CITRUS COUNTY CENTRAL LANDFILL
WATER-QUALITY MONITORING PLAN

Prepared for:

Citrus County Solid Waste Management Department

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August 2022

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1 WATER-QUALITY MONITORING PLAN FOR THE CITRUS COUNTY CENTRAL LANDFILL

This Water Quality Monitoring Plan (WQMP) details the compliance sampling required at the Citrus County Central Landfill (CCCL). This monitoring plan follows the format of Part L – Water Quality Monitoring Requirements – of the State of Florida *Application to Construct, Operate, Modify, or Close a Solid Waste Management Facility*.

The modifications to the current monitoring network to accommodate the Phase 4 Expansion include three new detection wells installed as part of the Phase 4a subcell and one additional well to be installed before waste is placed in the future Phase 4b subcell. The four new wells are:

- MW-23 and MW-24 are proposed to be installed on the west side of the Phase 4a subcell between MW-7 and MW-2.
- MW-25 will be installed on the north side of the Phase 4a subcell.
- MW-26 will be installed on the north side of the future Phase 4b subcell. MW-26 will be installed after construction and before waste is placed in Phase 4b subcell.

Citrus County is also performing evaluation monitoring due to parameter exceedances in MW-7 and MW-20 on the CCCL site according to the FDEP letter *Notice of Evaluation Monitoring for Monitoring Wells MW-7 & MW-20*, dated November 23, 2021. MW-20 is within the footprint of Phase 4 Subcell 4b and the access road for Subcell 4a. As discussed in the preapplication meeting, this well will not be abandoned and will be protected during construction of Phase 4 Subcell 4a. The compliance monitoring and assessment around this well will continue while Subcell 4a is in construction and will be completed before construction begins on Subcell 4b. Three new compliance wells – MW-7C(s), MW-7C(d), and MW-20C – have been installed and sampled. We are currently awaiting the analytical results from the laboratory.

Attachment 1 is a site map that shows the groundwater monitoring network and accounts for the installation of the proposed wells and the new compliance wells.

2 WATER QUALITY MONITORING PLAN

a. Sign and Seal

   This WQMP has been signed, dated, and sealed in accordance with Rule 62-701.510(2)(a), FAC.

b. Sampling and Analysis

   All sampling and analysis have been performed in accordance with Chapter 62-160, FAC; Rule 62-701.510(2)(b), FAC; the FDEP Standard Operating Procedures 001/01; and the current FDEP Permit No. 21375-025-SO/01.

c. Groundwater Monitoring Requirements

(1) The existing monitoring network has one detection well – MW-21.

(2) The existing monitoring network has 10 compliance wells – MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, MW-20, MW-21, and MW-22. MW-20 will be abandoned during Phase 4 construction. Compliance well MW-23 will be installed and sampled before waste is placed into Phase 4 Subcell 4a.

(3) The existing monitoring network has two background wells – MW-3 and MW-7.

(4) Attachment 1 shows the locations of each groundwater monitoring wells in the proposed monitoring network. Attachment 2 is a table that provides well construction information for all existing wells.

(5) Well spacing is less than 500 feet across the downgradient direction of groundwater flow and approximately 1,500 feet apart across the upgradient direction of groundwater flow in the uppermost aquifer – the Floridan aquifer – within the zone of discharge.

(6) The screened intervals of the monitoring wells were positioned to encounter the water table of the unconfined Floridan aquifer throughout normal seasonal fluctuation.

(7) The wells are constructed to provide representative groundwater samples from the zones monitored. Attachment 2 provides well construction information for all wells.

(8) Unused wells and piezometers will be abandoned properly, as specified in Rule 40D-3.531, FAC, and the rules of the Southwest Florida Water Management District (SWFWMD).

(9) The site has no detection sensors.

d. Surface Water Monitoring Requirements

Surface water is only required to be sampled if a discharge off the CCCL property occurs. The sample will be collected from the body of water from which the discharge occurred.

e. Sampling Frequency and Requirements

(1) Newly installed wells and replacement wells will be sampled for the parameters listed in Rules 62-701.510(7)(a) and (7)(c), FAC, within 2 weeks of well completion and development.

(2) Routine monitoring well sampling and analysis requirements:

(a) Water samples from all monitoring wells (background and compliance) will be sampled semiannually for the parameters listed in Rule 62-701.510(7)(a), FAC, as tabulated in Table e(2)(a).

Table e(2)(a) Monitoring Well Sampling Parameters

Field Parameters	Laboratory Parameters
Static Water Levels	Total Ammonia -N
Specific Conductivity	Chlorides
pH	Iron
Dissolved Oxygen	Mercury
Turbidity	Nitrate
Temperature	Sodium
Colors and Sheens (by observation)	Total Dissolved Solids (TDS)
	Those parameters listed in 40 CFR Part 258, Appendix I.

(b) Assessment wells MW-18, MW-18D, MW-19, and MW-19D will be sampled semiannually for the parameters listed in Table e(2)(b).

Table e(2)(b) Assessment Well Sampling Parameters

Field Parameters	Laboratory Parameters
Static Water Levels	Benzene
Specific Conductivity	Methylene Chloride
pH	Vinyl Chloride
Dissolved Oxygen	
Turbidity	
Temperature	
Colors and Sheens (by observation)	

(3) Surface water is only required to be sampled if a discharge off the CCCL property occurs. If discharge off the property occurs, samples will be collected for the parameters listed in Rule 62-701.510(7)(b), as tabulated in Table e(3).

Table e(3) Surface Water Sampling Parameters

Field Parameters	Laboratory Parameters
Surface Water Elevation	Unionized Ammonia
Specific Conductivity	Total Hardness
pH	Biochemical Oxygen Demand (BOD5)
Dissolved Oxygen	Iron
Turbidity	Mercury

Field Parameters	Laboratory Parameters
Temperature	Nitrate
Colors and Sheens (by observation)	TDS
	Total Organic Carbon (TOC)
	Fecal Coliform
	Total Phosphorus
	Chlorophyll A
	Total Nitrogen
	Chemical Oxygen Demand (COD)
	Total Suspended Solids (TSS)
	Those parameters listed in 40 CFR Part 258, Appendix I.

f. Evaluation Monitoring, Prevention Measures, and Corrective Actions

(1) Groundwater Corrective Actions

If monitoring parameters are detected in wells at concentrations that are significantly above background water quality or that are at concentrations above FDEP's water quality standards or criteria specified in Chapter 62-520, FAC, the well will be re-sampled within 30 days after the initial analytical data are received to confirm the data. If the data are confirmed or the well is not re-sampled, FDEP will be notified in writing within 14 days of the finding. Upon notification by FDEP, evaluation monitoring will be initiated in accordance with Rule 62-701.510(6), FAC.

(2) Surface Water Corrective Actions

Surface water is only sampled on a per-discharge event. FDEP will be notified within 24 hours of discovery of a discharge event.

g. Water Quality Monitoring Report Requirements

Groundwater monitoring reporting is required and has been completed in accordance with Chapter 62-701.510(8), FAC.

(1) Groundwater compliance monitoring reports are submitted to FDEP semiannually in accordance with the current permit (FDEP Permit No. 21375-025-SO/01). Additionally, these reports are submitted in accordance with the requirements of Section 62-701.510(8)(a), FAC.

(2) Water quality data will be provided electronically in a format consistent with requirements for importing into FDEP databases and in compliance with the permit.

(3) A technical report, signed, sealed, and dated by a PG or PE, will be submitted to FDEP every 2.5 years in accordance with the requirements of

Chapter 62-701.510(8)(b), FAC. The most recent report dated September 2020 summarized data from the First Semiannual 2018 through the First Semiannual 2020 sampling events. The report summarized and interpreted the water-quality and water-level measurements collected during the past 2.5 years. The report included the following:

a) Tabular display of data showing all detected parameters.

b) Graphical display of any leachate key indicator parameters.

c) Hydrographs for all monitoring wells.

d) Trend analysis of any monitoring parameter consistently detected.

e) Comparisons between shallow-, medium-, and deep-zone wells.

f) Comparisons between background water quality and the water quality in detection and compliance wells.

g) Correlations between related parameters such as TDS and specific conductance.

h) Discussions of erratic and/or poorly correlated data.

i) Interpretation of groundwater contour maps including an evaluation of groundwater flow rates.

j) An evaluation of the adequacy of the water-quality monitoring frequency and sampling locations based on site conditions.

Attachment 1

Site Map

N

GRAPHIC SCALE

0 75 150 300

SCALE IN FEET

LEGEND

- OWNED PROPERTY BOUNDARY
- LEASED PROPERTY BOUNDARY
- EXISTING LIMITS OF WASTE
- PROPOSED CLASS I LANDFILL
- MW-7 — BACKGROUND WELLS
- MW-13 — COMPLIANCE MONITORING WELL
- PZ-1 — PIEZOMETERS
- MW-9 — PIEZOMETERS
- MW-21 — DETECTION WELL
- MW-23 — PROPOSED DETECTION WELL
- MW-20C — NEW COMPLIANCE MONITORING WELL
- ADDED PER RAI 1 (TYP)

FIGURE L.1
SITE PLAN AND GROUNDWATER MONITORING NETWORK
CITRUS COUNTY CENTRAL LANDFILL
CITRUS COUNTY, FLORIDA

JonesEdmunds

Attachment 2

Well Construction Information

Well Name	Well Designation	Date Installed	Top of Casing Elevation (ft NGVD)	Total Depth (ft BLS)	Total Depth (ft BTOC)	Screen Details					Filter Pack (Silica Sand)
						Length (ft)	Depth (ft BLS)		Elevation (ft NGVD)		
							Top	Bottom	Top	Bottom	
MW-AA	Piezometer	NR	105.85	116	117.4	10	106	116	-1.6	-11.6	NR
MW-B	Piezometer	NR	113.30	128	128.8	20	108	128	4.5	-15.5	NR
MW-E	Piezometer	NR	109.36	118	120.9	20	98	118	8.5	-11.5	NR
MW-1R	Piezometer	NR	118.07	125	127.8	10	115	125	0.3	-9.7	NR
MW-2	Piezometer	NR	136.05	161	163.8	15	146	161	-12.8	-27.8	NR
MW-3	Background	NR	120.31	119	119.8	15	104	119	15.5	0.5	NR
MW-5	Piezometer	NR	120.98	120	122.5	10	110	120	8.5	-1.5	NR
MW-6	Piezometer	NR	118.27	122	124.7	10	112	122	3.6	-6.4	NR
MW-7	Background	NR	128.47	137	139.06	20	117	137	9.4	-10.6	NR
MW-8R	Piezometer	NR	117.96	128	127.98	20	108	128	10.0	-10.0	NR
MW-9	Piezometer	NR	113.29	121	120.96	20	101	121	12.3	-7.7	NR
MW-10	Compliance	11/2/05	113.37	120.5	120.0	20	100.5	120.5	13.4	-6.6	20/30
MW-11	Compliance	11/2/05	104.69	112.0	111.7	20	92.0	112.0	13.0	-7.0	Gravel
MW-12	Compliance	11/2/05	103.36	110.0	109.5	20	90.0	110.0	13.9	-6.1	20/30
MW-13	Compliance	11/10/05	111.92	120.0	119.5	20	100.0	120.0	12.4	-7.6	20/30
MW-14	Compliance	11/10/05	108.50	116.0	115.5	20	96.0	116.0	13.0	-7.0	20/30
MW-15	Compliance	11/10/05	123.58	130.0	129.6	20	110.0	130.0	14.0	-6.0	20/30
MW-16	Piezometer	10/31/05	119.64	127.0	126.6	20	107.0	127.0	13.0	-7.0	20/30
MW-17	Compliance	11/3/05	110.85	118.0	117.5	20	98.0	118.0	13.4	-6.7	20/30
MW-18	Assessment	1/23/07	115.82	120.0	119.7	20	100.0	120.0	16.1	-3.9	20/30
MW-19	Assessment	1/22/07	113.50	140.0	139.6	10	130.0	140.0	-16.1	-26.1	20/30
MW-20	Compliance	1/12/11	119.76	125.70	125.0	20	105.0	125.0	14.76	-5.24	20/30
MW-21	Detection	1/12/11	115.63	125.40	125.0	20	105.0	125.0	10.63	-9.37	20/30
MW-18D	Assessment	7/31/17	115.68	140.00	139.6	10	130.0	140.0	-13.92	-23.92	20/30
MW-19D	Assessment	7/29/17	113.59	160.00	159.6	5	155.0	160.0	-41.01	-46.01	20/30
MW-22	Compliance	8/1/17	113.79	125.00	124.5	20	105.0	125.0	9.29	-10.71	20/30
PZ-1 A	Piezometer	1/26/07	110.97	120.0	119.7	20	100.0	120.0	11.3	-8.7	20/30
PZ-2 A	Piezometer	1/24/07	116.82	120.0	119.8	20	100.0	120.0	17.0	-3.0	20/30
MW-23*	Detection	Proposed	122.3	132.3	132.3	20	112.3	132.3	10	-10	20/30
MW-24*	Detection	Proposed	122.3	132.3	132.3	20	112.3	132.3	10	-10	20/30
MW-25*	Detection	Proposed	122.3	132.3	132.3	20	112.3	132.3	10	-10	20/30
MW-26*	Detection	Proposed	122.3	132.3	132.3	20	112.3	132.3	10	-10	20/30

Notes: Updated with County survey information dated September 14, 2017.
ft-BLS = Feet Below Land Surface; ft-BTOC = Feet Below Top of Casing; ft-NGVD = feet National Geodetic Vertical Datum; NR = Not recorded.
*Proposed Construction details for the new detection wells are approximate and will be adjusted based on final grades and site-specific conditions.