1.007	61.4	1.21	8.07	-6.2	7,500mL	
0855	200mL/min	23.46	0 .01	15.40	1.008	70.6	1.20	8.10	-10.0	8,500	
0900	200mL/min	23.46	0 .01	15.43	1.009	74.0	1.23	8.10	-10.7	9,500	

.007 1.021 .03 1.007 4.29 3.51 5.85 .14 .01

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

.442

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

1.007 1.015 1.012 1.007 65.8 57.8 64.7 76.4

GW-38443-051515-AS-022 (1030)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

1 of 2

Project Data:

Project Name: Saville Dragon Drum
Ref. No.: 38443-70-65
Date: 5/15/15
Personnel: A. Schwartz, G. Lewis

Monitoring Well Data:

Well No.: MW-210B
Vapour PID (ppm): 00
Measurement Point: T.O.C.
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft): 104.63
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 5ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: .8
Initial Depth to Water (m/ft): 23.50

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
0910 Begin purge @ 200 ml/min											
0915	200 ml/min	23.51	.01	15.80	0.762	234	2.36	8.42	-41.4	1,000 ml	
0920	200 ml/min	23.51	.01	15.89	0.821	167	1.34	8.66	-67.4	2,000 ml	
0925	200 ml/min	23.51	.01	15.99	0.845	115	1.31	8.73	-76.8	3,000 ml	
0930	200 ml/min	23.51	.01	16.14	0.852	75.4	1.29	8.77	-83.6	4,000 ml	
0935	200 ml/min	23.51	.01	16.26	0.856	48.0	1.30	8.74	-83.7	5,000 ml	
0940	200 ml/min	23.51	.01	16.32	0.857	29.0	1.28	8.71	-83.4	6,000 ml	
0945	200 ml/min	23.51	.01	16.57	0.857	21.1	1.29	8.73	-87.5	7,000	
0950	200 ml/min	23.51	.01	16.68	0.857	16.9	1.28	8.74	-90.1	8,000	
0955	200 ml/min	23.51	.01	16.62	0.858	13.2	1.29	8.72	-90.7	9,000	
1000	200 ml/min	23.51	.01	16.96	0.860	9.61	1.29	8.70	-90.0	10,000 ml	
1005	200 ml/min	23.51	.01	17.07	0.859	8.07	1.28	8.67	-88.8	11,000 ml	
1010	200 ml/min	23.51	.01	17.16	0.859	7.09	1.27	8.68	-91.8	12,000 ml	
1015	200 ml/min	23.51	.01	17.11	0.858	6.~~8~~45	1.29	8.68	-92.1	13,000 ml	
1020	200 ml/min	23.51	.01	17.32	0.859	6.13	1.29	8.79	-107.8	14,000 ml	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

2 of 2

Project Data:

Project Name: South Dayton Dump

Ref. No.: 38243-70-15

Date: 5/15/15

Personnel: A. Schwartz, G. Lewis

Monitoring Well Data:

Well No.: MW-210B

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft):

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1825	200mL	23.51	.01	17.80	0.859	4.85	1.25	8.78	-41.9	15,000	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

GW-38443-051515-AS-023 (1120)

Project Data:

Project Name: South Dayton Dump
Ref. No.: 038443
Date: 5/15/15
Personnel: A. Schuch, K. Unger

Monitoring Well Data:

Well No.: MW-210
Vapour PID (ppm): 0.0
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): 36.5
Measured Well Depth (m/ft): 38.58
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10 ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 16
Initial Depth to Water (m/ft): 21.99

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[5]	±10 %	±10 %	±0.1 Units	±10 mV		
1045 begin purge @ 200 mL/min 21.99											
1050	200	21.99	0	16.68	1.237	7.77	1.78	7.12	61.9	1,000 mL	
1055	200	21.99	0	16.46	1.240	5.23	0.93	7.11	62.8	2,000 mL	
1100	200	21.99	0	16.51	1.242	4.46	0.72	7.14	62.4	3,000 mL	
1105	200	21.99	0	16.57	1.241	3.70	0.79	7.17	60.0	4,000 mL	
1110	200	21.99	0	16.56	1.237	2.77	0.85	7.21	58.9	5,000 mL	
1115	200	21.99	0	16.69	1.238	3.05	0.86	7.21	58.6	6,000 mL	
				.4964	1.240		.79	7.17			

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-051515-RS-024 (13-00)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: South Dayton Dump
Ref. No.: C38443-70-15
Date: 5/15/15
Personnel: R. Schwerk, K. Nugent

Monitoring Well Data:

Well No.: MW-201
Vapour PID (ppm): 00
Measurement Point: T.O.R
Constructed Well Depth (m/ft): 32
Measured Well Depth (m/ft): 31.87
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): 10 ft
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)[2]: 1.6
Initial Depth to Water (m/ft): 5.75

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1200 Begin purge @ 200 ml/min											
1205	200	5.75	0	16.17	1.198	112	1.50	7.07	81.4	1,000 ml	
1210	200	5.75	0	16.09	1.200	52	0.88	7.10	79.4	2,000 ml	
1215	200	5.75	0	16.41	1.196	23.4	1.00	7.11	76.3	3,000 ml	
1220	200	5.75	0	16.49	1.204	23.2	0.08	7.15	71.9	4,000 ml	
1225	200	5.75	0	15.99	1.205	16.4	0.06	7.15	70.2	5,000 ml	
1230	200	5.75	0	16.67	1.198	14.1	0.04	7.17	68.7	6,000 ml	
1235	200	5.75	0	15.60	1.201	9.88	0.05	7.17	67.7	7,000 ml	
1240	200	5.75	0	15.52	1.198	8.89	0.04	7.16	67.9	8,000 ml	
1245	200	5.75	0	15.39	1.197	8.39	0.05	7.15	68.1	9,000 ml	
1250	200	5.75	0	15.35	1.195	5.08	0.06	7.13	69.3	10,000 ml	
1255	200	5.75	0	15.37	1.194	4.39	0.05	7.13	68.6	11,000 ml	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 1 of 2

GW-38443-062315-JC-025 (1300)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SOUTH DAKOTA ~~Ohio River Terminals Co.~~

Ref. No.: ~~043903-08~~ 038443

Date: ~~5/ /15~~ 6/23/15

Personnel: Jason Close / Kevin Nugent

Monitoring Well Data:

Well No.: MW- B

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

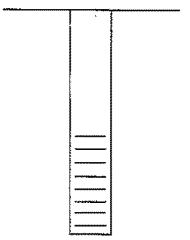
Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.40'



	Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
	09			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1110	~~0950~~	400	22.40'		17.63	1.156	42.5	1.14	7.59	-78.46		
1115	~~1005~~	400	22.41	0.01	17.25	1.130	28.2	1.14	7.57	-84.4		
1120	~~1010~~	400	22.41	0	17.08	1.143	18.9	1.18	7.57	-85.7		
1125	~~1015~~	400	22.41	0	17.21	1.182	11.2	1.38	7.55	-85.4		
1130	~~1020~~	400	22.41	0	17.23	1.243	8.58	1.50	7.53	-83.9		
1135	~~1025~~	400	22.41	0	17.00	1.279	5.80	1.43	7.51	-84.4		
1140	~~1030~~	400	22.41	0	16.97	1.326	8.26	1.47	7.49	-83.2		
1145	1145	400	22.41	0	17.07	1.388	7.63	1.50	7.48	-82.9		
	1150	400	22.41	0	17.12	1.430	[illegible]52	1.51	7.47	-81.3		
	1155	400	22.41	0	17.17	1.470	6.02	1.59	7.47	-80.1		
	1200	400	22.41	0	17.06	1.483	5.57	1.67	7.47	-78.5		
	1205	400	22.41	0	17.03	1.521	4.29	1.72	7.46	-78.1		
	1210	400	22.41	0	16.95	1.545	4.18	1.79	7.44	-76.5		
	1215	400	22.41	0	16.82	1.564	3.05	1.73	7.43	-75.0		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 2 of 2

GW-38443-062315-JC- (1300)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SOUTH SYRACUSE ~~Ohio River Terminals Co.~~

Ref. No.: ~~043903.08~~ 038443

Date: ~~5/ /15~~ 6/23/15

Personnel: Jason Close / K WUGENT

Monitoring Well Data:

Well No.: MW-3

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.41

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1220	400	22.41	0	16.99	1.583	3.26	1.80	7.42	-74.5		
1225	400	22.41	0	16.92	1.585	3.11	1.78	7.42	-73.9		
1230	400	22.41	0	16.94	1.609	3.06	1.80	7.41	-72.4		
1235	400	22.41	0	16.97	1.619	2.84	1.76	7.41	-72.1		
1240	400	22.41	0	16.95	1.634	2.76	1.82	7.39	-71.4		
1245	400	22.41	0	16.93	1.640	3.91	1.82	7.39	-71.0		
1250	400	22.41	0	16.88	1.638	2.75	1.85	7.38	-71.6		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 1 of 2

GW-38443-062315-JC-026 ( )

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: 300TH STREET ~~Ohio River Terminals Co.~~

Ref. No.: ~~043903-08~~ 038443

Date: ~~5/ /15~~ 6/23/15

Personnel: Jason Close / K DUGENT

Monitoring Well Data:

Well No.: MW- A

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.00

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1303	300	22.00	—								
1310	300	22.01	0.01	18.19	1.227	>1000	0.95	7.44	-87.5		
1315	300	22.00	0	18.00	1.219	>1000	1.80	7.47	-88.6		
1320	300	22.00	0	18.19	1.224	557	2.87	7.49	-88.2		
1325	300	22.00	0	18.28	1.230	323	3.57	7.49	-92.7		
1330	300	22.01	0.01	18.48	1.242	174	3.81	7.51	-97.2		
1335	300	22.01	0.01	18.55	1.247	136	4.05	7.52	-95.8		
1340	300	22.00	0.00	18.53	1.250	100	4.24	7.54	-98.7		
1345	300	22.00	0.0	18.78	1.260	83.3	4.17	7.52	-100.8		
1350	300	22.01	0.01	19.11	1.275	70.1	4.19	7.51	-102.1		
1355	300	22.01	0.01	19.86	1.299	224	4.23	7.48	-102.7		
1400	300	22.00	0.00	20.27	1.316	147	4.41	7.48	-102.1		
1405	300	22.01	0.01	20.41	1.319	123	4.75	7.49	-102.6		
1410	300	22.00	0.0	20.43	1.323	132	4.71	7.48	-102.2		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 2 of 2 GW-38443-062315-JC- (1515 ~~1500~~)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SOUTHAMPTON ~~Ohio River Terminals~~ Co.

Ref. No.: ~~043903-08~~ 038443

Date: ~~5/ /15~~ 6/23/15

Personnel: Jason Close / K NUGENT

Monitoring Well Data:

Well No.: MW- 4

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.00

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1415	300	22.02	0.02	20.37	1.320	109	4.67	7.48	-102.2		
1420	300	22.02	0.02	20.53	1.326	98	4.68	7.49	-103.9		
1425	300	22.01	0.01	20.38	1.322	82	4.76	7.50	-104.6		
1430	300	22.01	0.01	20.52	1.326	91.0	4.72	7.50	-105.2		
1435	300	22.02	0.02	19.73	1.303	87.3	4.88	7.52	-104.2		
1440	300	22.02	0.02	20.15	1.315	77.2	4.83	7.51	-104.8		
1445	300	22.02	0.02	20.64	1.333	86.3	4.77	7.50	-105.5		
1450	300	22.02	0.02	20.77	1.337	80.5	4.83	7.49	-105.8		
1455	300	22.02	0.02	20.09	1.348	126	4.86	7.49	-105.3		
1500	300	22.02	0.02	20.25	1.322	140	4.99	7.52	-104.1		
1505	300	22.02	0.02	20.17	1.318	130	4.92	7.51	-104.3		
1510	300	22.		20.42	1.325	122	4.90	7.51	-105.6		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 1 of 2 GW-38443-062315-JC-027(1710)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SDD ~~Ohio River Terminals Co.~~

Ref. No.: ~~043903-08~~ 38443-10-5

Date: 6/23/15

Personnel: Jason Close / Kevin Nugent

Monitoring Well Data:

Well No.: MW-220

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.31

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1518	500	22.31									
1525	500	22.31	0	17.05	1.038	7100	2.51	8.00	-73.9		
1530	500	22.31	0	16.80	0.994		0.92	7.86	-94.3		
1535	500	22.33	0.02	16.82	0.974	132	0.49	7.87	-106.2		
1540	500	22.35	0.04	16.70	0.950	119	0.35	7.87	-110.5		
1545	500	22.35	0.04	16.64	0.936	211	0.28	7.84	-112.9		
1550	500	22.35	0.04	16.39	0.923	255	0.25	7.83	-113.8		
1555	500	22.35	0.04	16.73	0.922	249	0.24	7.85	-116.3		
1600	500	22.35	0.04	16.53	0.911	223	0.24	7.85	-118.4		
1605	500	22.35	0.04	16.51	0.903	247	0.23	7.84	-119.0		
1610	500	22.35	0.04	16.49	0.896	241	0.23	7.82	-118.1		
1615	500	22.35	0.04	16.20	0.884	217	0.22	7.83	-120.0		
1620	500	22.35	0.04	16.38	0.883	209	0.23	7.82	-120.4		
1625	500	22.35	0.04	16.36	0.874	179	0.23	7.84	-119.8		
1630	500	22.35	0.04	16.22	0.867	183	0.23	7.86	-120.8		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Page 2 of 2

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SP ~~Ohio River Terminals Co.~~

Ref. No.: ~~043903-08~~ 38443-76-15

Date: ~~5/ /15~~ 6/23/15

Personnel: Jason Close / CANUSENT

Monitoring Well Data:

Well No.: MW- 220

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)[1]:

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)[2]:

Initial Depth to Water (m/ft): 22.31

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1635	500	22.35	0.04	16.27	0.800	200	0.24	7.85	-121.4		
1640	500	22.35	0.04	16.41	0.838	236	0.22	7.85	-122.5		
1645	500	22.35	0.04	16.28	0.849	199	0.22	7.86	-121.6		
1650	500	22.35	0.04	16.23	0.845	146	0.21	7.84	-122.6		
1655	500	22.35	0.04	16.22	0.842	135	0.22	7.86	-122.5		
1700	500	22.35	0.04	16.09	0.838	186	0.24	7.85	-122.6		
1705	500	22.35	0.04	16.05	0.834	238	0.21	7.85	-121.8		

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GW-38443-062415-JC-028 (1045)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SDD - DP&L
Ref. No.: 038443-70-15
Date: 6/24/2015
Personnel: Jason Close
Kevin Nugent

Monitoring Well Data:

Well No.: 221
Vapour PID (ppm):
Measurement Point:
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):
Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in):
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 23.49

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
0845	200	23.49	—								
0940 0935	200	23.49	Ø	19.15	0.875	71000	0.66	7.18	-100.6		
0945	200	23.50	0.01	19.07	0.872	71000	0.38	7.14	-107.4		
0950	200	23.49	0	19.20	0.875	>1000	0.39	7.14	-106.7		
0955	200	23.50	0.01	19.23	0.876	71000	0.46	7.14	-106.3		
1000	200	23.50	0.01	19.23	0.876	71000	0.41	7.14	-105.9		
1005	200	23.50	0.01	19.21	0.874	71000	0.35	7.13	-103.9		
1010	200	23.50	0.01	19.09	0.873	71000	0.38	7.12	-104.0		
1015	200	23.50	0.01	19.51	0.878	71000	0.39	7.10	-104.0		
1020	200	23.50	0.01	19.50	0.880	71000	0.35	7.11	-103.8		
1025	200	23.50	0.01	19.71	0.886	71000	0.42	7.09	-99.0		
1030	200	23.50	0.01	19.90	0.889	71000	0.31	7.09	-103.4		
1035	200	23.50	0.01	20.09	0.892	71000	0.30	7.09	-104.4		
1040	200	23.50	0.01	20.05	0.892	71000	0.29	7.08	-103.4		
1045	200	23.50	0.01	20.12	0.894	71000	0.29	7.09	-101.8		

Notes:
(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches
(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be

6W-38443-062415-029(1205)
030(1215)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: SDD - DP&L
Ref. No.: 038443-70-15
Date: 6/24/2015
Personnel: Jason Close
Kevin Nugent

Monitoring Well Data:

Well No.: 6W-5
Vapour PID (ppm):
Measurement Point:
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):
Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in):
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 21.75

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1110	300	21.75	—								
1115	300	21.75	0	17.39	1.142	27.8	0.45	7.11	-94.3		
1120	300	21.75	Ø	16.92	1.204	11.5	0.37	7.11	-94.0		
1125	300	21.75	0	16.83	1.230	4.83	0.28	7.11	-94.1		
1130	300	21.76	0.01	16.74	1.253	2.53	0.25	7.11	-93.0		
1135	300	21.75	0.0	17.28	1.296	3.07	0.22	7.10	-92.9		
1140	300	21.76	0.01	17.44	1.317	2.45	0.23	7.09	-93.0		
1145	300	21.77	0.02	17.34	1.326	1.77	0.22	7.09	-92.5		
1150	300	21.75	0	17.46	1.336	1.28	0.22	7.08	-92.9		
1155	300	21.77	0.02	17.37	1.342	1.07	0.22	7.08	-91.1		
1200	300	21.76	0.01	17.36	1.345	1.02	0.20	7.07	-90.8		
1205	300										
1215	300										

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be

Attachment 2 - Data Validation Memoranda

CONESTOGA-ROVERS & ASSOCIATES

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www.CRAworld.com

MEMORANDUM

TO: Julian Hayward, Valerie Chan

REF. NO.: 038443-70

FROM: Angela Bown/cs/23-NF

DATE: June 9, 2015

RE: Analytical Results and Full Validation
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works, Inc.
Moraine, Ohio
May 2015

1.0 Introduction

The following document details a validation of analytical results for water samples collected in support of the Spring 2015 Groundwater Sampling event at the South Dayton Dump and Landfill Site during May 2015. Samples were submitted to TestAmerica Laboratories, Inc. (TestAmerica) located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. Evaluation of the data was based on information obtained from the finished data sheets, raw data, chain of custody forms, calibration data, blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spike (MS) samples, and field quality assurance/quality control (QA/QC) samples. The assessment of analytical and in-house data included checks for data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) "Quality Assurance Project Plan-Version 1", November 2014

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria and sample preservation requirements for the analyses are summarized in the method. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times with the exception of one sample re-analysis. Table 4 presents the qualified sample result.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3.0 Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check)

Prior to volatile organic compound (VOC) analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, methods require the analysis of the specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

The tuning compound was analyzed at the required frequency throughout VOC analysis periods. All tuning criteria were met, indicating that proper optimization of the instrumentation was achieved.

4.0 Initial Calibration

GC/MS

To quantify VOCs of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i. All relative response factors (RRFs) must be greater than or equal to 0.05 (0.01 for compounds that exhibit poor response)
ii. The percent relative standard deviation (RSD) values must not exceed 20.0 percent (40.0 percent for compounds that exhibit poor response) or a minimum correlation coefficient (R) and minimum coefficient of determination (R^2) of 0.99 if linear and quadratic equation calibration curves, respectively, are used

The initial calibration data for VOCs were reviewed. All compounds met the above criteria for sensitivity and linearity.

5.0 Continuing Calibration

GC/MS

To ensure that instrument calibration for VOC analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

i. All RRF values must be greater than or equal to 0.05 (0.01 for compounds that exhibit poor response)
ii. Percent difference (%D) values must not exceed 25 percent (40 percent for compounds that exhibit poor response)

Calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability with the exception of acetone and bromomethane. Table 5 presents the qualified sample results.

6.0 Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Methylene chloride and acetone were detected in several method blanks. Sample results that were similar in concentration to the method blanks were qualified as non-detect due to potential laboratory contamination. Table 6 presents the qualified sample results. All remaining method blank results were non-detect.

7.0 Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the laboratory criteria.

8.0 Internal Standards (IS) Analyses

IS data were evaluated for all VOC sample analyses.

To ensure that changes in the GC/MS sensitivity and response do not affect sample analysis results IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

i. The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard
ii. IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard

All organic IS recoveries and retention times met the above criteria.

9.0 Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

10.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

Non-detect sample results associated with high MS/MSD recoveries or RPDs were not qualified. Non-detect data would not be impacted by the indicated high bias/variability.

If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

11.0 Field QA/QC Samples

The field QA/QC consisted of 2 trip blank samples, 2 rinse blank samples, and 2 field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, 2 trip blanks were submitted to the laboratory for VOC analysis. Methylene chloride was detected in the trip blanks. All potentially impacted sample results were previously qualified for method blank contamination and did not required further qualification.

Rinse Blank Sample Analysis

To assess field decontamination procedures, ambient conditions at the site, and cleanliness of sample containers, 2 rinse blanks were submitted for analysis, as identified in Table 1. 2-Butanone and chloroform were detected in the rinse blank samples. Associated sample results that were similar in concentration to the rinse blanks were qualified as non-detect in Table 7. All remaining results were non-detect for the analytes of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, 2 field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the practical quantitation limit (PQL), the evaluation criteria is one times the PQL value for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

12.0 Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the PQL but greater than the MDL were qualified as

estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the PQL in Table 2.

13.0 Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The samples identified in Table 1 were reviewed. The organic compounds reported adhered to the specified identification criteria.

14.0 Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Sample Identification	*Location*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters* TCL VOCs	*Comments*
TestAmerica Job Number: 240-50787-1						
GW-38443-051115-GL-001	MW-204	WG	05/11/2015	12:40:00	X	
GW-38443-051115-GL-002	MW-102	WG	05/11/2015	14:35:00	X	
GW-38443-051115-GL-003	MW-102	WG	05/11/2015	14:40:00	X	FD(GW-38443-051115-GL-002)
GW-38443-051115-GL-004	MW-103	WG	05/11/2015	15:55:00	X	
GW-38443-051115-GL-005	Rinse Blank	WGQ	05/11/2015	16:40:00	X	
GW-38443-051215-GL-006	MW-212	WG	05/12/2015	09:45:00	X	
GW-38443-051215-GL-007	MW-202	WG	05/12/2015	11:05:00	X	
GW-38443-051215-GL-008	MW-209	WG	05/12/2015	12:10:00	X	
GW-38443-051215-GL-009	MW-222A	WG	05/12/2015	14:15:00	X	
GW-38443-051215-GL-010	MW-222	WG	05/12/2015	15:45:00	X	
GW-38443-051315-AS-014	MW-215A	WG	05/13/2015	13:05:00	X	MS/MSD
GW-38443-051315-AS-015	MW-215B	WG	05/13/2015	14:10:00	X	
GW-38443-051315-AS-016	MW-209A	WG	05/13/2015	15:40:00	X	
GW-38443-051315-AS-017	Rinse Blank	WGQ	05/13/2015	16:05:00	X	
GW-38443-051315-GL-011	MW-203	WG	05/13/2015	08:45:00	X	
GW-38443-051315-GL-012	MW-101A	WG	05/13/2015	09:35:00	X	
GW-38443-051315-GL-013	MW-219	WG	05/13/2015	10:55:00	X	
GW-38443-051415-AS-018	MW-229	WG	05/14/2015	15:25:00	X	
GW-38443-051415-AS-019	MW-229	WG	05/14/2015	15:30:00	X	FD(GW-38443-051415-AS-018)
GW-38443-051415-AS-020	MW-216	WG	05/14/2015	16:35:00	X	
TRIPBLANK-051415-001	Trip Blank	WGQ	05/14/2015	00:00:00	X	
TestAmerica Job Number: 240-50825-1						
GW-38443-051515-AS-021	MW-210A	WG	05/15/2015	09:05:00	X	
GW-38443-051515-AS-022	MW-210B	WG	05/15/2015	10:30:00	X	
GW-38443-051515-AS-023	MW-210	WG	05/15/2015	11:20:00	X	
GW-38443-051515-AS-024	MW-201	WG	05/15/2015	13:00:00	X	
TRIPBLANK-051515-002	Trip Blank	WGQ	05/15/2015	00:00:00	X	

Notes:

FD() - Field Duplicate of the Sample in Parentheses
MS/MSD - Matrix Spike/Matrix Spike Duplicate
TCL - Target Compound List
VOCs - Volatile Organic Compounds
WG - Groundwater
WGQ - Groundwater Quality Control Sample

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***
Aquifer		***Lower Aquifer***	***Lower Aquifer***	***Lower Aquifer***
Sample Location:		***MW-209A***	***MW-210A***	***MW-210B***
Sample ID:		***GW-38443-051315-AS-016***	***GW-38443-051515-AS-021***	***GW-38443-051515-AS-022***
Date:		***5/13/2015***	***5/15/2015***	***5/15/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***
Parameters	***Units***			
Volatiles				
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	14 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	14 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	14 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	14 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	14 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	14 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	29 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	14 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	14 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	14 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	14 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	14 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	14 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	140 U
2-Hexanone	µg/L	10 U	10 U	140 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	140 U
Acetone	µg/L	10 U	10 U	140 U
Benzene	µg/L	1.0 U	1.0 U	390
Bromodichloromethane	µg/L	1.0 U	1.0 U	14 U
Bromoform	µg/L	1.0 U	1.0 U	14 U
Bromomethane (Methyl bromide)	µg/L	1.0 UJ	1.0 U	14 U
Carbon disulfide	µg/L	1.0 U	1.0 U	14 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	14 U
Chlorobenzene	µg/L	1.0 U	1.0 U	14 U
Chloroethane	µg/L	1.0 U	1.0 U	14 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	14 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	14 U
cis-1,2-Dichloroethene	µg/L	1.9	1.0 U	14 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	14 U
Cyclohexane	µg/L	1.0 U	1.0 U	14 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	14 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	14 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***
Aquifer		***Lower Aquifer***	***Lower Aquifer***	***Lower Aquifer***
Sample Location:		***MW-209A***	***MW-210A***	***MW-210B***
Sample ID:		***GW-38443-051315-AS-016***	***GW-38443-051515-AS-021***	***GW-38443-051515-AS-022***
Date:		***5/13/2015***	***5/15/2015***	***5/15/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***
Parameters	***Units***			
Ethylbenzene	µg/L	1.0 U	1.0 U	14 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	14 U
Methyl acetate	µg/L	10 U	10 U	140 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	14 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	14 U
Methylene chloride	µg/L	1.0 U	1.0 U	14 U
Styrene	µg/L	1.0 U	1.0 U	14 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	14 U
Toluene	µg/L	1.0 U	1.0 U	14 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	14 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	14 U
Trichloroethene	µg/L	1.0 U	1.0 U	14 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	14 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.0 U	1.0 U	14 U
Vinyl chloride	µg/L	9.3	32	14 U
Xylenes (total)	µg/L	2.0 U	2.0 U	29 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***	***OU1***
Aquifer		***Lower Aquifer***	***Lower Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-215B***	***MW-216***	***MW-101A***	***MW-202***
Sample ID:		***GW-38443-051315-AS-015***	***GW-38443-051415-AS-020***	***GW-38443-051315-GL-012***	***GW-38443-051215-GL-007***
Date:		***5/13/2015***	***5/14/2015***	***5/13/2015***	***5/12/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Volatiles					
1,1,1-Trichloroethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.2 J	17 U	0.44 J	1.0 U
1,1-Dichloroethene	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	3.3 U	33 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	17 U	170 U	10 U	10 U
2-Hexanone	µg/L	17 U	170 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	17 U	170 U	10 U	10 U
Acetone	µg/L	17 UJ	170 UJ	10 U	10 U
Benzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
Bromoform	µg/L	1.7 U	17 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.7 U	17 U	1.0 UJ	1.0 UJ
Carbon disulfide	µg/L	1.7 U	17 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.7 U	17 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Chloroethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.7 U	17 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.7 U	17 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	35	480	1.8	1.0 U
cis-1,3-Dichloropropene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.7 U	17 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.7 U	17 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.7 U	17 U	1.0 U	1.0 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***	***OU1***
Aquifer		***Lower Aquifer***	***Lower Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-215B***	***MW-216***	***MW-101A***	***MW-202***
Sample ID:		***GW-38443-051315-AS-015***	***GW-38443-051415-AS-020***	***GW-38443-051315-GL-012***	***GW-38443-051215-GL-007***
Date:		***5/13/2015***	***5/14/2015***	***5/13/2015***	***5/12/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Ethylbenzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Methyl acetate	µg/L	17 U	170 U	10 U	10 U
Methyl cyclohexane	µg/L	1.7 U	17 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.7 U	17 U	1.0 U	1.0 U
Methylene chloride	µg/L	1.7 U	17 U	1.0 U	1.0 U
Styrene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Toluene	µg/L	1.7 U	17 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.7 U	17 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.7 U	17 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.7 U	17 U	1.0 U	2.3
Trichlorofluoromethane (CFC-11)	µg/L	1.7 U	17 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.7 U	17 U	1.0 U	1.0 U
Vinyl chloride	µg/L	5.4	350	1.7	1.0 U
Xylenes (total)	µg/L	3.3 U	33 U	2.0 U	2.0 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		*OU1*	*OU1*	*OU1*	*OU1*
Aquifer		*Upper Aquifer*	*Upper Aquifer*	*Upper Aquifer*	*Upper Aquifer*
Sample Location:		*MW-203*	*MW-204*	*MW-209*	*MW-210*
Sample ID:		*GW-38443-051315-GL-011*	*GW-38443-051115-GL-001*	*GW-38443-051215-GL-008*	*GW-38443-051515-AS-023*
Date:		*5/13/2015*	*5/11/2015*	*5/12/2015*	*5/15/2015*
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Volatiles					
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,1-Dichloroethane	µg/L	0.32 J	1.0 U	1.0 U	2.5 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	5.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	25 U
2-Hexanone	µg/L	10 U	10 U	10 U	25 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	25 U
Acetone	µg/L	10 U	10 U	10 U	25 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Bromomethane (Methyl bromide)	µg/L	1.0 UJ	1.0 UJ	1.0 UJ	2.5 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Chlorobenzene	µg/L	1.4	0.31 J	1.0 U	2.5 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
cis-1,2-Dichloroethene	µg/L	5.0	1.0 U	1.0 U	14
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***	***OU1***
Aquifer		***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-203***	***MW-204***	***MW-209***	***MW-210***
Sample ID:		***GW-38443-051315-GL-011***	***GW-38443-051115-GL-001***	***GW-38443-051215-GL-008***	***GW-38443-051515-AS-023***
Date:		***5/13/2015***	***5/11/2015***	***5/12/2015***	***5/15/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Methyl acetate	µg/L	10 U	10 U	10 U	25 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Trichloroethene	µg/L	1.1	1.0 U	1.0 U	78
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.0 U	1.0 U	1.0 U	2.5 U
Vinyl chloride	µg/L	1.6	1.0 U	1.0	2.5 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	5.0 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***	***OU1***
Aquifer		***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-212***	***MW-215A***	***MW-219***	***MW-229***
Sample ID:		***GW-38443-051215-GL-006***	***GW-38443-051315-AS-014***	***GW-38443-051315-GL-013***	***GW-38443-051415-AS-018***
Date:		***5/12/2015***	***5/13/2015***	***5/13/2015***	***5/14/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Volatiles					
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	8.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	0.37 J	1.0 U	4.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	40 U
2-Hexanone	µg/L	10 U	10 U	10 U	40 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	40 U
Acetone	µg/L	10 U	10 U	10 U	40 U
Benzene	µg/L	1.0 U	2.8	1.0 U	4.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 UJ	1.0 UJ	1.0 UJ	4.0 UJ
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Chlorobenzene	µg/L	1.0 U	1.7	1.0 U	4.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	0.93 J	1.0 U	9.8
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Cyclohexane	µg/L	1.0 U	0.58 J	1.0 U	4.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU1***	***OU1***	***OU1***
Aquifer		***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-212***	***MW-215A***	***MW-219***	***MW-229***
Sample ID:		***GW-38443-051215-GL-006***	***GW-38443-051315-AS-014***	***GW-38443-051315-GL-013***	***GW-38443-051415-AS-018***
Date:		***5/12/2015***	***5/13/2015***	***5/13/2015***	***5/14/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Ethylbenzene	µg/L	1.0 U	0.48 J	1.0 U	4.0 U
Isopropyl benzene	µg/L	1.0 U	0.71 J	1.0 U	4.0 U
Methyl acetate	µg/L	10 U	10 U	10 U	40 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.8	4.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Toluene	µg/L	1.0 U	1.0 U	0.25 J	4.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	85
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.0 U	1.0 U	1.0 U	4.0 U
Vinyl chloride	µg/L	1.0 U	0.31 J	1.0 U	4.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	8.0 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU2***	***OU2***	***OU2***
Aquifer		***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-229***	***MW-102***	***MW-102***	***MW-103***
Sample ID:		***GW-38443-051415-AS-019***	***GW-38443-051115-GL-002***	***GW-38443-051115-GL-003***	***GW-38443-051115-GL-004***
Date:		***5/14/2015***	***5/11/2015***	***5/11/2015***	***5/11/2015***
		Duplicate		***Duplicate***	
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Volatiles					
1,1,1-Trichloroethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	2.5 U	1.0 U	1.0 U	0.48 J
1,1-Dichloroethene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	5.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	25 U	10 U	10 U	10 U
2-Hexanone	µg/L	25 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	25 U	10 U	10 U	10 U
Acetone	µg/L	25 UJ	10 U	10 U	10 U
Benzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	2.5 U	1.0 UJ	1.0 UJ	1.0 UJ
Carbon disulfide	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	8.7	1.0 U	1.0 U	0.38 J
cis-1,3-Dichloropropene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU1***	***OU2***	***OU2***	***OU2***
Aquifer		***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***	***Upper Aquifer***
Sample Location:		***MW-229***	***MW-102***	***MW-102***	***MW-103***
Sample ID:		***GW-38443-051415-AS-019***	***GW-38443-051115-GL-002***	***GW-38443-051115-GL-003***	***GW-38443-051115-GL-004***
Date:		***5/14/2015***	***5/11/2015***	***5/11/2015***	***5/11/2015***
		Duplicate		***Duplicate***	
Sampling Company:		***CRA***	***CRA***	***CRA***	***CRA***
Parameters	***Units***				
Ethylbenzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	25 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	2.5 U	1.0 U	0.31 J	1.0 U
Toluene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	73	1.8	1.9	0.54 J
Trichlorofluoromethane (CFC-11)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	2.5 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	5.0 U	2.0 U	2.0 U	2.0 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU2***	***OU2 (DP&L)***	***OU2 (DP&L)***
Aquifer		***Upper Aquifer***	***Lower Aquifer***	***Upper Aquifer***
Sample Location:		***MW-201***	***MW-222***	***MW-222A***
Sample ID:		***GW-38443-051515-AS-024***	***GW-38443-051215-GL-010***	***GW-38443-051215-GL-009***
Date:		***5/15/2015***	***5/12/2015***	***5/12/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***
Parameters	***Units***			
Volatiles				
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 UJ	1.0 UJ
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	17	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U

TABLE 2

GROUNDWATER SAMPLING ANALYTICAL RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

OU		***OU2***	***OU2 (DP&L)***	***OU2 (DP&L)***
Aquifer		***Upper Aquifer***	***Lower Aquifer***	***Upper Aquifer***
Sample Location:		***MW-201***	***MW-222***	***MW-222A***
Sample ID:		***GW-38443-051515-AS-024***	***GW-38443-051215-GL-010***	***GW-38443-051215-GL-009***
Date:		***5/15/2015***	***5/12/2015***	***5/12/2015***
Sampling Company:		***CRA***	***CRA***	***CRA***
Parameters	***Units***			
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	0.45 J	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.4	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	5.6	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

TABLE 3

SUMMARY OF ANALYTICAL METHODOLOGIES
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Parameter	***Method***
TCL VOCs	SW-846 8260 [1]

Notes:

[1] "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 (with all subsequent revisions)

TCL - Target Compound List

TABLE 4

QUALIFIED SAMPLE RESULTS DUE TO HOLDING TIME EXCEEDANCE
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Parameter	*Sample ID*	*Holding Time (days)*	*Holding Time Criteria (days)*	*Analyte*	*Qualified Sample Results*	*Units*
VOCs	GW-38443-051315-AS-015	15	14	1,1-Dichloroethane	1.2 J	µg/L

Notes:

J - Estimated Concentration
VOCs - Volatile Organic Compounds

TABLE 5

QUALIFIED SAMPLE RESULTS DUE TO OUTLYING CONTINUING CALIBRATION RESULTS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Parameter	*Analyte*	*Calibration Date*	*%D*	*Associated Sample ID*	*Qualified Result*	*Units*
VOCs	Bromomethane	5/20/2015	27	GW-38443-051115-GL-001	1.0 UJ	µg/L
				GW-38443-051115-GL-002	1.0 UJ	µg/L
				GW-38443-051115-GL-003	1.0 UJ	µg/L
				GW-38443-051115-GL-004	1.0 UJ	µg/L
				GW-38443-051215-GL-006	1.0 UJ	µg/L
				GW-38443-051215-GL-007	1.0 UJ	µg/L
				GW-38443-051215-GL-008	1.0 UJ	µg/L
				GW-38443-051215-GL-009	1.0 UJ	µg/L
				GW-38443-051215-GL-010	1.0 UJ	µg/L
				GW-38443-051315-AS-014	1.0 UJ	µg/L
				GW-38443-051315-AS-016	1.0 UJ	µg/L
				GW-38443-051315-GL-011	1.0 UJ	µg/L
				GW-38443-051315-GL-012	1.0 UJ	µg/L
				GW-38443-051315-GL-013	1.0 UJ	µg/L
				GW-38443-051415-AS-018	4.0 UJ	µg/L
VOCs	Acetone	5/21/2015	50	GW-38443-051315-AS-015	17 UJ	µg/L
				GW-38443-051415-AS-019	25 UJ	µg/L
				GW-38443-051415-AS-020	170 UJ	µg/L

Notes:

%D - Percent difference
UJ - Not detected; associated reporting limit is estimated
VOCs - Volatile Organic Compounds

TABLE 6

QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE METHOD BLANKS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Parameter	*Analyte*	*Analysis Date*	*Blank Result **	*Sample ID*	*Original Result*	*Qualified Result*	*Units*
VOCs	Methylene chloride	05/20/2015	1.92 J	GW-38443-051415-AS-018	1.6 J	4.0 U	µg/L
VOCs	Methylene chloride	05/21/2015	0.81 J	GW-38443-051315-AS-015	0.64 J	1.7 U	µg/L
VOCs	Methylene chloride	05/21/2015	1.21 J	GW-38443-051415-AS-019	1.2 J	2.5 U	µg/L
VOCs	Methylene chloride	05/21/2015	8.1 J	GW-38443-051415-AS-020	9.3 J	17 U	µg/L

Notes:

* - Blank result adjusted for sample factors where applicable
J - Estimated Concentration
U - Not detected at the associated reporting limit
VOCs - Volatile Organic Compounds

TABLE 7

QUALIFIED SAMPLE DATA DUE TO ANALYTE CONCENTRATIONS IN THE RINSE BLANKS
SPRING 2015 GROUNDWATER SAMPLING
SOUTH DAYTON DUMP AND LANDFILL
ILLINOIS TOOL WORKS, INC.
MORAINE, OHIO
MAY 2015

Parameter	*Rinse Blank ID*	*Blank Date*	*Analyte*	*Blank Result*	*Associated Sample ID*	*Original Result*	*Qualified Result*	*Units*
VOCs	GW-38443-051315-AS-017	05/13/15	Chloroform	0.30 J	GW-38443-051215-GL-009	0.52 J	1.0 U	µg/L

Notes:

J - Estimated Concentration
U - Not detected at the associated reporting limit
VOCs - Volatile Organic Compounds

Memorandum

To:	Julian Hayward	Ref. No.:	038443
From:	Angela Bown/cs/24-NF	Date:	July 21, 2015
cc:	Valerie Chan		

Re: Analytical Results and Full Validation
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works
Moraine, Ohio
June 2015

1. Introduction

This document details a validation of analytical results for water samples collected in support of the Spring 2015 Groundwater Sampling at the South Dayton Dump and Landfill site during June 2015. Samples were submitted to TestAmerica Laboratories, Inc (TestAmerica) located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. Evaluation of the data was based on information obtained from the finished data sheets, raw data, chain of custody form, calibration data, blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) samples. The assessment of analytical and in-house data included checks for: data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) "Quality Assurance Project Plan (QAPP)", Revision 01, November 2014

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

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REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check)

3.1 Organic Analyses

Prior to volatile organic compound (VOC) analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the method requires the analysis of specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

The tuning compound was analyzed at the required frequency throughout VOC analysis periods. All tuning criteria were met indicating that proper optimization of the instrumentation was achieved.

4. Initial Calibration - Organic Analyses

4.1 GC/MS

To quantify VOCs of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i) All relative response factors (RRFs) must be greater than or equal to 0.050 (greater than or equal to 0.010 for compounds that exhibit poor response)

ii) The percent relative standard deviation (%RSD) values must not exceed 20.0 percent (40.0 percent for compounds that exhibit poor response) or a minimum correlation coefficient (R) and minimum coefficient of determination (R^2) of 0.99 if linear and quadratic equation calibration curves are used

The initial calibration data for VOCs were reviewed. All compounds met the above criteria for sensitivity and linearity.

5. Continuing Calibration - Organic Analyses

5.1 GC/MS

To ensure that instrument calibration for VOC analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

i) All RRF values must be greater than or equal to 0.050 (greater than or equal to 0.010 for compounds that exhibit poor response)

ii) Percent difference (%D) values must not exceed 25.0 percent (40.0 percent for compounds that exhibit poor response)

Calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability with the exception of Bromomethane. Table 4 presents the sample results that were qualified due to outlying continuing calibration results.

6. Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

6.1 Organic Analyses

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

7. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the laboratory criteria.

8. Internal Standards (IS) Analyses

IS data were evaluated for all VOC sample analyses.

8.1 Organics Analyses

To ensure that changes in the GC/MS sensitivity and response do not affect sample analysis results IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

i) The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard

ii) IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard

All organic IS recoveries and retention times met the above criteria.

9. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

9.1 Organic Analyses

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

10. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the distillation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

10.1 Organic Analyses

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

11. Field QA/QC Samples

The field QA/QC consisted of one (1) trip blank sample and one (1) field duplicate sample set.

11.1 Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

11.2 Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

12. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the PQL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

13. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The samples identified in Table 1 were reviewed. The organic compounds reported adhered to the specified identification criteria.

14. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works, Inc.
Moraine, Ohio
June 2015

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: TCL VOCs	Comments
TestAmerica Job Number: 240-52473-1						
GW-38443-062315-JC-025	MW-B	WG	06/23/2015	13:00	X	
GW-38443-062315-JC-026	MW-A	WG	06/23/2015	15:15	X	
GW-38443-062315-JC-027	MW-220	WG	06/23/2015	17:10	X	
GW-38443-062415-JC-028	MW-221	WG	06/24/2015	10:45	X	MS/MSD
GW-38443-062415-JC-029	GW-5	WG	06/24/2015	12:05	X	
GW-38443-062415-JC-030	GW-5	WG	06/24/2015	12:15	X	FD(GW-38443-062415-JC-029)
TRIP BLANK 001	Trip Blank	WGQ	06/24/2015	-	X	

Notes:

FD - Field Duplicate sample of sample in parenthesis
MS/MSD - Matrix Spike/Matrix Spike Duplicate
TCL - Target Compound List
VOCs - Volatile Organic Compounds
WG - Groundwater
WGQ - Groundwater Quality Control Sample

Table 2

Analytical Results Summary
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works
Moraine, Ohio
June 2015

Sample Location:		**MW-220**	**MW-A**	**MW-B**
Sample ID:		**GW-38443-062315-JC-027**	**GW-38443-062315-JC-026**	**GW-38443-062315-JC-025**
Sample date:		**6/23/2015**	**6/23/2015**	**6/23/2015**
Parameters	**Units**			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.4 U	3.3 U	33 U
1,1,2,2-Tetrachloroethane	µg/L	1.4 U	3.3 U	33 U
1,1,2-Trichloroethane	µg/L	1.4 U	3.3 U	33 U
1,1-Dichloroethane	µg/L	1.4 U	3.3 U	33 U
1,1-Dichloroethene	µg/L	1.4 U	3.3 U	33 U
1,2,4-Trichlorobenzene	µg/L	1.4 U	3.3 U	33 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.9 U	6.7 U	67 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.4 U	3.3 U	33 U
1,2-Dichlorobenzene	µg/L	1.4 U	3.3 U	33 U
1,2-Dichloroethane	µg/L	1.4 U	3.3 U	33 U
1,2-Dichloropropane	µg/L	1.4 U	3.3 U	33 U
1,3-Dichlorobenzene	µg/L	1.4 U	3.3 U	33 U
1,4-Dichlorobenzene	µg/L	1.4 U	3.3 U	33 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	14 U	9.9 J	330 U
2-Hexanone	µg/L	14 U	33 U	330 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	14 U	33 U	330 U
Acetone	µg/L	14 U	53	34 J
Benzene	µg/L	38	80	250
Bromodichloromethane	µg/L	1.4 U	3.3 U	33 U
Bromoform	µg/L	1.4 U	3.3 U	33 U
Bromomethane (Methyl bromide)	µg/L	1.4 UJ	3.3 UJ	33 UJ
Carbon disulfide	µg/L	1.4 U	3.3 U	33 U
Carbon tetrachloride	µg/L	1.4 U	3.3 U	33 U
Chlorobenzene	µg/L	1.4 U	3.3 U	33 U
Chloroethane	µg/L	1.4 U	3.3 U	33 U
Chloroform (Trichloromethane)	µg/L	1.4 U	3.3 U	33 U
Chloromethane (Methyl chloride)	µg/L	1.4 U	3.3 U	33 U
cis-1,2-Dichloroethene	µg/L	40	3.3 U	33 U
cis-1,3-Dichloropropene	µg/L	1.4 U	3.3 U	33 U
Cyclohexane	µg/L	1.4 U	67	200
Dibromochloromethane	µg/L	1.4 U	3.3 U	33 U

Table 2

Analytical Results Summary
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works
Moraine, Ohio
June 2015

	Sample Location:	**MW-220**	**MW-A**	**MW-B**
	Sample ID:	**GW-38443-062315-JC-027**	**GW-38443-062315-JC-026**	**GW-38443-062315-JC-025**
	Sample date:	**6/23/2015**	**6/23/2015**	**6/23/2015**
Parameters	**Units**			
Dichlorodifluoromethane (CFC-12)	µg/L	1.4 U	3.3 U	33 U
Ethylbenzene	µg/L	1.4 U	8.2	600
Isopropyl benzene	µg/L	1.4 U	21	38
Methyl acetate	µg/L	14 U	33 U	330 U
Methyl cyclohexane	µg/L	1.4 U	40	87
Methyl tert butyl ether (MTBE)	µg/L	1.4 U	3.3 U	33 U
Methylene chloride	µg/L	1.4 U	3.3 U	33 U
Styrene	µg/L	1.4 U	3.3 U	33 U
Tetrachloroethene	µg/L	1.4 U	3.3 U	33 U
Toluene	µg/L	1.4 U	2.8 J	64
trans-1,2-Dichloroethene	µg/L	1.4 U	3.3 U	33 U
trans-1,3-Dichloropropene	µg/L	1.4 U	3.3 U	33 U
Trichloroethene	µg/L	1.4 U	3.3 U	33 U
Trichlorofluoromethane (CFC-11)	µg/L	1.4 U	3.3 U	33 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.4 U	3.3 U	33 U
Vinyl chloride	µg/L	33	3.3 U	33 U
Xylenes (total)	µg/L	2.9 U	3.9 J	1100

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

Table 2

Analytical Results Summary
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works
Moraine, Ohio
June 2015

	Sample Location:	**GW-5**	**GW-5**	**MW-221**
	Sample ID:	**GW-38443-062415-JC-029**	**GW-38443-062415-JC-030**	**GW-38443-062415-JC-028**
	Sample date:	**6/24/2015**	**6/24/2015**	**6/24/2015**
			Duplicate	
Parameters	**Units**			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.0 U	1.3 U	10 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.3 U	10 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.3 U	10 U
1,1-Dichloroethane	µg/L	1.0 U	1.3 U	10 U
1,1-Dichloroethene	µg/L	1.0 U	1.3 U	10 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.3 U	10 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.5 U	20 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.3 U	10 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.3 U	10 U
1,2-Dichloroethane	µg/L	1.0 U	1.3 U	10 U
1,2-Dichloropropane	µg/L	1.0 U	1.3 U	10 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.3 U	10 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.3 U	10 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	13 U	100 U
2-Hexanone	µg/L	10 U	13 U	100 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	13 U	100 U
Acetone	µg/L	10 U	13 U	100 U
Benzene	µg/L	35	35	10 U
Bromodichloromethane	µg/L	1.0 U	1.3 U	10 U
Bromoform	µg/L	1.0 U	1.3 U	10 U
Bromomethane (Methyl bromide)	µg/L	1.0 UJ	1.3 UJ	10 UJ
Carbon disulfide	µg/L	1.0 U	1.3 U	10 U
Carbon tetrachloride	µg/L	1.0 U	1.3 U	10 U
Chlorobenzene	µg/L	1.0 U	1.3 U	10 U
Chloroethane	µg/L	1.0 U	1.3 U	10 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.3 U	10 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.3 U	10 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.3 U	290
cis-1,3-Dichloropropene	µg/L	1.0 U	1.3 U	10 U
Cyclohexane	µg/L	14	11	10 U
Dibromochloromethane	µg/L	1.0 U	1.3 U	10 U

Table 2

Analytical Results Summary
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works
Moraine, Ohio
June 2015

	Sample Location:	**GW-5**	**GW-5**	**MW-221**
	Sample ID:	**GW-38443-062415-JC-029**	**GW-38443-062415-JC-030**	**GW-38443-062415-JC-028**
	Sample date:	**6/24/2015**	**6/24/2015**	**6/24/2015**
			Duplicate	
Parameters	**Units**			
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.3 U	10 U
Ethylbenzene	µg/L	1.0 U	1.3 U	10 U
Isopropyl benzene	µg/L	0.75 J	0.68 J	10 U
Methyl acetate	µg/L	10 U	13 U	100 U
Methyl cyclohexane	µg/L	4.6	3.5	10 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.3 U	10 U
Methylene chloride	µg/L	1.0 U	1.3 U	10 U
Styrene	µg/L	1.0 U	1.3 U	10 U
Tetrachloroethene	µg/L	1.0 U	1.3 U	10 U
Toluene	µg/L	0.25 J	1.3 U	10 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.3 U	10 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.3 U	10 U
Trichloroethene	µg/L	1.0 U	1.3 U	10 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.3 U	10 U
Trifluorotrichloroethane (Freon 113)	µg/L	1.0 U	1.3 U	10 U
Vinyl chloride	µg/L	1.0 U	1.3 U	110
Xylenes (total)	µg/L	0.56 J	2.5 U	20 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated

Table 3

Analytical Methods
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works, Inc.
Moraine, Ohio
June 2015

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Collection or Extraction to Analysis (Days)**
TCL VOCs	SW-846 8260B	Water	-	14

Notes:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
TCL - Target Compound List
VOCs - Volatile Organic Compounds

Table 4

Qualified Sample Results Due to Outlying Continuing Calibration Results
Spring 2015 Groundwater Sampling
South Dayton Dump and Landfill
Illinois Tool Works, Inc.
Moraine, Ohio
June 2015

Parameter	Analyte	Calibration Date	%D	Associated Sample ID	Qualified Result	Units
VOCs	Bromomethane	7/2/2015	25.4	GW-38443-062315-JC-025	33 UJ	µg/L
				GW-38443-062315-JC-026	3.3 UJ	µg/L
				GW-38443-062315-JC-027	1.4 UJ	µg/L
				GW-38443-062415-JC-028	10 UJ	µg/L
				GW-38443-062415-JC-029	1.0 UJ	µg/L
VOCs	Bromomethane	7/6/2015	28.2	GW-38443-062415-JC-030	1.3 UJ	µg/L

Notes:

-- - Not applicable
%D - Percent difference
UJ - Not detected; associated reporting limit is estimated
VOCs - Volatile Organic Compounds