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July 13, 2016

Mr. John Morris, P.G.
Southwest District Office
Florida Department of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926

Re: **Review of Semi-Annual Sampling Results**
First Half 2016 Sampling Event
Hardee County Landfill
WACS Facility ID No. SWD/25/40612
Permit No. 38414-016-SO/01

Dear Mr. Morris:

On behalf of the Hardee County Solid Waste Department, Atkins presents this review of the results of the first half of 2016 sampling event for the facility referenced above. This document is designed to comply with the requirements of Appendix 3-Water Quality Monitoring Plan, included with the facility's operation permit, and was compiled in general accordance with the guidelines promulgated in Chapter 62-701.510(9)(a) of the Florida Administrative Code (FAC).

BACKGROUND

The Hardee County Solid Waste Disposal Facility is an active Class I landfill, which encompasses approximately 100 acres of land at 685 Airport Road in Hardee County, Florida. In November 2013, the County received a construction permit (38414-015-SC/01) for Phase II Section II Construction. Phase II Section II is located along the west side of the current waste placement area. Also in November 2013, the County received an operation permit associated with the Phase II Sections I & II operation. In 2014, the County completed construction of the waste cell for Phase II Section II. This required abandonment of two existing monitoring wells, abandonment of multiple piezometers, and installation of two new monitoring wells. According to the facility's operating permit (38414-016-SO/01), the water quality monitoring network is designed to monitor the groundwater in the surficial aquifer and the surface water.

The groundwater monitoring network includes eight monitoring wells, which are designated MW-1, MW-2, MW-4, MW-10R, MW-11, MW-12R, MW-13, and MW-14. The facility's permit designates MW-1 and MW-4 as background wells and the other wells as detection wells. Item 3 of Appendix 3-Water Quality Monitoring Plan lists the monitoring wells and piezometers applicable to the facility's current operation permit.

There are two other monitoring wells, MW-6 and MW-7, which are designated by the permit as piezometers, along with 12 other piezometers. Please note that the following former piezometers have been abandoned and are no longer included in the operating permit: PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-6, PZ-9, PZ-10, PZ-15, and PZ-16. The layout of the site is presented in **Figure 1**.

Item 4 of Appendix 3-Water Quality Monitoring Plan of the facility's operation permit specifies that groundwater samples shall be collected from the monitoring wells on a semi-annual basis. The groundwater samples are analyzed for the analytes listed on the 40 Code of Federal Regulations (CFR) Part 258, Appendix I, as well as for total ammonia, iron, chlorides, mercury, nitrate, sodium, and total dissolved solids (TDS). These analytes are also listed in Item 4 of Appendix 3 of the facility's operation permit.

Item 8 of Appendix 3-Water Quality Monitoring Plan of the facility's operation permit calls for the collection of a surface water sample from one location, which is designated SW-2. The surface water samples are normally collected during both semi-annual sampling events during the year if sufficient water is present.

The groundwater and surface water sampling points are illustrated in **Figure 1**.

FIRST HALF 2016 SAMPLING EVENT

The first half of 2016 sampling event was conducted on May 25 and 26, 2016. Groundwater samples and one surface water sample were collected during this event. The groundwater and surface water samples were collected in general accordance with the Florida Department of Environmental Protection (FDEP) Standard Operating Procedure for Field Activities (SOP 001/01). Sample collection was performed by Atkins personnel, and analysis was performed by Flowers Chemical Laboratories, Inc. (FCL). FCL is a NELAC-certified laboratory. A FDEP Water Quality Monitoring Certification form for the sampling event is provided in **Attachment A**.

Sample Collection Methodology

Prior to sampling the monitoring wells, each well was purged with a peristaltic pump using the "low-flow" method. A minimum equivalent of one to three well volumes was purged from each well prior to sample collection. Temperature, pH, conductivity, dissolved oxygen (DO), and turbidity measurements were monitored and recorded throughout the purging process to ensure that representative water samples were collected. The groundwater samples were given identifiers which corresponded to the well of origin. Depth-to-groundwater measurements were made from the top-of-casing (TOC) at each monitoring well prior to initiating the purging process. Water level readings were also made at the piezometers listed in the permit. The water level measurements were subtracted from the TOC elevations to determine the elevation of the water table at each well and piezometer. The TOC elevations are referenced in feet above the National Geodetic Vertical Datum (NGVD). The groundwater sampling logs and field equipment calibration logs are provided in **Attachment B**.

All of the samples were placed in laboratory-prepared containers, placed on ice, and carried to FCL for analysis of the analytes listed in the applicable sections of the facility's operation permit.

FIRST HALF 2016 SAMPLING EVENT RESULTS

Groundwater Flow Pattern

Depth to groundwater measurements were collected at the eight monitoring wells and at 14 piezometers during this sampling event. The groundwater level elevation data from this event are presented in **Table 1**. The groundwater elevation data were plotted and contoured to generate the groundwater elevation contour map presented in **Figure 2**. Piezometer P-18 had a small amount of water at the depth of 5.18 feet below TOC, but it appeared to be blocked or clogged at the water table elevation. The data indicated that the groundwater in the surficial aquifer beneath the landfill was flowing in a southerly direction at the time of this sampling event. The groundwater also appeared to be flowing to the southeast, toward a wetland area east of the landfill. The water table gradient measured approximately 0.00062 feet per foot beneath the site (as measured between well MW-1 and well MW-10R). Water level elevation measurements were attempted at two staff gauges located in ponds on the site (SG-1 and SG-2). However, the water level reading on the staff gauge at SG-2 was totally obscured by vegetation and could not be observed. Therefore, no data was reported for that location, and the SG-2 water elevation is not shown in **Figure 2**.

Sampling Results

A description of the detections in the groundwater and surface water is presented below.

Groundwater Analytical Results

There were numerous inorganic analytes detected, but no organic analytes detected, in the groundwater samples collected and analyzed during this sampling event. The inorganic analyte detections included all of those which are typically part of the analytical program except antimony, beryllium, cadmium, cobalt, copper, lead, mercury, selenium, silver, and thallium. At least one inorganic analyte was detected at every well in the monitoring network.

The concentrations of all of the analytes that were detected in the groundwater were compared to their respective Maximum Contaminant Level (MCL) or Secondary Drinking Water Standard (SDWS) in accordance with the Florida statutes. The MCLs and SDWSs for Drinking Water Standards, Monitoring, and Reporting are promulgated by Chapter 62-550 of the Florida Administrative Code (FAC). Not every parameter has an MCL or SDWS. There were three analytes detected at concentrations that did not comply with their standards – pH, iron, and arsenic. Iron and pH have SDWS criteria, while the criteria for arsenic is provided as an MCL in Chapter 62-550 FAC. A description of the detection patterns with these three analytes is described below.

- pH - The standard for pH is any value within the range of 6.5 to 8.5 Standard Units (SU). The pH values at half of the wells were less than 6.5 SU, and the pH measured as low as

5.41 SU at well MW-1. The pH values at wells MW-2, MW-4, MW-12R, and MW-14 were within the standard range. The pH value at one of the background wells, MW-1 (with a pH of 5.41 SU) was lower than the standard range, while the other background well, MW-4 (with a pH of 6.52 SU), had a pH value that was within the standard range.

- Iron - The standard for iron is 0.3 milligrams per liter (mg/L). The iron concentrations in the samples collected at all wells except MW-11, MW-12R, and MW-14 exceeded the standard. The iron concentrations at both of the background wells (MW-1 and MW-4) were higher than the standard. The highest iron concentration detected during May 2016 was 22.8 mg/L (at MW-10R). However, it should be noted that the iron concentrations in some of the wells during the May 2016 sampling event were significantly higher than during the December 2015 sampling event.
- Arsenic – Monitoring at this site has been closely tracking arsenic concentrations in MW-4. The standard for arsenic is 0.01 mg/L. For the past several sampling events, the arsenic concentration in MW-4 has slightly exceeded that standard, and that trend continued during this sampling event. The arsenic concentration in MW-4 during May 2016 was 0.0128 mg/L, which compares closely with the December 2015 arsenic concentration (0.0134 mg/L) and with the May 2015 arsenic concentration (0.0131 mg/L). MW-4 is designated as a background well.

A summary of the groundwater analytical results is presented in **Table 2**, and the laboratory analytical reports are provided in **Attachment C**.

Surface Water Analytical Results

There were several inorganic analytes detected in the surface water sample (SW-2). The concentration of every analyte that was detected in the surface water sample was compared to the State surface water quality standards (if a standard existed for that analyte). The surface water standards are promulgated by Chapter 62-302, FAC. A summary of the surface water analytical results is presented in **Table 3**, and the laboratory analytical report is provided in **Attachment C**.

None of the laboratory parameters were out of compliance with their surface water criteria. The Dissolved Oxygen field measurement was not in compliance with the surface water criteria. Dissolved Oxygen was measured at a concentration of 1.43 mg/L, which is less than the criteria of greater than 5 mg/L.

SUMMARY AND CONCLUSIONS

The results of the first half of 2016 sampling event at the Hardee County Solid Waste Disposal Facility were consistent with those of the recent sampling events, with numerous inorganic analyte detections in the groundwater and surface water.

There were three analytes detected in the groundwater that did not comply with their regulatory standards: arsenic, pH, and iron were detected in the groundwater at concentrations in excess of



their regulatory criteria. It should be noted that the primary parameters that were not in compliance with their standards in the groundwater (pH and iron) were also not in compliance with their standards in one or both of the background monitoring wells. The arsenic exceedance occurred only in one of the background monitoring wells (MW-4).

Based on these findings, the facility does not appear to be having a significant effect on groundwater and surface water quality. Atkins recommends that the analytical results in future sampling events be evaluated closely for any developing trends. If you have any questions regarding the information presented in this report, please call me at (813) 281-8377.

Sincerely,

A handwritten signature in blue ink that reads "Bradley J. Bayne".A circular professional engineer seal for Bradley J. Bayne, State of Florida, No. 1733. The seal is faint and partially obscured by the signature.

Bradley J. Bayne, PG
Senior Scientist
Florida PG No. 1733

CC: Ken Wheeler, Project Manager, Hardee County Solid Waste Management Department, 685 Airport Road, Wauchula, FL 33873 (1 copy)
Steve Strickland, Hardee County Solid Waste Management Department, 685 Airport Road, Wauchula, FL 33873 (1 copy)
File 100048521

TABLES

Table 1
Groundwater Elevation Data
Hardee County Landfill
First Half 2016

Well Identifier	Top-of-Casing Elevation (Ft-NGVD)	Ground Surface Elevation (Ft-NGVD)	Total Depth (Ft-TOC)	Well Diameter (Inches)	Depth to Groundwater (Ft below TOC)	Groundwater Elevation (Ft-NGVD)
Monitoring Wells						
MW-1	87.97	86.24	11.00	4	5.17	82.80
MW-2	85.86	83.75	10.50	4	5.31	80.55
MW-4	87.16	84.09	18.90	2	5.54	81.62
MW-10R	88.56	85.49	15.12	2	6.62	81.94
MW-11	88.11	85.17	13.90	2	6.18	81.93
MW-12R	89.00	85.71	23.25	2	6.76	82.24
MW-13	88.88	NM	23.00	2	6.43	82.45
MW-14	88.16	NM	23.00	2	5.82	82.34
Piezometers						
MW-6	88.25	85.06	NA	2	6.56	81.69
MW-7	87.88	84.98	NA	2	6.38	81.50
P-7	84.47	82.41	NA	2	3.51	80.96
P-8	85.32	83.25	NA	2	5.45	79.87
P-11	88.69	86.16	NA	2	7.22	81.47
P-13	87.96	87.98	NA	2	5.85	82.11
P-14	87.31	84.05	NA	2	5.55	81.76
P-17	88.82	85.88	NA	2	5.36	83.46
P-18	88.74	84.37	NA	2	5.18	83.56
P-19	86.73	84.14	NA	2	4.65	82.08
P-20	87.6	84.68	NA	2	5.48	82.12
P-21	86.63	83.57	NA	2	5.74	80.89
P-22	87.04	84.09	NA	2	5.10	81.94
P-23	86.45	83.71	NA	2	5.74	80.71
Staff Gauges						
SG-1	80.51#	NA	NA	NA	+3.20	83.71
SG-2	78.57#	NA	NA	NA	**	ND

ND = No Data # = lag bolt/zero elevation

** = staff gauge was obscured by vegetation and not visible

Table 2
Groundwater Analytical Summary
Hardee County Landfill
First Half 2016

Analyte	Monitoring Well:		MW-1	MW-2	MW-4	MW-10R	MW-11	MW-12R	MW-13	MW-14
	Sample Date:		5/25/2016	5/25/2016	5/25/2016	5/26/2016	5/26/2016	5/26/2016	5/25/2016	5/25/2016
	Standard ⁽¹⁾	Units								
Field Measurements										
Groundwater Elevation		ft	82.8	80.55	81.62	81.94	81.93	82.24	82.45	82.34
Temperature		deg. C	25.4	25.2	22.7	24.7	24.8	25.2	25.3	24.7
pH	6.5-8.5	STD	5.41	7.19	6.52	6.16	5.53	7.04	6.39	6.90
Conductivity		umhos/cm	359	708	527	462	233	496	561	893
Dissolved Oxygen (DO)		mg/l	0.46	1.76	0.55	0.47	0.59	0.64	0.96	0.60
Turbidity		NTU	8.67	4.14	2.70	1.11	17.2	3.01	3.38	19.6
Inorganics (Appendix I parameters only)										
Nitrate (as N)	10	mg/l	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0733	0.0100 U	1.27	0.425
TDS	500	mg/l	266	332	372	222	112	266	270	498
Chloride	250	mg/l	24.7	26.8	32.9	28.7	11.1	8.93	15.0	21.6
Antimony	0.006	mg/l	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	0.01	mg/l	0.0062	0.00100 U	0.0128	0.0034	0.00100 U	0.0034	0.00100 U	0.0026
Barium	2	mg/l	0.0090	0.0194	0.0106	0.0152	0.0117	0.00200 U	0.00200 U	0.0062
Beryllium	0.004	mg/l	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U
Cadmium	0.005	mg/l	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U
Chromium	0.1	mg/l	0.00100 U	0.00100 U	0.00310	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Cobalt		mg/l	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Copper	1	mg/l	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Lead	0.015	mg/l	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Mercury	0.002	mg/l	0.0000200 U	0.0000200 U	0.0000200 U	0.0000200 U	0.0000200 U	0.0000200 U	0.0000200 U	0.0000200 U
Nickel	0.1	mg/l	0.0038	0.00190 I	0.00190 I	0.00100 U	0.00100 U	0.00100 U	0.00120 I	0.00160 I
Selenium	0.05	mg/l	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Silver	0.1	mg/l	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U	0.000500 U
Thallium	0.002	mg/l	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Vanadium		mg/l	0.0213	0.002	0.0284	0.0033	0.006	0.0048	0.0031	0.00540
Zinc	5	mg/l	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.063	0.0178 I	0.0100 U	0.0100 U
Ammonia (as N)	2.8	mg/l	0.0464	0.0100 U	0.0100 U	0.426	0.0100 U	0.0100 U	0.0100 U	0.125
Iron	0.3	mg/l	8.25	2.71	10.7	22.8	0.170	0.086	0.304	0.211
Sodium	160	mg/l	11.7	19.3	13.7	18.7	6.08	5.36	11.0	11.2
Organics										
1,1,1,2-Tetrachloroethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,1,1-Trichloroethane	200	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,1,2,2-Tetrachloroethane		ug/l	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
1,1,2-Trichloroethane	5	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,1-Dichloroethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,1-Dichloroethene	7	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,2-Dichloroethane	3	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
1,2-Dichloropropane	5	ug/l	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
2-Butanone (MEK)		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
2-Hexanone		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Acetone	6300	ug/l	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Acrylonitrile		ug/l	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U
Benzene	1	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Bromochloromethane		ug/l	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Bromodichloromethane		ug/l	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Bromoform		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Bromomethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Carbon Disulfide		ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Carbon Tetrachloride	3	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Chlorobenzene		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Chloroethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Chloroform		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Chloromethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Dibromochloromethane		ug/l	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
Dibromomethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Ethylbenzene	700	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Methyl Iodide		ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Methyl isobutyl ketone		ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Methylene chloride		ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Para-dichlorobenzene	75	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Styrene	100	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Tetrachloroethene	3	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Toluene	1000	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Trichloroethene	3	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Trichlorofluoromethane		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Vinyl Acetate		ug/l	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Vinyl chloride	1	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
Xylenes	10000	ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
cis-1,2-Dichloroethene	70	ug/l	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
cis-1,3-Dichloropropene		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
o-Dichlorobenzene	600	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
trans-1,2-Dichloroethene	100	ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
trans-1,3-Dichloropropene		ug/l	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
trans-1,4-Dichloro-2-butene		ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,2,3 - Trichloropropane		ug/l	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
1,2 - Dibromomethane (EDB)		ug/l	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U
1,2 - dibromo-3-chloropropane		ug/l	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U

⁽¹⁾ - Maximum Contaminant Level (MCL) or Secondary Drinking Water Standard (SDWS), as established in Chapter 62-550. Analyte concentrations shown with shading represent an exceedance of the MCL or SDWS.

U = Compound was analyzed but not detected; I = Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Table 3
Surface Water Analytical Summary
Hardee County Landfill
First Half 2016

Analyte	Location:		SW-2
	Sample Identifier:		SW-2
	Date of Test:		5/26/2016
	Standard(1)	Units	
Field Measurements			
Temperature		deg. C	23.1
pH	6-8.5	STD	7.03
Conductivity	1275	umhos/cm	444
Dissolved Oxygen (DO)	>5	mg/l	1.43
Turbidity	29+	NTU	8.85
Inorganics			
Nitrate (as N)		mg/L	0.0100 U
Nitrite (as N)		mg/L	0.0200 U
Total Dissolved Solids (TDS)		mg/L	600
Aluminum	1.5	mg/L	0.0571
Antimony	4.3	mg/L	0.00200 U
Arsenic	0.05	mg/L	0.00100 U
Barium		mg/L	0.0084
Beryllium	0.00013	mg/L	0.000500 U
Cadmium	Note 2	mg/L	0.000200 U
Chromium	Note 3	mg/L	0.00100 U
Cobalt		mg/L	0.00100 U
Copper	Note 4	mg/L	0.00100 U
Iron	1	mg/L	0.785
Lead	Note 5	mg/L	0.00100 U
Mercury	0.000012	mg/L	0.0000200 U
Nickel	Note 6	mg/L	0.00100 U
Selenium	5	mg/L	0.00200 U
Silver	0.00007	mg/L	0.000500 U
Thallium	0.0063	mg/L	0.00100 U
Vanadium	0.049	mg/L	0.00130 I
Zinc	Note 7	mg/L	0.0100 U
Fecal coliform	800	cfu/100mL	6.00
Total Hardness (as CaCO3)		mg/L	132
Total Organic Carbon (TOC)		mg/L	28.1
Total Nitrogen		mg/L	1.91
Total Phosphorus		mg/L	1.02
Total Suspended Solids (TSS)		mg/L	16.5
Un-ionized Ammonia	0.02	mg/L	0.000153 I
Biological Oxygen Demand (BOD)		mg/l	2.54
Chemical Oxygen Demand (COD)		mg/L	77.1
Chlorophyll A		mg/m3	7.84
Total Kheldahl Nitrogen (TKN) (as N)		mg/l	1.90
Organics			
1,1,1,2-Tetrachloroethane		ug/l	0.500 U
1,1,1-Trichloroethane	270	ug/l	0.500 U
1,1,2,2-Tetrachloroethane	10.8	ug/l	0.100 U
1,1,2-Trichloroethane	16	ug/l	0.500 U
1,1-Dichloroethane		ug/l	0.500 U
1,1-Dichloroethene	3.2	ug/l	0.500 U
1,2-Dichloroethane	37	ug/l	0.500 U
1,2-Dichloropropane	14	ug/l	0.200 U

Analyte	Location:		SW-2
	Sample Identifier:		SW-2
	Date of Test:		5/26/2016
	Standard(1)	Units	
1,2,3-Trichloropropane	0.2	ug/l	0.0200 U
1,2-Dibromoethane (EDB)	13	ug/l	0.0100 U
1,2-Dibromo-3-chloropropane		ug/l	0.0200 U
2-Butanone (MEK)	120000	ug/l	0.500 U
2-Hexanone		ug/l	0.500 U
Acetone	1700	ug/l	5.00 U
Acrylonitrile	0.2	ug/l	0.300 U
Benzene	71.28	ug/l	0.500 U
Bromochloromethane		ug/l	0.100 U
Bromodichloromethane	49.7	ug/l	0.100 U
Bromoform		ug/l	0.500 U
Bromomethane	35	ug/l	0.500 U
Carbon disulfide	110	ug/l	1.00 U
Carbon tetrachloride	4.42	ug/l	0.500 U
Chlorobenzene	17	ug/l	0.500 U
Chloroethane		ug/l	0.500 U
Chloroform		ug/l	0.500 U
Chloromethane	470.8	ug/l	0.500 U
Dibromochloromethane		ug/l	0.400 U
Dibromomethane	1580	ug/l	0.500 U
Ethylbenzene	610	ug/l	0.500 U
Methyl iodide		ug/l	1.00 U
Methyl isobutyl ketone		ug/l	1.00 U
Methylene chloride		ug/l	1.00 U
Para-dichlorobenzene		ug/l	0.500 U
Styrene	460	ug/l	0.500 U
Tetrachloroethene	8.85	ug/l	0.500 U
Toluene	480	ug/l	0.500 U
Trichloroethene	80.7	ug/l	0.500 U
Trichlorofluoromethane		ug/l	0.500 U
Vinyl Acetate	700	ug/l	10.0 U
Vinyl chloride	2.4	ug/l	0.500 U
Xylenes	370	ug/l	1.00 U
cis-1,2-Dichloroethene	3.2	ug/l	0.200 U
cis-1,3-Dichloropropene	12	ug/l	0.500 U
o-Dichlorobenzene		ug/l	0.500 U
trans-1,2-Dichloroethene	11000	ug/l	0.500 U
trans-1,3,-Dichloropropene	12	ug/l	0.500 U
trans-1,4-Dichloro-2-butene		ug/l	1.00 U

Abbreviations: mg/l = milligrams per liter; ug/l = micrograms per liter; NTU = nephelometric turbidity units; mg/m³ - milligrams per cubic meter. U = less than method detection limit (MDL) I = between MDL and practical quantitation limit

(1) Surface water standards presented in Chapter 62-302, FAC. Analyte concentrations shown with shading represent an exceedance of the regulatory level. Value of hardness is used to determine calculated standards below.

(2) Cd less than or equal to $e(0.7852(\ln H)-3.49)$

(3) Cr less than or equal to $e(0.819(\ln H)+0.6848)$

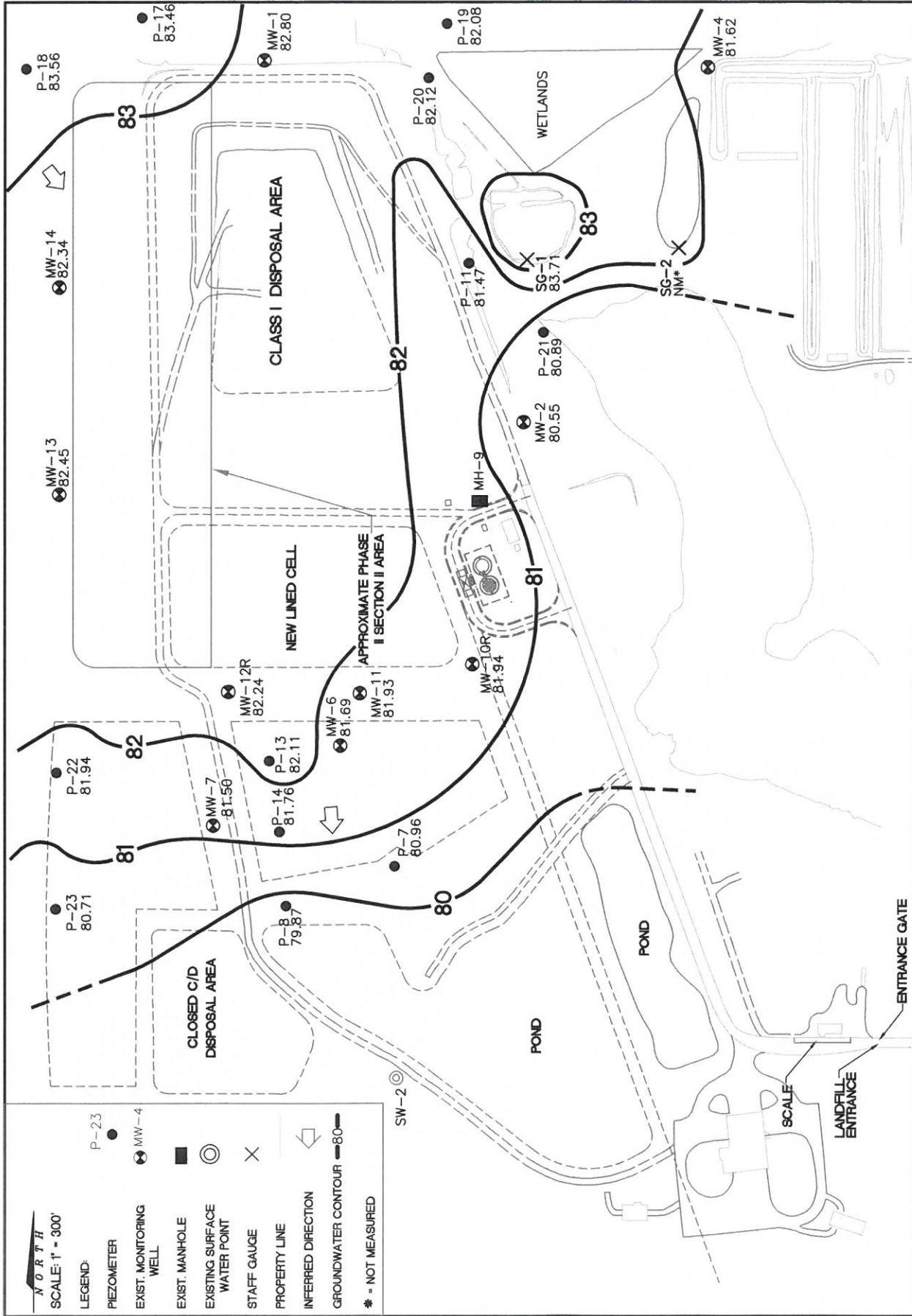
(4) Cu less than or equal to $e(0.845(\ln H)-1.702)$

(5) Pb less than or equal to $e(1.273(\ln H)-4.705)$

(6) Ni less than or equal to $e(0.846(\ln H)+0.0584)$

(7) Zn less than or equal to $e(0.8473(\ln H)+0.884)$

FIGURES



ATKINS	HARDEE COUNTY LANDFILL	WATER TABLE ELEVATION CONTOUR MAP FIRST HALF 2016	FIGURE 2
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ATTACHMENT A

Ground Water Monitoring Report Form



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form #: 62-701.900(31), F.A.C

Form Title: Water Quality Monitoring Certification

Effective Date: January 6, 2010

Incorporated in Rule 62-701.510(9), F.A.C.

WATER QUALITY MONITORING CERTIFICATION

PART I GENERAL INFORMATION

- (1) Facility Name Hardee County Solid Waste Disposal Facility
Address 685 Airport Road
City Wauchula, FL Zip 33873 County Hardee
Telephone Number (863) 773-5089
- (2) WACS Facility ID SWD-25-40612
- (3) DEP Permit Number 38414-016-SO-01
- (4) Authorized Representative's Name Bradley J. Bayne, PG Title Senior Geologist
Address Atkins North America, 4030 West Boy Scout Boulevard, Suite 700
City Tampa, FL Zip 33607 County Hillsborough
Telephone Number (813) 281-8377
Email address (if available) bradley.bayne@atkinsglobal.com

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submission of false information including the possibility of fine and imprisonment.

June 30, 2016
(Date)

Bradley J. Bayne
(Owner or Authorized Representative's Signature)

PART II QUALITY ASSURANCE REQUIREMENTS

- Sampling Organization Atkins North America (see above information)
- Analytical Lab NELAC / HRS Certification # NELAC # E83018
- Lab Name Flowers Chemical Laboratories, Inc.
- Address 481 Newburyport Avenue, Altamonte Springs, FL 32715
- Phone Number (407) 339-5984
- Email address (if available) june@flowerslabs.com (June Flowers)

ATTACHMENT B

Groundwater Sampling Logs and Field Equipment Calibration Logs

GROUNDWATER SAMPLING LOG

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wacahula, FL	
WELL NO: MW-1	SAMPLE ID: MW-1	DATE: 5/25/16	

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 1/4	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 5.17	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
= (12.70 feet - 5.17 feet) X 0.65 gallons/foot = 4.89 gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
= gallons + (gallons/foot X feet) + gallons = gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGING INITIATED AT: 11:40	PURGING ENDED AT: 12:23	TOTAL VOLUME PURGED (gallons): 6.50

[illegible]

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

SAMPLING DATA

[illegible]

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump;
RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchoola, FL	
WELL NO: mw-2	SAMPLE ID: mw-2	DATE: 5/25/16	

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 1/4	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 5.31	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) $= (12.70 \text{ feet} - 5.31 \text{ feet}) \times 0.65 \text{ gallons/foot} = 4.80 \text{ gallons}$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) $= \text{gallons} + (\text{gallons/foot} \times \text{feet}) + \text{gallons} = \text{gallons}$				

[illegible]

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			ANALYSIS INITIATED AT: 10:58		SAMPLING ENDED AT: 11:03	
PUMP OR TUBING DEPTH IN WELL (feet): 9				TUBING MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y (N) Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced)							DUPLICATE: Y (N)			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
See Chain of Custody										
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+ 5$ NTU or $+ 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: MW-4	SAMPLE ID: MW-4	DATE: 5/25/16	

PURGING DATA

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			SAMPLING INITIATED AT: 9:20		SAMPLING ENDED AT: 9:25	
PUMP OR TUBING DEPTH IN WELL (feet): 9				TUBING MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y <input checked="" type="radio"/> N		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y <input checked="" type="radio"/> N				TUBING Y <input checked="" type="radio"/> N (replaced)			DUPLICATE: Y <input checked="" type="radio"/> N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wavichula, FL	
WELL NO: MW-10R	SAMPLE ID: MW-10R	DATE: 5/26/16	

PURGING DATA

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			SAMPLING INITIATED AT: 10:30		SAMPLING ENDED AT: 10:35	
PUMP OR TUBING DEPTH IN WELL (feet): 10				TUBING MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y <input checked="" type="checkbox"/> Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y <input checked="" type="checkbox"/> TUBING Y <input checked="" type="checkbox"/> (replaced)				DUPLICATE: Y <input checked="" type="checkbox"/>						
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
See chain of Custody										
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPF = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: MW-11	SAMPLE ID: MW-11	DATE: 5/26/16	

PURGING DATA

WELL	TUBING	WELL SCREEN INTERVAL						STATIC DEPTH	PURGE PUMP TYPE		
DIAMETER (inches): 2	DIAMETER (inches): 1/4	DEPTH:		feet to	feet			TO WATER (feet): 6.18	OR BAILER: Peristaltic		
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) <div style="text-align: center;">= (13.90 feet - 6.18 feet) x 0.16 gallons/foot = 1.24 gallons</div>											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) <div style="text-align: center;">= gallons + (gallons/foot X feet) + gallons = gallons</div>											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9			FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9			PURGING INITIATED AT: 11:05		PURGING ENDED AT: 11:30		TOTAL VOLUME PURGED (gallons): 3.75	
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or μS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:20	2.25	2.25	0.15	6.49	5.54	24.75	234	1.30	17.5	Clear	None
11:25	0.75	3.0	0.15	6.50	5.53	24.77	233	0.67	17.2	↓	↓
11:30	0.75	3.75	0.15	6.50	5.53	24.80	233	0.59	17.2	↓	↓
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			SAMPLING INITIATED AT: 11:30		SAMPLING ENDED AT: 11:35	
PUMP OR TUBING DEPTH IN WELL (feet): 9				TUBING MATERIAL CODE: S + HDPE		FIELD-FILTERED: Y (N)		FILTER SIZE: _____ µm		
FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced)						DUPLICATE: Y (N)				
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
See Chain of Custody										
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: MW-12R	SAMPLE ID: MW-12R	DATE: 5/26/16	

PURGING DATA

WELL DIAMETER (inches): 2		TUBING DIAMETER (inches): 1/4		WELL SCREEN INTERVAL DEPTH: feet to feet		STATIC DEPTH TO WATER (feet): 6.76		PURGE PUMP TYPE OR BAILER: Peristaltic			
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) <div style="text-align: center;">= (23.04 feet - 6.76 feet) X 0.16 gallons/foot = 2.60 gallons</div>											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) <div style="text-align: center;">= gallons + (gallons/foot X feet) + gallons = gallons</div>											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9			FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9			PURGING INITIATED AT: 12:00		PURGING ENDED AT: 12:30		TOTAL VOLUME PURGED (gallons): 4.5	
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) <u>µmhos/cm or µS/cm</u>	DISSOLVED OXYGEN (circle units) <u>mg/L or % saturation</u>	TURBIDITY (NTU)	COLOR (describe)	ODOR (describe)
12:20	3.0	3.0	0.15	6.93	7.02	25.50	500	1.11	2.19	Clear	None
12:25	0.75	3.75	0.15	6.94	7.03	25.14	499	0.55	4.05	↓	↓
12:30	0.75	4.50	0.15	6.93	7.04	25.16	496	0.64	3.01	↓	↓
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			SAMPLING INITIATED AT: 12:30		SAMPLING ENDED AT: 12:35	
PUMP OR TUBING DEPTH IN WELL (feet): 9				TUBING: MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y (N)		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y (N)				TUBING Y (N(replaced))			DUPLICATE: Y (N)			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
See Chain of Custody										
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: mw-13	SAMPLE ID: mw-13	DATE: 5/25/16	

PURGING DATA

[illegible]

~~S~~SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>[Signature]</i>			SAMPLING INITIATED AT: 14:05		SAMPLING ENDED AT: 14:10	
PUMP OR TUBING DEPTH IN WELL (feet): 10				TUBING MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y <input checked="" type="checkbox"/> N		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y <input checked="" type="checkbox"/> N				TUBING Y <input checked="" type="checkbox"/> N(replaced)			DUPLICATE: Y <input checked="" type="checkbox"/> N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

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2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: MW-14	SAMPLE ID: MW-14	DATE: 5/25/16	

PURGING DATA

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad J Bayne</i>			SAMPLING INITIATED AT: 15:00		SAMPLING ENDED AT: 15:05	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE: S+HDPE		FIELD-FILTERED: Y (N) Filtration Equipment Type:		FILTER SIZE: _____ µm		
FIELD DECONTAMINATION: PUMP Y (N)				TUBING Y (N) (replaced)			DUPLICATE: Y (N)			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
See Chain of Custody										
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

SITE NAME: Hardee County Landfill		SITE LOCATION: 685 Airport Road, Wauchula, FL	
WELL NO: SW-2	SAMPLE ID: SW-2	DATE: 5/26/16	

PURGING DATA

WELL DIAMETER (inches):		TUBING DIAMETER (inches):		WELL SCREEN INTERVAL DEPTH: feet to feet		STATIC DEPTH TO WATER (feet):		PURGE PUMP TYPE OR BAILER: Peristaltic			
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) <div style="text-align: center;">= (feet – feet) X gallons/foot = gallons</div>											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) <div style="text-align: center;">= gallons + (gallons/foot X feet) + gallons = gallons</div>											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10			FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10			PURGING INITIATED AT: 8:45		PURGING ENDED AT: 8:55		TOTAL VOLUME PURGED (gallons): 2.0	
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or μS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
8:50	1.0	1.0	0.2	—	7.04	23.08	444	1.42	12.7	clear	None
8:55	1.0	2.0	0.2	—	7.03	23.08	444	1.43	8.85	↓	↓
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Brad Bayne / Atkins				SAMPLER(S) SIGNATURE(S): <i>Brad Bayne</i>			SAMPLING INITIATED AT: 8:55		SAMPLING ENDED AT: 9:10	
PUMP OR TUBING DEPTH IN WELL (feet): 10				TUBING MATERIAL CODE: S + HDPE			FIELD-FILTERED: Y (N)		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y (N)				TUBING Y (N) (replaced)			DUPLICATE: Y (N)			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

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Revision Date: February 12, 2009

