



**Review of 2016 2<sup>nd</sup> Semi-annual Groundwater Monitoring Report  
for  
J.E.D. Solid Waste Management Facility**

Review Dates: 5/1/17 & 5/9/17	Reviewed By: Allen Rainey, Environmental Specialist III	WACS Facility ID #: 89544
Facility Name: J.E.D. Solid Waste Management Facility		County: Osceola
Monitoring Period: November 2016		
Type: Routine	Facility Class Types: Class I, Construction & Demolition Debris	
Report Date: 2/21/17	Received Date: 3/15/17	WACS Upload Date: 3/16/17 (8:06 pm)
Prepared By: Environmental Planning Specialists (EPS)	Submitted By: EPS	
Report Title: 25 <sup>th</sup> Semi-annual Water Quality Monitoring Report		

**Review Details**

Summary

- The Department continues to work with the facility concerning corrective actions for landfill gas influences upon the saturation zone. The report indicates that a likely source of benzene in the wells is landfill gas.
- There are no indications that groundwater is discharging to surface waters.

Parameter Exceedances

- Benzene standard (1 µg/L) was exceeded in groundwater wells as follows. The report indicates that a likely source of benzene is landfill gas. This is the second exceedance of benzene in wells MW-10B and MW-16AR.

Well ID	Well Type	Concentration (µg/L)
MW-6A	Detection	5.7
MW-8A	Detection	4.9*
MW-9A	Detection	7.7*
MW-10A	Detection	3.5
MW-10B	Detection	5.6
MW-11A	Detection	6.2
MW-12A	Detection	7
MW-13A	Detection	3.9

\* Qualifier code "J" accompanied the results, indicating surrogate recovery issues.

- Lead standard (15 µg/L) was exceeded in detection well MW-31B at 100 µg/L. Report PDF page 13 attributes the lead concentrations to high turbidity levels in the samples.
- Vanadium standard (49 µg/L) was exceeded in detection well MW-31B at 130 µg/L). Report PDF page 14 attributes the vanadium concentrations to high turbidity levels in the samples.
- 1,2-Dibromo-3-Chloropropane standard (0.2 µg/L) was exceeded in detection well MW-22AR at 2.9 µg/L. Report PDF page 15 indicates the result may be anomalous. The Department will watch future concentrations of this contaminant.
- 1,2-Dibromoethane standard (0.02 µg/L) was exceeded in detection well MW-22AR at 0.36 µg/L). The report does not mention this exceedance. The Department will watch future concentrations of this contaminant.
- Sodium standard (160 mg/L) was exceeded in detection wells MW-16AR at 240 mg/L and MW-1A at 280 mg/L. This is the first sodium exceedance in well MW-16AR.
- Chloride standard (250 mg/L) was exceeded in detection wells MW-16 AR at 420 mg/L and MW-1A at 530 mg/L. This is the first chloride exceedance in well MW-16AR.
- Ammonia 62-777 GCTL (2.8 mg/L) was exceeded in 13 A-zone groundwater wells and 5 B-zone groundwater wells. The facility's MPIS establishes a background concentration of 10 mg/L for wells MW-5A, MW-9A, MW-10A, and MW-11A. Ammonia concentrations in those wells were below the MPIS background. The report states that "Under reducing geochemical conditions, nitrogen containing compounds can be converted to ammonia. Reducing conditions are favorable in the shallow aquifer at the site and may develop in several ways such as the shadow effect of the lined disposal areas preventing the infiltration of oxygen-rich precipitation, displacement of oxygen by landfill gas immediately above the water table, or high organic matter content found in site soils which promotes the growth of oxygen consuming microorganisms (HDR Engineering, Inc., Class I Permit Renewal Request for Additional Information, January 2012)." That explanation is acceptable.
- Total dissolved solids standard (500 mg/L) was exceeded in 8 A-zone groundwater wells and 10 B-zone groundwater wells. The Department will continue to monitor total dissolved solids concentrations in the wells.
- Iron standard for groundwater (0.3 mg/L) was exceeded in a majority of groundwater wells.

- Iron standard for surface water (1 mg/L) was exceeded in surface water location SW-4. Within the last three years, such surface water exceedances occurred only during the May 2014 and May 2016 sampling events.
- pH in all of the wells was below the range of 6.5 to 8.5. That is consistent with data since 2010. Condition 6 of the facility's MPIS establishes a background pH value for the site of 4.5 STU.

Notations

- Condition 5 of the facility's MPIS establishes an arsenic background concentration of 20 mg/L for wells MW-11A and MW-13A. Arsenic concentrations were not detected in any of the wells.
- Sodium and chloride exceedances first appeared during the November 2012. They originally occurred only in well MW-1A, and now they also appear in well MW-16AR. The report on PDF page 20 attributes the current concentrations in well MW-16AR to "storm water runoff and cover soil from uncapped areas that occurred within the past year directly upslope between the Cell 6 and Cell 9 sump areas." According to the "Sixth Technical Report on Water Quality" dated 4/27/17 and received 5/1/17, the facility is considering use of geosynthetic tarps as control measures for the stormwater runoff and soil erosion. The Department will continue to watch sodium and chloride concentrations and accepts the report's recommendation to continue to monitor such exceedances as part of the current MPIS.
- Nitrate standard (10 mg/L) was exceeded in detection wells MW-16AR at 51 mg/L and MW-17AR. Qualifier code "Q" accompanied the result for MW-17AR, indicating the laboratory analyzed the sample past the holding time. Report PDF page 15 indicates that the reason was due to an inadvertent sample receiving error ant that "the impact on the data is minimal."
- The evaluation monitoring mentioned on report PDF page 19 was ended in November 2014. It does not impact this sampling event. However, on 12/29/16, the Department added evaluation monitoring wells CW-1A, CW-2A, and CW-3A to the semi-annual monitoring requirements in the MPIS to help determine any benzene impacts at the edge of the ZOD.
- The Department continues to work with the facility concerning corrective actions for landfill gas influences, primarily benzene, upon the saturation zone.
- Surface water samples were initially collected on 5/12/16. Following a laboratory error, the facility sampled both locations again on 5/25/16 and analyzed only for mercury.
- Both qualifier codes "J" and "U" accompanied many of the analytes for 8 of the wells. Code "J" indicates surrogate recovery issues.
- For the surface water locations, the facility reported and uploaded to ADaPT the ammonia concentrations as ammonia-N (WACS Analyte ID 1515). The ammonia in surface water standard was recently changed in Chapter 62-302, F.A.C. The Solid Waste Program is deciding how the new standard should be implemented at solid waste facilities.
- The report attributes the exceedances in well MW-31B to turbidity. There is a history of high turbidities in newly installed wells. During the next sampling events, try sampling techniques that reduce turbidity, such as, lower pumping rate. Also, consider analyzing both unfiltered and field filtered samples from the well. The Department will continue to watch those concentrations.

**Purging Completion**

Dissolved oxygen $\leq$ 20% saturation? YES If no, $\pm$ 0.2 mg/L or readings are within 10%? N/A	Turbidity $\leq$ 20 NTUs? NO If no, $\pm$ 5 NTUs or readings are within 10%? YES
Temperature $\pm$ 0.2° C? YES	pH $\pm$ 0.2 standard units? YES
Specific conductance $\pm$ 5% of reading? YES	

**Sampling and Analysis**

Sampling dates: Nov. 15, 16, 17, 18, 21, & 22	Last lab analysis date: 12/5/16
# of active groundwater monitoring locations: 40	# of active surface water monitoring locations: 2
Initial sampling device: peristaltic & electric submersible pumps	Re-sampling device: N/A
All groundwater and surface water sampling points sampled? YES	All analyses performed? YES
Trip blanks? NO	Field or equipment blanks? YES

Lab certified under National Environmental Laboratory Accreditation Program? YES

Unionized ammonia analysis? YES      Phenols analysis? N/A      Unfiltered samples? YES

**Monitoring Plan Implementation Schedule Reporting Requirements**

Revision Date: N/A	Effective Date: 7/7/16	Permit #: 0199726-030-SO-MM
Notification made within 14 days of sampling? YES		
Cover letter? NO		
Ground Water Monitoring Report, DEP Form 62-520.900(2) (or equivalent)? YES		Certification Date: 2/21/17
Summary of exceedances & sampling issues? YES		

Review of Semi-annual Groundwater Monitoring Report for J.E.D. Solid Waste Management Facility

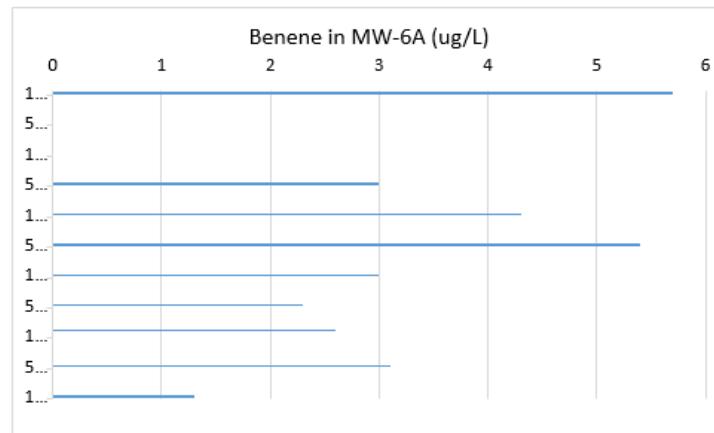
Page 3 of 5

Groundwater contour maps? YES <sup>a</sup>	Contour maps signed and sealed? YES
Water levels & water elevation table? YES	Water level measurements made within one-day period? YES
Groundwater Sampling Logs, DEP Form FD 9000-24? YES	
Chain of custody forms? YES	
Conclusions and recommendations? YES	
Lab and field EDD files named correctly (89544_201611_swldd.txt & 89544_201611_swfdd.txt)? YES	
Report named correctly (89544_201611_swgwmr.pdf)? YES	
File(s) indicate successful data export? YES	
Report signed and sealed by P.G.? YES	Date signed and sealed: 3/14/17
Report received within 60 days of completing lab analysis? NO (The last day of laboratory analysis was 12/5/16. The Department received the report on 3/16/17, which is 41 days past the 2/3/17 due date.)	
<sup>a</sup> contour map for A-zone wells only	

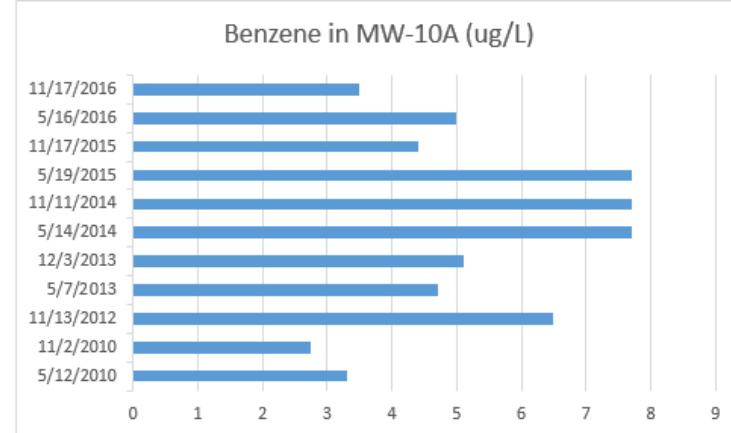
### Graphs

#### Benzene concentrations in monitoring wells ( $\mu\text{g/L}$ )

MW-6A	11/15/2012	1.3	ug/L
MW-6A	5/8/2013	3.1	ug/L
MW-6A	12/2/2013	2.6	ug/L
MW-6A	5/13/2014	2.3	ug/L
MW-6A	11/11/2014	3	ug/L
MW-6A	5/18/2015	5.4	ug/L
MW-6A	11/17/2015	4.3	ug/L
MW-6A	5/16/2016	3	ug/L
MW-6A	11/21/2017	5.7	ug/L



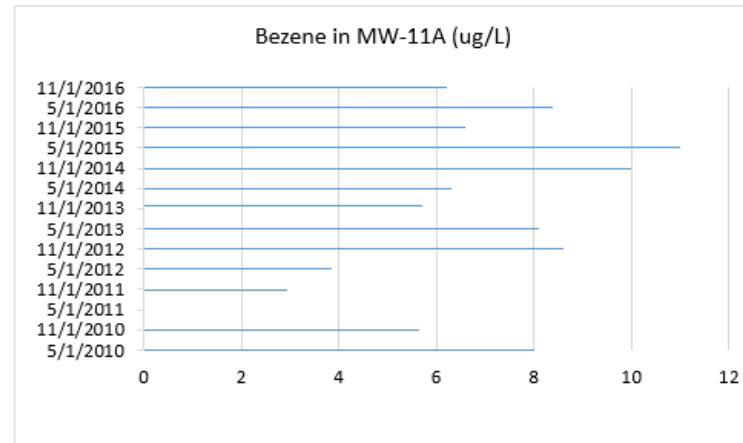
MW-10A	5/12/2010	3.3	ug/L
MW-10A	11/2/2010	2.74	ug/L
MW-10A	11/13/2012	6.5	ug/L
MW-10A	5/7/2013	4.7	ug/L
MW-10A	12/3/2013	5.1	ug/L
MW-10A	5/14/2014	7.7	ug/L
MW-10A	11/11/2014	7.7	ug/L
MW-10A	5/19/2015	7.7	ug/L
MW-10A	11/17/2015	4.4	ug/L
MW-10A	5/16/2016	5	ug/L
MW-10A	11/17/2016	3.5	ug/L



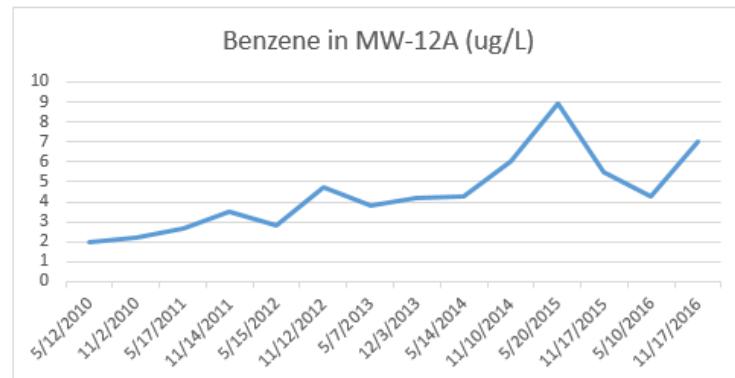
# Review of Semi-annual Groundwater Monitoring Report for J.E.D. Solid Waste Management Facility

Page 4 of 5

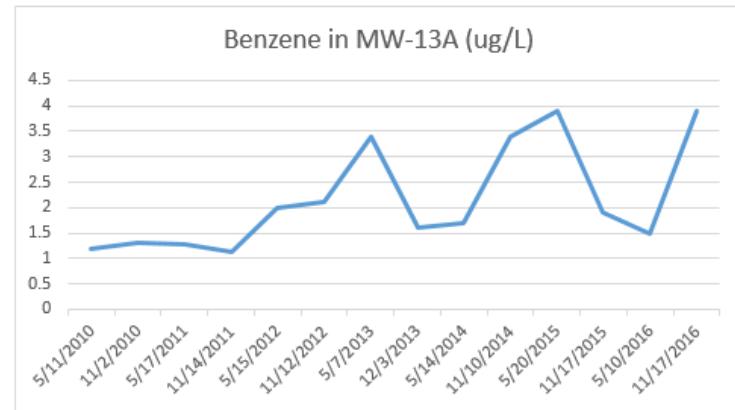
MW-11A	5/12/2010	8	ug/L
MW-11A	11/2/2010	5.65	ug/L
MW-11A	11/14/2011	2.95	ug/L
MW-11A	5/15/2012	3.84	ug/L
MW-11A	11/12/2012	8.6	ug/L
MW-11A	5/7/2013	8.1	ug/L
MW-11A	12/3/2013	5.7	ug/L
MW-11A	5/14/2014	6.3	ug/L
MW-11A	11/11/2014	10	ug/L
MW-11A	5/19/2015	11	ug/L
MW-11A	11/17/2015	6.6	ug/L
MW-11A	5/10/2016	8.4	ug/L
MW-11A	11/17/2016	6.2	ug/L



MW-12A	5/12/2010	2	ug/L
MW-12A	11/2/2010	2.19	ug/L
MW-12A	5/17/2011	2.69	ug/L
MW-12A	11/14/2011	3.5	ug/L
MW-12A	5/15/2012	2.83	ug/L
MW-12A	11/12/2012	4.7	ug/L
MW-12A	5/7/2013	3.8	ug/L
MW-12A	12/3/2013	4.2	ug/L
MW-12A	5/14/2014	4.3	ug/L
MW-12A	11/10/2014	6	ug/L
MW-12A	5/20/2015	8.9	ug/L
MW-12A	11/17/2015	5.5	ug/L
MW-12A	5/10/2016	4.3	ug/L
MW-12A	11/17/2016	7	ug/L

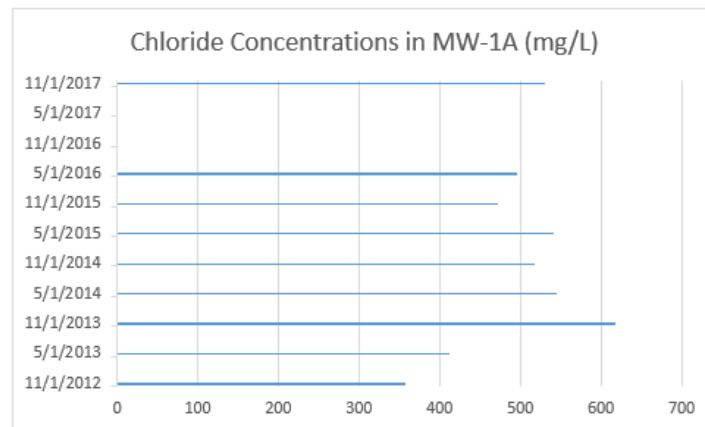


MW-13A	5/11/2010	1.2	ug/L
MW-13A	11/2/2010	1.31	ug/L
MW-13A	5/17/2011	1.28	ug/L
MW-13A	11/14/2011	1.14	ug/L
MW-13A	5/15/2012	1.98	ug/L
MW-13A	11/12/2012	2.1	ug/L
MW-13A	5/7/2013	3.4	ug/L
MW-13A	12/3/2013	1.6	ug/L
MW-13A	5/14/2014	1.7	ug/L
MW-13A	11/10/2014	3.4	ug/L
MW-13A	5/20/2015	3.9	ug/L
MW-13A	11/17/2015	1.9	ug/L
MW-13A	5/10/2016	1.5	ug/L
MW-13A	11/17/2016	3.9	ug/L



Chloride (250 mg/L) and sodium (160 mg/L) exceedances in monitoring well MW-1A

MW-1A	11/15/2012	358	mg/L
MW-1A	5/9/2013	412	mg/L
MW-1A	11/18/2013	617	mg/L
MW-1A	5/6/2014	544	mg/L
MW-1A	11/12/2014	518	mg/L
MW-1A	5/7/2015	542	mg/L
MW-1A	11/18/2015	472	mg/L
MW-1A	5/12/2016	495	mg/L
MW-1A	11/22/2017	530	mg/L



MW-1A	11/15/2012	198	mg/L
MW-1A	5/9/2013	201	mg/L
MW-1A	11/18/2013	326	mg/L
MW-1A	11/18/2013	336	mg/L
MW-1A	5/6/2014	297	mg/L
MW-1A	11/12/2014	290	mg/L
MW-1A	11/12/2014	289	mg/L
MW-1A	5/7/2015	282	mg/L
MW-1A	11/18/2015	243	mg/L
MW-1A	11/18/2015	248	mg/L
MW-1A	5/12/2016	318	mg/L
MW-1A	11/22/2017	280	mg/L

