HillsboroughCounty GOVERNMENT Florida

Hillsborough County

Dept. Of Environmental Protection

JUN 01 2015

Southwest District

April 28, 2015

Mr. John Morris, P.G.
Florida Department of Environmental Protection
Waste Permitting Section
13051 Telecom Parkway
Temple Terrace, FL 33637

RE: Southeast County Landfill
Laboratory Analytical Results
Initial Assessment Monitoring Plan
Report No. 55 – March 2015

Dear Mr. Morris:

The Hillsborough County Public Utilities Department (County) is pleased to provide the analytical results from the March 2015 sampling event conducted as part of the continuation of the Initial Assessment Monitoring Plan (IAMP). The IAMP was developed to address the potential impacts to groundwater from the sinkhole on the edge of Phase 6 at the Southeast County Landfill (SCLF), which was discovered on December 14, 2010.

As part of the agreement between the County and Florida Department of Environmental Protection (Department) Southwest District Office, four (4) upper Floridan/Limestone aquifer monitoring wells, designated as TH-72, TH-76, TH-77, and TH-78 are sampled on a monthly schedule. Representative samples were collected from each of these four (4) monitoring wells on March 4-5, 2015 and analyzed for total dissolved solids (TDS), chloride, total ammonia, arsenic, iron, sodium, and five (5) field parameters. The samples collected were analyzed by our contracted laboratory, Advanced Environmental Laboratories, Inc. The following paragraphs summarize the parameter specific results pertinent to the evaluation of potential water quality impacts from the sinkhole at the SCLF.

pH
pH was observed within the Secondary Drinking Water Standard (SDWS) acceptable range of 6.5-8.5 pH units in each of the four (4) upper Floridan/Limestone aquifer monitoring wells. The pH values in monitoring wells, TH-72, TH-76, TH-77, and TH-78 were recorded at 6.87, 7.58, 7.56, and 8.23 pH units, respectively, and the values are consistent with the historical data set.

Turbidity
Turbidity values in the upper Floridan/Limestone aquifer monitoring wells TH-72, TH-76, TH-77, and TH-78 were recorded at 0.66, 0.68, 0.63, and 0.62 Nephelometric Turbidity Units (NTUs), respectively, and these values are consistent with the historical data set.

Conductivity
The conductivity values in TH-72, TH-76, TH-77, and TH-78 were recorded at 2,486, 500, 490, and 605 umhos/cm, respectively. Monitoring well TH-72 is the closest upper Floridan/Limestone aquifer monitoring well to the sinkhole, and it continues to exhibit groundwater impacts similar to those observed over the past year. Conductivity values in TH-76, TH-77, and TH-78 are relatively low and consistent with the other unaffected deep wells across the site.

Total Dissolved Solids (TDS)
The TDS in monitoring well TH-72 was observed at 1,300 mg/l, which continues to be above the SDWS of 500 mg/l. The remaining three (3) down gradient upper Floridan/Limestone aquifer monitoring wells, TH-76, TH-77, and TH-78 exhibited TDS values of 270, 250, and 300 mg/l, respectively. These values are consistent with the water quality of the unaffected deep wells across the site.

Chloride
Chloride was observed at 450 mg/l in monitoring well TH-72, which is above the SDWS of 250 mg/l. Chloride values in the down gradient upper Floridan/Limestone aquifer monitoring wells TH-76, TH-77, and TH-78 were observed at 13, 7.6, and 28 mg/l. These values are consistent with the unaffected deep wells across the site.

Iron
The total iron concentration in the upper Floridan/Limestone aquifer monitoring well TH-72 was 0.65 mg/l, which is above the SDWS of 0.3 mg/l. The remaining three monitoring wells, TH-76, TH-77, and TH-78 exhibited iron below the SDWS at 0.095, 0.11, and 0.24 mg/l, respectively. The concentrations of iron observed are consistent with the historical data sets for these wells.

Sodium
Sodium was observed at a concentration of 190 mg/l in monitoring well TH-72, which is above the Primary Drinking Water Standard (PDWS) of 160 mg/l. Sodium values in down gradient monitoring wells TH-76, TH-77, and TH-78 were observed at 21, 18, and 36 mg/l, which is consistent with the unaffected deep wells across the site.

Groundwater Elevations and Direction of Flow
On March, 2015, the County collected groundwater elevation data at eleven (11) locations along the western portion of Phases 1-6 at the landfill site, including seven (7) surficial aquifer wells and four (4) upper Floridan (limestone) aquifer wells. No significant changes to the patterns of flow in the surficial aquifer were noted in the data set, and the flow diagram for the surficial aquifer is provided. The elevations observed within the wells closest to the sinkhole indicate that the flow pattern continues to be affected by the feature, which has not been unexpected. However, the overall direction of flow within the surficial aquifer remains toward the west/northwest.

A contour diagram of the upper Floridan / Limestone aquifer has been prepared for the west side of the landfill around the sinkhole, and it is provided with this submittal. This diagram was generated manually in AutoCad ™ utilizing the four data points closest to the sinkhole. During this sampling event, the changes in elevations between TH-72 and TH-76 is - 0.04 ft., and TH-72 and TH-77 is + 0.14 ft. Elevation of newly installed monitor well TH-78 indicated an elevation of approximately 8 feet higher than those elevations recorded at TH-72, TH-76, and TH-77. This anomaly in the groundwater elevation indicates that TH-78 may be influenced by the surface water body in this area, or some other geologic formation anomaly may be creating this potentiometric high. Based on the significant difference in elevations, the data from TH-78 was not utilized to prepare the contour diagram. However, the County maintains the position that the configuration of the three down gradient deep monitoring wells adequately addresses the potential for migration of the contamination observed in TH-72, and the three wells have not exhibited any impact to date.

Conclusions
The water quality observed in the March 2015 IAMP sampling event indicates that the monitoring well TH-72 continues to exhibit impacts to water quality in the upper Floridan / Limestone aquifer. The impacts observed include elevated conductivity, TDS, chloride, iron, and sodium. The values have remained relatively stable, and do not appear to be migrating to any of the down gradient deep monitoring wells. Down gradient wells, TH-76 and TH-77, and TH-78 exhibit good water quality consistent with the unaffected deep wells at the site.

Recommendations

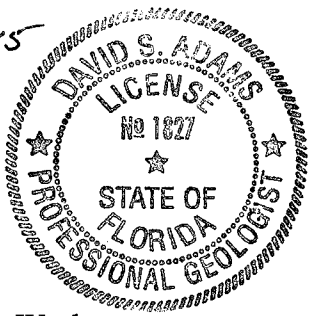
The County has submitted information to the FDEP Southwest District office that supports the discontinuation of the IAMP. Two select IAMP wells, TH-72 and TH-78, shall be included in the semi-annual sampling events conducted in accordance with the Landfill Operations Permit No. 35435-022-SO/01. The application for modification of that permit will be submitted to the FDEP in Tallahassee.

Enclosed for your review please find a site location map depicting the location of the monitoring wells sampled, the water quality data summary table for this sampling event, a groundwater elevation data table, groundwater contour and flow diagrams for the surficial and upper Floridan / Limestone aquifers, the historical data summary tables for the wells sampled this month, and the complete analytical data report from our contracted laboratory, Advanced Environmental Laboratories, Inc. Should you have any questions or require any additional information please feel free to call me at (813) 663-3221.

Respectfully submitted,

David S. Adams 4/28/2015

David S. Adams, P.G
Environmental Manager
Public Utilities Department



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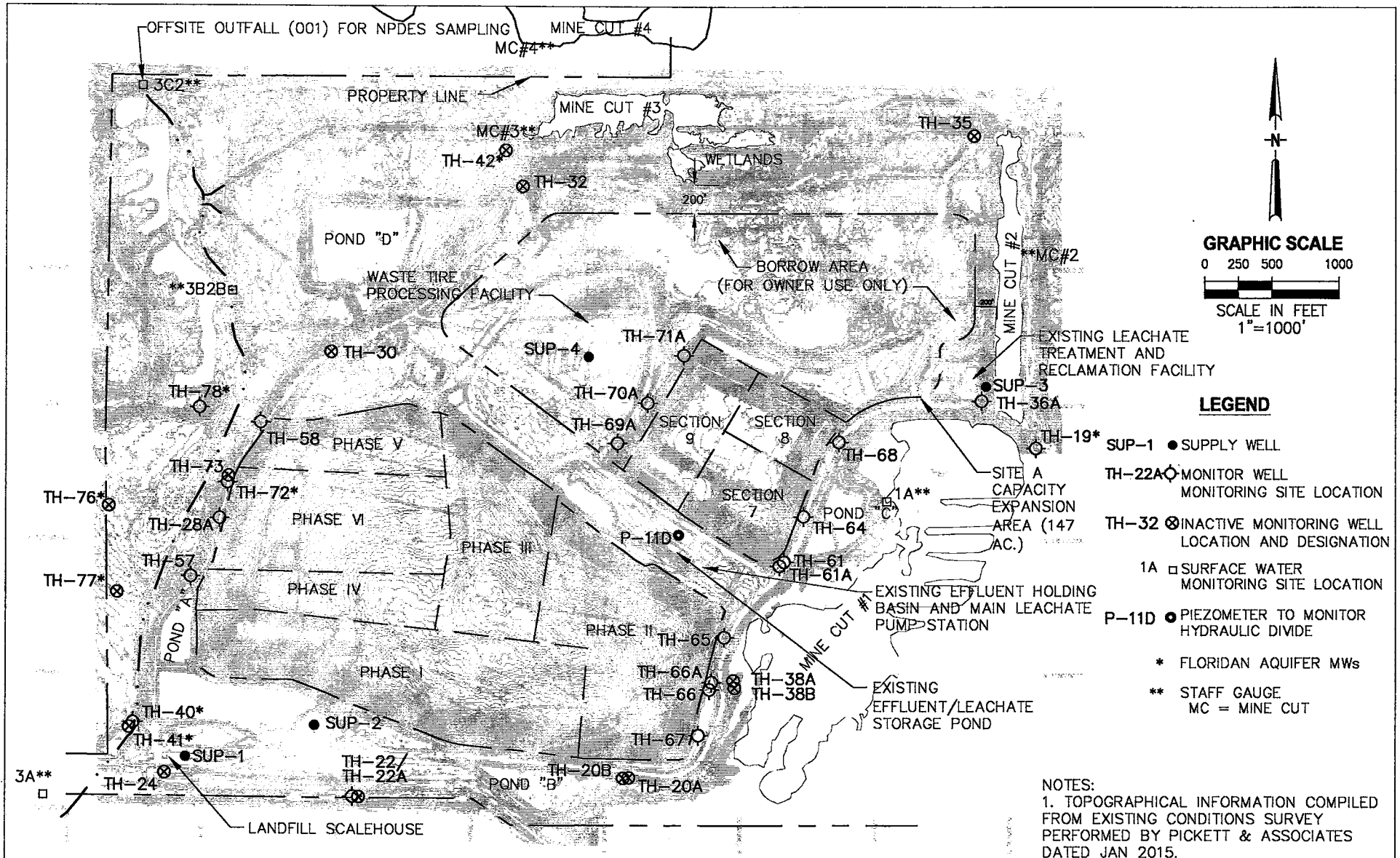


NOTES:
1. TOPOGRAPHICAL INFORMATION COMPILED FROM EXISTING CONDITIONS SURVEY PERFORMED BY PICKETT & ASSOCIATES DATED JAN 2015.

HDR

LOCATION OF MONITORING WELLS, PIEZOMETERS, AND SURFACE WATER SAMPLING SITES SOUTHEAST COUNTY LANDFILL HILLSBOROUGH COUNTY, FLORIDA

DATE
APRIL 2015

FIGURE
FIGURE L-1

Southeast County Landfill
Laboratory Analytical Data
Upper Floridan Aquifer Groundwater Monitoring Wells
March 4-5, 2015

GENERAL	Upper Floridan Wells				MCL STANDARD
PARAMETERS	TH-72	TH-76	TH-77	TH-78	
conductivity (umhos/cm) (field)	2,486	500	490	605	NS
dissolved oxygen (mg/l) (field)	0.57	0.39	0.49	0.46	NS
pH (field)	6.87	7.58	7.56	8.23	(6.5 - 8.5)**
temperature (°C) (field)	23.50	22.99	23.52	23.50	NS
turbidity (NTU) (field)	0.66	0.68	0.63	0.62	NS
total dissolved solids (mg/l)	1,300	320	330	410	500**
chloride (mg/l)	450	13	7.6	28	250**
ammonia nitrogen (mg/l as N)	21	0.33	0.37	0.33	NS
METALS (mg/l)					MCL STANDARD
arsenic	0.0021 u	0.0021 u	0.0021 u	0.0021 u	0.01*
iron	0.65	0.095 i	0.11 i	0.24	0.3**
sodium	190	21	18	36	160*

Note: Ref. Groundwater Guidance Concentrations, FDEP 2012

MCL = Maximum Contaminant Level

NTU = Nephelometric Turbidity Units

NS = No Standard

u = parameter was analyzed but not detected.

i = value was detected between the laboratory method detection limit and practical quantitation limit.

* = Primary Drinking Water Standard

** = Secondary Drinking Water Standard

1,300

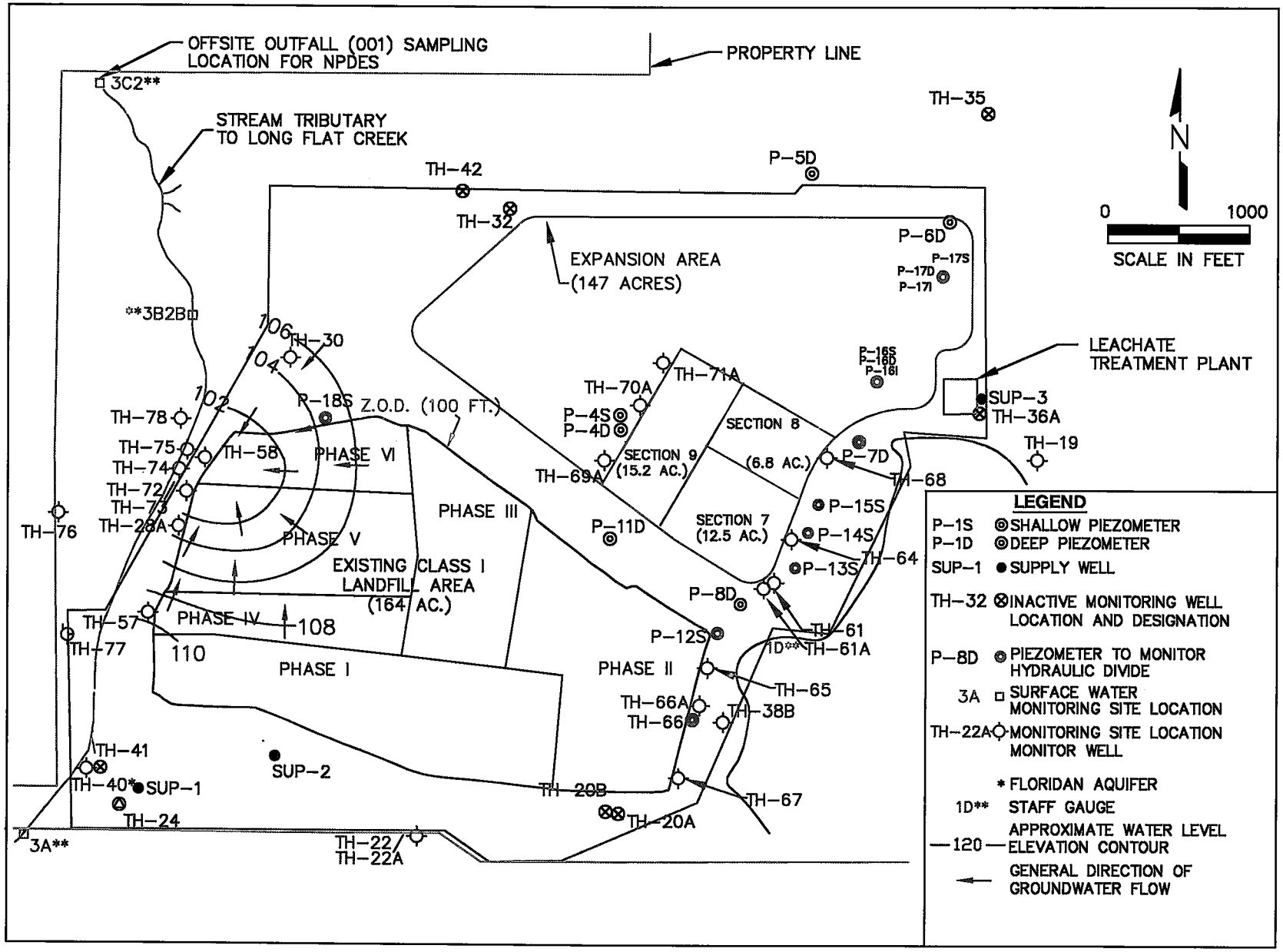
ug/l = micrograms per liter

mg/l = milligrams per liter

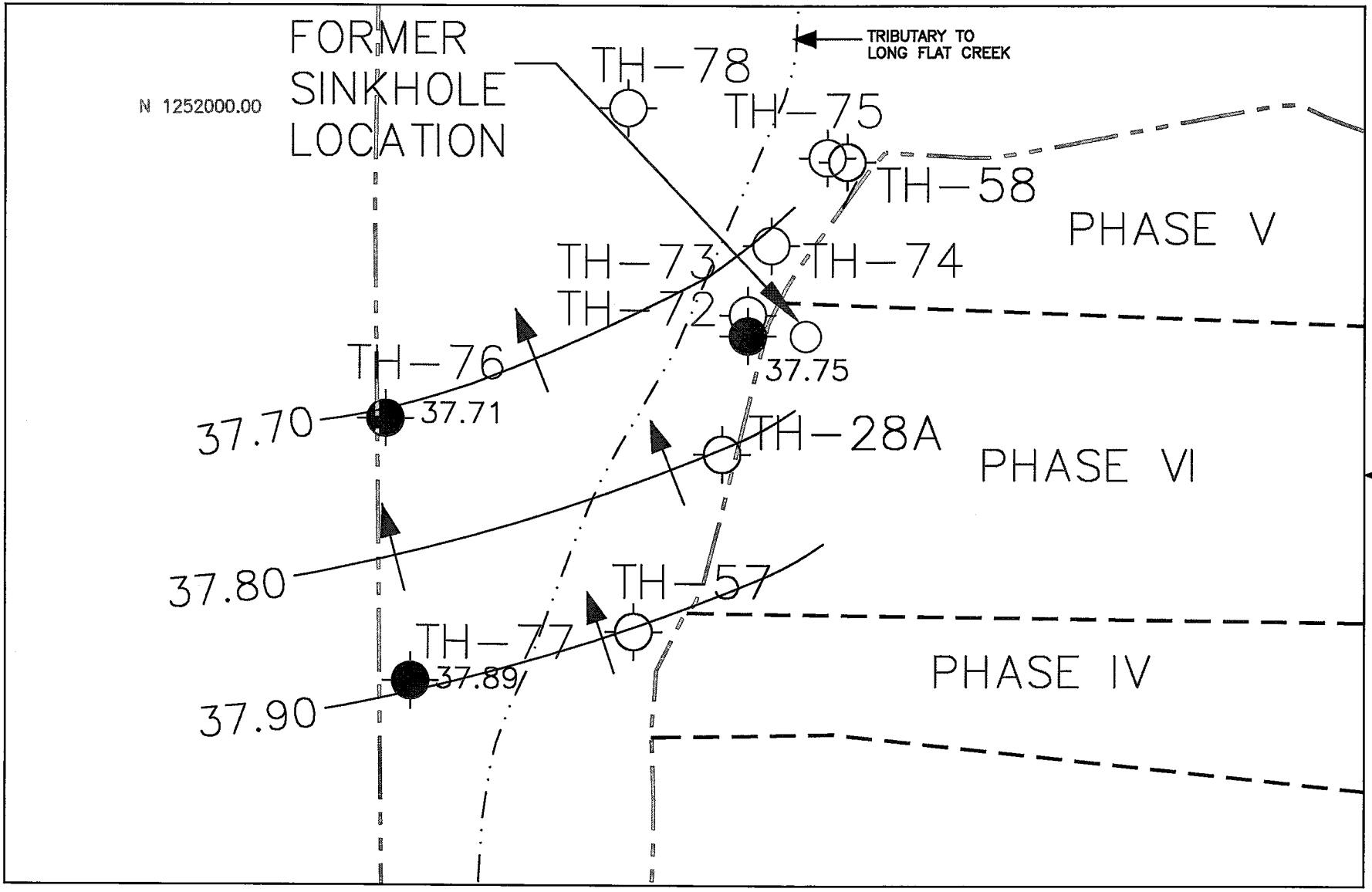
Southeast County Landfill
Groundwater Elevations
March 4, 2015

Measuring Point I.D.	T.O.C. Elevations (NGVD)	W.L. B.T.O.C.	W.L. (NGVD)	Time
TH-28A	131.10	27.64	103.46	10:03 AM
TH-30	128.88	23.63	105.25	9:55 AM
TH-57	128.36	18.59	109.77	10:06 AM
TH-58	127.88	27.44	100.44	9:58 AM
TH-72*	130.96	93.21	37.75	10:01 AM
TH-73	131.07	30.15	100.92	10:00 AM
TH-74	109.08	8.82	100.26	9:48 AM
TH-75	106.92	7.41	99.51	9:50 AM
TH-76*	111.21	73.50	37.71	10:14 AM
TH-77*	119.88	81.99	37.89	10:11 AM
TH-78*	120.75	75.16	45.59	10:20 AM

NGVD = National Geodetic Vertical Datum
T.O.C. = Top of Casing
B.T.O.C. = Below Top of Casing
* = Floridan Well
W.L. = Water Level



Southeast County Landfill
Groundwater Elevation Contour Diagram – March 4, 2015



MARCH 2015
UPPER FLORIDAN / LIMESTONE AQUIFER CONTOUR DIAGRAM
IN THE VICINITY OF THE FORMER SINKHOLE
SOUTHEAST COUNTY LANDFILL
HILLSBOROUGH COUNTY, FLORIDA

Hillsborough County Southeast Landfill
Laboratory Analytical Results from IAMP Groundwater Monitoring
TH-72

Date	Depth to Water (feet)	Water Table Elevation (NGVD)	conductivity (umhos/cm) (field)	dissolved oxygen (mg/l) (field)	pH (field)	temperature (°C) (field)	turbidity (NTU) (field)	total dissolved solids (mg/l)	chloride (mg/l)	ammonia nitrogen (mg/l as N)	arsenic (mg/l)	iron (mg/l)	sodium (mg/l)
01/27/2011	115.69	15.27	551	0.39	7.43	22.88	3.2	320	32	0.22	0.004 u	0.52	32
02/03/2011	112.18	18.78	565	1.09	7.38	22.95	9.9	300	32	0.21	0.004 u	0.62	27
02/10/2011	109.80	21.16	514	1.58	7.34	22.65	3.2	340	31	0.28	0.004 u	0.54	31
02/14/2011	108.18	22.78	483	1.15	7.36	22.7	3.5	320	32	0.24	0.0013 u	0.58	32
02/24/2011	111.71	19.25	513	0.19	7.34	22.85	1	350	32	0.22	0.004 u	0.53	31
03/03/2011	111.88	19.08	579	0.77	7.35	22.8	0.8	330	31	0.23	0.004 u	0.43	32
03/10/2011	113.65	17.31	551	1.26	7.41	22.73	0.9	320	30	0.18	0.004 u	0.35	31
03/17/2011	112.85	18.11	388	1.05	7.34	22.9	0.9	330	30	0.31	0.004 u	0.25	31
03/24/2011	114.33	16.63	1192	1.5	7.58	23.1	1.5	1,100	350	9	0.004 u	0.64	130
04/01/2011	115.70	15.26	928	0.16	7.41	22.8	3.6	520	110	2	0.004 u	0.24	59
04/08/2011	112.10	18.86	810	0.92	7.35	23.13	6.1	420	87	1.9	0.004 u	0.22	51
05/05/2011	116.21	14.75	609	0.71	7.67	23.01	6.6	320	33	0.3	0.004 u	0.27	37
06/08/2011	119.19	11.77	607	0.71	7.65	23.35	4.51	340	32	0.57	0.004 u	0.2	34
07/07/2011	113.30	17.66	606	0.72	7.4	23.25	3.94	150	64	2.1	0.004 u	7.9	27
08/04/2011	103.31	27.65	564	0.33	7.29	23.18	0.4	360	33	0.21	0.004 u	0.18 i	34
09/08/2011	97.99	32.97	536	1.11	7.29	23.2	0.6	340	34	0.41	0.004 u	0.18 i	36
10/04/2011	99.45	31.51	471	1.69	7.31	23.13	1.1	290	31	0.3	0.004 u	0.14 i	34
11/03/2011	103.37	27.59	550	1.8	7.28	23.04	1.51	290	32	0.29	0.004 u	0.15 i	34
12/08/2011	106.80	24.16	528	1.92	7.31	22.9	0.73	320	29	0.32	0.004 u	0.13 i	33
01/05/2012	113.08	17.88	535	0.2	7.23	22.74	0.44	330	32	0.29	0.004 u	0.097 i	31
02/10/2012	113.86	17.10	511	0.94	7.3	22.89	1.39	310	28	0.28	0.004 u	0.13 i	30
03/07/2012	121.00	9.96	575	0.27	7.15	23.23	0.5	310	25	0.22	0.004 u	0.11 i	31
04/05/2012	124.96	6.00	522	1.09	7.08	23.18	0.65	280	28	0.41	0.004 u	0.11 i	29
05/03/2012	126.55	4.41	746	1.6	6.9	23.46	0.81	380	72	2.3	0.004 u	0.54	49
06/07/2012	120.46	10.50	641	0.72	7.07	23.4	0.26	370	46	1	0.004 u	0.23	37
07/05/2012	104.95	26.01	900	0.23	6.54	23.52	0.4	650	190	2.9 j3	0.004 u	0.39	70
08/03/2012	98.26	32.70	843	0.69	6.77	23.6	2.23	730	210	3	0.004 u	0.48	78
09/06/2012	91.18	39.66	2,357	0.2	6.51	23.62	1.05	1,300	570	12	0.004 u	1.1	170
10/04/2012	90.19	40.77	1,654	0.6	6.43	23.22	0.46	1,500	650	25	0.004 u	1.9	210
11/07/2012	99.29	31.67	2,488	0.76	6.58	23.03	0.74	1,400	540	15	0.004 u	1.4	180
12/05/2012	101.82	29.14	2,416	0.23	6.49	23.18	0.45	1,300	540	13	0.004 u	1.3	180 j3
01/03/2013	100.65	30.31	2,430	1.1	6.44	23.09	0.42	1,400	500	15	0.004 u	1.3	170 j3
02/07/2013	105.58	25.38	2,206	0.6	6.5	23.1	0.22	1,100	470	13	0.004 u	1.1	160
03/07/2013	110.00	20.96	1,234	0.3	6.61	22.85	0.41	770	290	11	0.004 u	1.1	110
04/04/2013	111.35	19.61	1,252	0.33	6.74	23.15	9.9	870	260	10	0.004 u	1	100
05/02/2013	109.56	21.40	1,615	0.18	6.83	23.16	0.45	810	300	8.6	0.004 u	0.87	110
06/04/2013	109.62	21.34	1,440	0.31	7.13	23.3	0.27	850	290	8.4	0.004 u	0.82	120
07/03/2013	98.72	32.24	1,450	0.18	7.03	23.5	0.41	820	280	8.8	0.004 u	0.79	120
08/02/2013	ND	ND	1,256	0.46	6.88	23.43	0.2	800	290	6.8	0.004 u	0.72	120
09/05/2013	87.92	43.04	1,001	0.61	6.98	23.45	1.17	760	290	7.6	0.004 u	0.71	110
10/02/2013	87.39	43.57	1,566	0.32	6.86	23.53	12.6	1,000	350	7.4 j3	0.004 u	0.79	120
11/06/2013	97.90	33.06	2,145	0.16	6.69	23.36	0.8	1,200	450	12	0.004 u	0.64	170
12/05/2013	98.50	32.46	2,615	0.39	6.74	23.45	0.58	1,200	580	16	0.004 u	0.65	200
01/03/2014	99.02	31.94	2,220	0.84	6.83	22.88	1.64	1,200	580	25	0.004 u	0.67	230 j3
02/06/2014	99.50	31.46	2,452	0.13	6.69	23.13	2.07	1,300	580	23 j3	0.004 u	0.71	210
03/04/2014	97.91	33.05	2,173	0.24	6.67	23.4	1.33	1,500	580	22	0.004 u	0.74	220
04/03/2014	96.22	34.74	1,992	0.22	6.74	23.35	1.33	1,400	590	27	0.0013 u	0.71	220
05/06/2014	100.22	30.74	2,247	0.46	6.81	23.5	1.22	1,400	590	24	0.004 u	0.64	230
06/03/2014	102.58	28.38	2,771	0.34	6.45	23.46	0.96	1,400	570	27	0.004 u	0.73	220
07/03/2014	97.64	33.32	2,388	0.29	6.86	23.54	1.34	1,300	570	24	0.004 u	0.72	220
08/12/2014	90.40	40.56	2,375	0.28	6.87	23.55	0.81	1,300	540	23	0.004 u	0.62	200 j3
09/05/2014	90.75	40.21	3,156	0.46	6.74	23.61	1.96	1,400	510	20	0.004 u	0.65	210
10/07/2014	88.72	42.24	2,300	0.18	6.78	23.59	0.79	1,300	530	23	0.004 u	0.61	200
11/04/2014	95.50	35.46	2,511	0.46	6.64	23.46	1.83	1,400	460	20	0.0016 u	0.68	200
12/03/2014	94.56	36.40	2,675	0.34	6.67	23.47	1.3	1,300	500	18	0.0016 u	0.58	160
01/08/2015	93.10	37.86	2,637	0.98	6.74	23.03	1.69	1,300	450	18	0.0016 u	0.64	190
02/04/2015	94.16	36.80	2,540	0.57	6.71	23.27	2.29	1,300	410	17	0.0016 u	0.62	190

New survey data beginning with 10/4/2012.
u = parameter was analyzed but not detected
i = reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
j3 = estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
ND = No Data - water levels collected during quarterly ADR.
1,100 EXCEEDS STANDARD

Hillsborough County Southeast Landfill
Laboratory Analytical Results from IAMP Groundwater Monitoring
TH-76

Date	Depth to Water (feet)	Water Table Elevation (NGVD)	conductivity (umhos/cm) (field)	dissolved oxygen (mg/l) (field)	pH (field)	temperature (°C) (field)	turbidity (NTU) (field)	total dissolved solids (mg/l)	chloride (mg/l)	ammonia nitrogen (mg/l as N)	arsenic (mg/l)	iron (mg/l)	sodium (mg/l)
05/02/2013	89.83	21.38	450	0.22	7.63	22.81	36.9	220	13	0.4	0.004 u	1.1	20
06/04/2013	89.91	21.30	401	0.27	7.86	22.9	16.2	240	13	0.4	0.004 u	0.66	22
07/03/2013	79.04	32.17	398	0.19	8	23	28.6	210	12	0.34	0.004 u	0.99	22
08/02/2013	ND	ND	343	0.22	7.57	23.02	42.2	230	13	0.26	0.004 u	1.6	21
09/05/2013	68.22	42.99	278	0.21	7.74	22.97	46	240	12	0.32	0.004 u	1.5	20
10/02/2013	67.69	43.46	399	0.22	7.61	22.99	61.9	120	13	0.38	0.004 u	1.7	20
11/06/2013	78.19	33.02	446	0.64	7.54	22.84	29	260	13	0.36	0.004 u	1.1	20
12/05/2013	78.80	32.41	478	0.48	7.45	22.9	19.2	240	12	0.35	0.004 u	0.96	20
01/03/2014	79.38	31.83	398	0.58	7.67	22.35	19.4	190	12	0.23 j3	0.004 u	1.1	20
02/06/2014	79.87	31.34	446	0.14	7.54	22.57	18.1	230	12	0.45	0.004 u	0.96	20
03/04/2014	78.20	33.01	434	0.18	7.36	22.7	26.2	230	12	0.33	0.004 u	0.69	20
04/03/2014	76.54	34.67	441	0.18	7.46	22.82	24.7	210	12	0.6	0.0013 u	0.34	19
05/06/2014	80.52	30.69	427	0.24	7.56	22.85	12.7	220	12	0.38	0.004 u	0.65	21
06/03/2014	82.85	28.36	423	0.3	7.47	22.82	16.8	240	12	0.47	0.004 u	0.64	20
07/03/2014	77.98	33.23	421	0.3	7.46	22.83	19.5	230	12	0.49	0.004 u	0.2	20
08/13/2014	70.72	40.49	445	0.25	7.37	22.81	17	240	12	0.5	0.004 u	0.7	20
09/05/2014	71.05	40.16	596	0.2	7.28	22.92	19	240	12	0.72	0.004 u	0.61	20
10/07/2014	69.03	42.18	432	0.34	7.37	22.89	17.9	260	12	0.78	0.004 u	0.77	19
11/04/2014	75.84	35.37	502	0.27	7.19	22.9	16.4	280	11	0.37	0.0016 u	0.27	21
12/03/2014	74.87	36.34	517	0.27	7.34	22.82	18.7	250	8	0.34	0.0016 u	0.21	19
01/08/2015	73.38	37.83	516	0.54	7.4	22.49	0.84	270	8.4	0.18	0.0016 u	0.14	22
02/04/2015	74.46	36.75	525	0.27	7.44	22.65	0.67	280	9.8	0.34	0.0016 u	0.13	22

u = parameter was analyzed but not detected

j3 = estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.

ND = No Data - water levels collected during quarterly ADR.

1.1 EXCEEDS STANDARD

Hillsborough County Southeast Landfill
Laboratory Analytical Results from IAMP Groundwater Monitoring
TH-77

Date	Depth to Water (feet)	Water Table Elevation (NGVD)	conductivity (umhos/cm) (field)	dissolved oxygen (mg/l) (field)	pH (field)	temperature (°C) (field)	turbidity (NTU) (field)	total dissolved solids (mg/l)	chloride (mg/l)	ammonia nitrogen (mg/l as N)	arsenic (mg/l)	iron (mg/l)	sodium (mg/l)
05/02/2013	98.31	21.57	440	0.57	7.39	23.39	59.4	190	9.4	0.39	0.004 u	1.2	17
06/04/2013	98.38	21.50	384	0.56	7.86	23.59	35.4	230	8.9	0.42	0.004 u	0.89	18
07/03/2013	87.48	32.40	388	0.41	7.8	23.7	38.4	210	8.9	0.4	0.004 u	1.1	17
08/02/2013	ND	ND	334	0.47	7.44	23.66	42.9	230	9.2	0.36	0.004 u	1.1	18
09/05/2013	76.66	43.22	269	0.83	7.61	23.68	47.1	230	8.9	0.35	0.004 u	0.96	16
10/02/2013	76.14	43.72	383	0.69	7.5	23.59	52.7	240	9.1	0.39	0.004 u	1.3	17
11/06/2013	86.68	33.20	423	0.74	7.43	23.51	25.1	230	9.7	0.36 j3	0.004 u	0.68	17
12/05/2013	87.29	32.59	451	0.9	7.44	23.6	16.4	220	9	0.36	0.004 u	0.58	17
01/03/2014	87.87	32.01	371	0.85	7.65	23.18	16.5	160	9.1	0.39	0.004 u	0.63	17
02/06/2014	88.30	31.58	424	0.09	7.53	23.39	4.62	250	9.2	0.27	0.004 u	0.26	16
03/04/2014	86.70	33.18	418	0.36	7.34	23.38	1.12	230	9.3	0.32	0.004 u	0.21	16
04/03/2014	85.02	34.86	430	0.28	7.45	23.47	1.97	220	9.4	0.61	0.0013 u	0.18	15
05/06/2014	89.02	30.86	414	0.34	7.52	23.47	1.01	220	9.7	0.59	0.004 u	0.19	17
06/03/2014	91.34	28.54	464	0.27	7.47	23.49	0.88	230	9.7	0.75	0.004 u	0.19	17
07/03/2014	86.40	33.48	409	0.34	7.44	23.65	1.56	230	9.6	0.48	0.004 u	0.14 i	17
08/13/2014	79.19	40.69	436	0.36	7.39	23.76	0.61	260	9.5	0.49	0.004 u	0.16 i	16
09/05/2014	79.52	40.36	578	0.37	7.31	23.62	1.02	240	12	0.72	0.004 u	0.61	20
10/07/2014	77.55	42.33	416	0.22	7.36	23.64	0.71	240	9.3	1.4 j3	0.004 u	0.16 i	16
11/04/2014	84.27	35.61	469	0.27	7.26	23.66	1.28	280	10	0.38	0.0016 u	0.16	17
12/03/2014	83.33	36.55	490	0.46	7.24	23.43	0.5	270	12	0.38	0.0016 u	0.15	16
01/08/2015	81.86	38.02	504	0.5	7.41	23.12	0.42	250	11	0.42	0.0016 u	0.14	18
02/04/2015	82.94	36.94	492	0.2	7.39	23.2	0.51	280	7 j3	0.39	0.0016 u	0.16	18

u = parameter was analyzed but not detected
i = reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
j3 = estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
ND = No Data - water levels collected during quarterly ADR.
1.2 EXCEEDS STANDARD

Hillsborough County Southeast Landfill
Laboratory Analytical Results from IAMP Groundwater Monitoring
TH-78

Date	Depth to Water (feet)	Water Table Elevation (NGVD)	conductivity (umhos/cm) (field)	dissolved oxygen (mg/l) (field)	pH (field)	temperature (°C) (field)	turbidity (NTU) (field)	total dissolved solids (mg/l)	chloride (mg/l)	ammonia nitrogen (mg/l as N)	arsenic (mg/l)	iron (mg/l)	sodium (mg/l)
07/02/2014	ND	ND	363	0.41	9.08	23.89	19.3	210	43	0.44	0.0019 i	1	38
08/12/2014	75.51	45.24	467	0.4	9.55	23.56	7.37	240	38	0.42 j3	0.004 u	0.48	34
09/05/2014	75.12	45.63	680	0.15	8.18	23.46	3.86	270	36	0.40	0.004 u	0.27	35
10/07/2014	73.49	47.26	508	0.30	8.39	23.35	1.12	270	34	0.44	0.004 u	0.23	34
11/04/2014	77.73	43.02	555	0.44	7.92	23.33	1.58	320	37	0.3	0.0016 u	0.27	34
12/03/2014	79.04	41.71	584	0.49	7.86	23.3	0.5	290	29	0.31	0.0016 u	0.25	31
01/08/2015	76.39	44.36	595	0.76	7.98	22.81	1.25	300	31	0.34	0.0016 u	0.24	36
02/04/2015	76.21	44.54	601	0.32	8.25	22.95	0.96	310	29	0.32	0.0016 u	0.2	35

u = parameter was analyzed but not detected
i = reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
j3 = estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
ND = No Data - survey data was not complete.
1 EXCEEDS STANDARD

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Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
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Fax: (813)630-4327

March 20, 2015

David Adams
Hillsborough Co Public Utilites
332 North Falkenburg Rd
Tampa, FL 33619

RE: Workorder: T1503041 Southeast County Landfill IAMP

Dear David Adams:

Enclosed are the analytical results for sample(s) received by the laboratory between Wednesday, March 04, 2015 and Thursday, March 05, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heidi Brooks
HBrooks@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

ACCREDITED IN ACCORDANCE WITH nelac

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SAMPLE SUMMARY

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID	Sample ID	Matrix	Date Collected	Date Received
T1503041001	Field Blank	Water	3/4/2015 10:28	3/4/2015 15:15
T1503041002	TH-78	Water	3/4/2015 11:33	3/4/2015 15:15
T1503041003	TH-72	Water	3/4/2015 12:53	3/4/2015 15:15
T1503041004	Duplicate	Water	3/5/2015 00:00	3/5/2015 14:35
T1503041005	TH-76	Water	3/5/2015 11:52	3/5/2015 14:35
T1503041006	TH-77	Water	3/5/2015 10:37	3/5/2015 14:35

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ANALYTICAL RESULTS

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID: **T1503041001** Date Received: 03/04/15 15:15 Matrix: Water
Sample ID: **Field Blank** Date Collected: 03/04/15 10:28

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:07	M
Iron	**20**	**U**	**ug/L**	**1**	200	20	3/16/2015 15:07	M
Sodium	**0.10**	**U**	**mg/L**	**1**	0.20	0.10	3/16/2015 15:07	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.02**	**U**	**mg/L**	**1**	0.10	0.02	3/5/2015 12:46	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**12**	**U**	**mg/L**	**1.25**	12	12	3/9/2015 09:36	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**1.1**	**U**	**mg/L**	**1**	5.0	1.1	3/9/2015 13:35	T

Lab ID: **T1503041002** Date Received: 03/04/15 15:15 Matrix: Water
Sample ID: **TH-78** Date Collected: 03/04/15 11:33

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements	Analytical Method: Field Measurements							
Conductivity	**605**		**umhos/cm**	**1**			3/4/2015 11:33	
Dissolved Oxygen	**0.46**		**mg/L**	**1**			3/4/2015 11:33	
Temperature	**23.5**		**°C**	**1**			3/4/2015 11:33	
Turbidity	**0.62**		**NTU**	**1**			3/4/2015 11:33	
pH	**8.23**		**SU**	**1**			3/4/2015 11:33	
METALS								

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ANALYTICAL RESULTS

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID: **T1503041002** Date Received: 03/04/15 15:15 Matrix: Water
Sample ID: **TH-78** Date Collected: 03/04/15 11:33

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:26	M
Iron	**240**		**ug/L**	**1**	200	20	3/16/2015 15:26	M
Sodium	**36**		**mg/L**	**1**	0.20	0.10	3/16/2015 15:26	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.33**		**mg/L**	**1**	0.10	0.02	3/5/2015 12:46	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**410**		**mg/L**	**1.25**	12	12	3/9/2015 09:36	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**28**		**mg/L**	**1**	5.0	1.1	3/9/2015 13:35	T

Lab ID: **T1503041003** Date Received: 03/04/15 15:15 Matrix: Water
Sample ID: **TH-72** Date Collected: 03/04/15 12:53

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements	Analytical Method: Field Measurements							
Conductivity	**2486**		**umhos/cm**	**1**			3/4/2015 12:53	
Dissolved Oxygen	**0.57**		**mg/L**	**1**			3/4/2015 12:53	
Temperature	**23.5**		**°C**	**1**			3/4/2015 12:53	
Turbidity	**0.66**		**NTU**	**1**			3/4/2015 12:53	
pH	**6.87**		**SU**	**1**			3/4/2015 12:53	
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							

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ANALYTICAL RESULTS

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID: **T1503041003** Date Received: 03/04/15 15:15 Matrix: Water
Sample ID: **TH-72** Date Collected: 03/04/15 12:53

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:29	M
Iron	**650**		**ug/L**	**1**	200	20	3/16/2015 15:29	M
Sodium	**190**		**mg/L**	**1**	0.20	0.10	3/16/2015 15:29	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water			Analytical Method: EPA 350.1					
Ammonia (N)	**21**		**mg/L**	**10**	1.00	0.25	3/5/2015 12:46	T
Analysis Desc: Tot Dissolved Solids,SM2540C			Analytical Method: SM 2540 C					
Total Dissolved Solids	**1300**		**mg/L**	**1.25**	12	12	3/9/2015 09:36	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water			Analytical Method: SM 4500-Cl-E					
Chloride	**450**		**mg/L**	**10**	50	11	3/9/2015 13:35	T

Lab ID: **T1503041004** Date Received: 03/05/15 14:35 Matrix: Water
Sample ID: **Duplicate** Date Collected: 03/05/15 00:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water			Preparation Method: SW-846 3010A Analytical Method: SW-846 6010					
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:33	M
Iron	**110**	**I**	**ug/L**	**1**	200	20	3/16/2015 15:33	M
Sodium	**18**		**mg/L**	**1**	0.20	0.10	3/16/2015 15:33	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water			Analytical Method: EPA 350.1					
Ammonia (N)	**0.38**		**mg/L**	**1**	0.10	0.02	3/10/2015 12:00	T
Analysis Desc: Tot Dissolved Solids,SM2540C			Analytical Method: SM 2540 C					
Total Dissolved Solids	**320**		**mg/L**	**1.25**	12	12	3/9/2015 09:36	T

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ANALYTICAL RESULTS

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID: **T1503041004** Date Received: 03/05/15 14:35 Matrix: Water
Sample ID: **Duplicate** Date Collected: 03/05/15 00:00

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**12**		**mg/L**	**1**	5.0	1.1	3/9/2015 13:35	T

Lab ID: **T1503041005** Date Received: 03/05/15 14:35 Matrix: Water
Sample ID: **TH-76** Date Collected: 03/05/15 11:52

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements	Analytical Method: Field Measurements							
Conductivity	**500**		**umhos/cm**	**1**			3/5/2015 11:52	
Dissolved Oxygen	**0.39**		**mg/L**	**1**			3/5/2015 11:52	
Temperature	**22.99**		**°C**	**1**			3/5/2015 11:52	
Turbidity	**0.68**		**NTU**	**1**			3/5/2015 11:52	
pH	**7.58**		**SU**	**1**			3/5/2015 11:52	
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:37	M
Iron	**95**	**I**	**ug/L**	**1**	200	20	3/16/2015 15:37	M
Sodium	**21**		**mg/L**	**1**	0.20	0.10	3/16/2015 15:37	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.33**		**mg/L**	**1**	0.10	0.02	3/10/2015 12:00	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**320**		**mg/L**	**1.25**	12	12	3/9/2015 09:36	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**13**		**mg/L**	**1**	5.0	1.1	3/9/2015 13:35	T

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ANALYTICAL RESULTS

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID: **T1503041006** Date Received: 03/05/15 14:35 Matrix: Water

Sample ID: **TH-77** Date Collected: 03/05/15 10:37

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
FIELD PARAMETERS								
Analysis Desc: Data entry of field measurements	Analytical Method: Field Measurements							
Conductivity	**490**		**umhos/cm**	**1**			3/5/2015 10:37	
Dissolved Oxygen	**0.49**		**mg/L**	**1**			3/5/2015 10:37	
Temperature	**23.52**		**°C**	**1**			3/5/2015 10:37	
Turbidity	**0.63**		**NTU**	**1**			3/5/2015 10:37	
pH	**7.56**		**SU**	**1**			3/5/2015 10:37	
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**2.1**	**U**	**ug/L**	**1**	10	2.1	3/16/2015 15:41	M
Iron	**110**	**I**	**ug/L**	**1**	200	20	3/16/2015 15:41	M
Sodium	**18**		**mg/L**	**1**	0.20	0.10	3/16/2015 15:41	M
WET CHEMISTRY								
Analysis Desc: Ammonia,E350.1,Water	Analytical Method: EPA 350.1							
Ammonia (N)	**0.37**		**mg/L**	**1**	0.10	0.02	3/10/2015 12:00	T
Analysis Desc: Tot Dissolved Solids,SM2540C	Analytical Method: SM 2540 C							
Total Dissolved Solids	**330**		**mg/L**	**1.25**	12	12	3/9/2015 09:36	T
Analysis Desc: Chlorides,SM4500-Cl-E,Water	Analytical Method: SM 4500-Cl-E							
Chloride	**7.6**		**mg/L**	**1**	5.0	1.1	3/9/2015 13:35	T

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS QUALIFIERS

Workorder: T1503041 Southeast County Landfill IAMP

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

M	DOH Certification #E82535(AEL-M)(FL NELAC Certification)
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)
T^	Not Certified

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QUALITY CONTROL DATA

Workorder: T1503041 Southeast County Landfill IAMP

QC Batch: WCAt/2036 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T1503041001, T1503041002, T1503041003

METHOD BLANK: 1695561

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.02	0.02	U

LABORATORY CONTROL SAMPLE: 1695562

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	1	1.0	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1695563 1695564 Original: T1503041002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY											
Ammonia (N)	mg/L	0.33	1	1.3	1.3	100	99	90-110	1	10	

QC Batch: WCAt/2063 Analysis Method: SM 2540 C
QC Batch Method: SM 2540 C Prepared:
Associated Lab Samples: T1503041001, T1503041002, T1503041003, T1503041004, T1503041005, T1503041006

METHOD BLANK: 1696038

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Total Dissolved Solids	mg/L	10	10	U

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QUALITY CONTROL DATA

Workorder: T1503041 Southeast County Landfill IAMP

LABORATORY CONTROL SAMPLE: 1696039

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	660	620	94	75-125	

SAMPLE DUPLICATE: 1696040 Original: T1502981001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
WET CHEMISTRY						
Total Dissolved Solids	mg/L	660	650	1	10	

QC Batch: WCAt/2075 Analysis Method: SM 4500-Cl-E

QC Batch Method: SM 4500-Cl-E Prepared:

Associated Lab Samples: T1503041001, T1503041002, T1503041003, T1503041004, T1503041005, T1503041006

METHOD BLANK: 1696894

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Chloride	mg/L	1.1	1.1	U

LABORATORY CONTROL SAMPLE: 1696895

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Chloride	mg/L	40	40	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1696896 1696897 Original: T1503041002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY											
Chloride	mg/L	28	40	69	69	103	102	90-110	1	10	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T1503041 Southeast County Landfill IAMP

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1696898 1696899 Original: T1503184003

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY											
Chloride	mg/L	94	40	140	140	102	103	90-110	0	10	

QC Batch: WCAt/2082 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Prepared:
Associated Lab Samples: T1503041004, T1503041005, T1503041006

METHOD BLANK: 1697182

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
WET CHEMISTRY				
Ammonia (N)	mg/L	0.02	0.02	U

LABORATORY CONTROL SAMPLE: 1697183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
WET CHEMISTRY						
Ammonia (N)	mg/L	1	1.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1697184 1697185 Original: T1503041004

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
WET CHEMISTRY											
Ammonia (N)	mg/L	0.38	1	1.3	1.3	96	95	90-110	0	10	

QC Batch: DGMm/1073 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3010A Prepared: 03/13/2015 09:30
Associated Lab Samples: T1503041001, T1503041002, T1503041003, T1503041004, T1503041005, T1503041006

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA

Workorder: T1503041 Southeast County Landfill IAMP

METHOD BLANK: 1701699

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Arsenic	ug/L	2.1	2.1	U
Iron	ug/L	20	20	U

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Sodium	mg/L	0.10	0.10	U

LABORATORY CONTROL SAMPLE: 1701700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
METALS						
Arsenic	ug/L	400	420	106	80-120	
Iron	ug/L	25000	27000	106	80-120	
Sodium	mg/L	50	54	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1701701 1701702 Original: T1502914001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
METALS											
Arsenic	ug/L	-0.17	400	420	430	106	107	75-125	1	20	
Iron	ug/L	200	25000	27000	27000	105	105	75-125	1	20	
Sodium	mg/L	25	50	79	79	106	107	75-125	0	20	

CERTIFICATE OF ANALYSIS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
9610 Princess Palm Ave Tampa, FL 33619
Payments: P.O. Box 551580 Jacksonville, FL32255-1580
Phone: (813)630-9616
Fax: (813)630-4327

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: T1503041 Southeast County Landfill IAMP

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
T1503041001	Field Blank			EPA 350.1	WCAt/2036
T1503041002	TH-78			EPA 350.1	WCAt/2036
T1503041003	TH-72			EPA 350.1	WCAt/2036
T1503041001	Field Blank			SM 2540 C	WCAt/2063
T1503041002	TH-78			SM 2540 C	WCAt/2063
T1503041003	TH-72			SM 2540 C	WCAt/2063
T1503041004	Duplicate			SM 2540 C	WCAt/2063
T1503041005	TH-76			SM 2540 C	WCAt/2063
T1503041006	TH-77			SM 2540 C	WCAt/2063
T1503041001	Field Blank			SM 4500-Cl-E	WCAt/2075
T1503041002	TH-78			SM 4500-Cl-E	WCAt/2075
T1503041003	TH-72			SM 4500-Cl-E	WCAt/2075
T1503041004	Duplicate			SM 4500-Cl-E	WCAt/2075
T1503041005	TH-76			SM 4500-Cl-E	WCAt/2075
T1503041006	TH-77			SM 4500-Cl-E	WCAt/2075
T1503041004	Duplicate			EPA 350.1	WCAt/2082
T1503041005	TH-76			EPA 350.1	WCAt/2082
T1503041006	TH-77			EPA 350.1	WCAt/2082
T1503041001	Field Blank	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041002	TH-78	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041003	TH-72	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041004	Duplicate	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041005	TH-76	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041006	TH-77	SW-846 3010A	DGMm/1073	SW-846 6010	ICPm/1073
T1503041002	TH-78	Field Measurements	FLDt/	Field Measurements	FLDt/
T1503041003	TH-72	Field Measurements	FLDt/	Field Measurements	FLDt/
T1503041005	TH-76	Field Measurements	FLDt/	Field Measurements	FLDt/
T1503041006	TH-77	Field Measurements	FLDt/	Field Measurements	FLDt/

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 528 S. Northlake Blvd., Ste. 1016 • Altamonte Springs, FL 32701 • 407.937.1594 • Fax 407.937.1597
☐ Gainesville: 4965 SW 41st Blvd. • Gainesville, FL 32608 • 352.377.2349 • Fax 352.395.8639
☐ Jacksonville: 6661 Southpoint Pkwy. • Jacksonville, FL 32216 • 904.363.9350 • Fax 904.363.9354
☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.889.2288 • Fax 954.889.2281
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

T150841

Client Name: Hills. Co. Public Utilities	Project Name: Southeast County Landfill - IAMP		
Address: 332 North Falkenburg Rd.	P.O. Number/Project Number: N/A		
Tampa, Florida 33619	Project Location: Southeast County Landfill		
Phone: (813) 663-3222	REMARKS/SPECIAL INSTRUCTIONS:		
FAX: (813) 274-6801			
Contact: Michael Townsel			
Sampled By: Z. PATTERSON / A. BALLOON			
Turn Around Time: ☑ STANDARD ☐ RUSH			
Page: 1 of: 1			

SAMPLE ID	SAMPLE DESCRIPTION	Grab	Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	PRESERVATION	ANALYSIS REQUIRED: Ammonia-N	TDS	Chloride	As, Fe, Na	LABORATORY I.D. NUMBER
001	FIELD BLANK	G		3/4/15	10:28	GW	3		✓	✓	✓	✓	
002	TH-78	↓		↓	11:33	↓	↓		✓	✓	✓	✓	
003	TH-72	↓		↓	12:53	↓	↓		✓	✓	✓	✓	

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge
Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 1.2 (in degrees celcius)

Form revised 09/19/2012 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 1A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		3/4/15	1513		3/4/15	1513
2						
3						
4						

FOR DRINKING WATER USE (When PWS information not otherwise supplied)

PWS ID: _____
Contact Person: _____ Phone: _____
Supplier of Water: _____
Site Address: _____

Advanced Environmental Laboratories, Inc.

☐ Altamonte Springs: 526 S. Northlake Blvd., Ste. 1016 • Altamonte Springs, FL 32701 • 407.937.1594 • Fax 407.937.1597
☐ Gainesville: 4965 SW 41st Blvd. • Gainesville, FL 32608 • 352.377.2349 • Fax 352.395.6639
☐ Jacksonville: 6661 Southpoint Pkwy. • Jacksonville, FL 32216 • 904.363.9350 • Fax 904.363.9354
☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.889.2288 • Fax 954.889.2281
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

T150741

Client Name: Hills. Co. Public Utilities	Project Name: Southeast County Landfill - IAMP
Address: 332 North Falkenburg Rd.	P.O. Number/Project Number: N/A
Tampa, Florida 33619	Project Location: Southeast County Landfill
Phone: (813) 663-3222	REMARKS/SPECIAL INSTRUCTIONS:
FAX: (813) 274-6801	
Contact: Michael Townsel	
Sampled By: Z. PATTERSON / A. BALLOU	
Turn Around Time: ☑ STANDARD ☐ RUSH	
Page: 1 of: 1	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	PRESERVATION	ANALYSIS REQUIRED: Ammonia-N	TDS	Chloride	As, Fe, Na	LABORATORY I.D. NUMBER
	Duplicate	G	3/5/15	N/A	GW	3		✓	✓	✓	✓	004
	TH-76	↓	↓	11:52	↓	↓		✓	✓	✓	✓	005
	TH-77	↓	↓	10:37	↓	↓		✓	✓	✓	✓	006

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☑ Where required, pH checked Temperature when received 5.0 (In degrees celcius)

Form revised 09/19/2012

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 1A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		3/5/15	1435		3/5/15	1435
2						
3						
4						

FOR DRINKING WATER USE (When PWS information not otherwise supplied)

PWS ID:

Contact Person: Phone:

Supplier of Water:

Site Address:

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:	
WELL NO:	FIELD BLANK	SAMPLE ID: FIELD BLANK	DATE: 3/4/15

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:
N/A	N/A		N/A	N/A

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
N/A	N/A	N/A	N/A	N/A

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)

FIELD BLANK

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
ANDREW BALLOON / ZACK PATTERSON	Zack Patterson	10:28	10:34

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
N/A	T		

FIELD DECONTAMINATION: ~~PUMP Y N Dedicated~~ ~~TUBING Y N Dedicated~~ 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 COC FOR ANALYSIS

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:** ± 5% **Dissolved Oxygen:** all readings ≤ 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 2009

DEP-SOP-001/01
FS 2200 Groundwater Sampling

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:.	Lithia, Florida	
WELL NO:	TH-78	SAMPLE ID:	TH-78	DATE: 3/4/15

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2	0.5	163.14 feet to 178.14 feet	75.16	DBP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

= (178.14 feet – 75.16 feet) X .16 gallons/foot = 16.48 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
177.14	177.14	10:33	11:33	30.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. µS/cm	DISSOLVED OXYGEN mg/L	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:06	16.5	16.5	.50	75.18	8.49	23.41	597	.51	.60	NONE	NONE
11:15	4.5	21.0	.50	75.18	8.38	23.46	600	.51	.86		
11:24	4.5	25.5	.50	75.18	8.28	23.46	604	.47	.77		
11:33	4.5	30.0	.50	75.18	8.23	23.50	605	.46	.62		

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
ANDREW BALLOON / ZACK PATTERSON	Zack Patterson	11:33	11:39

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
177.14	T		

FIELD DECONTAMINATION: PUMP Y N (Dedicated) TUBING Y N (Dedicated) 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 C.O.C. FOR SAMPLE ANALYSIS DBP =Dedicated Bladder Pump

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:** ± 5% **Dissolved Oxygen:** all readings ≤ 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 2009

Revision Date: February 1, 2004

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:.	Lithia, Florida	
WELL NO:	TH-72	SAMPLE ID:	TH-72	DATE: 3/4/15

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 0.5	WELL SCREEN INTERVAL DEPTH: 180 feet to 190 feet	STATIC DEPTH TO WATER (feet): 93.21	PURGE PUMP TYPE OR BAILER: DBP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

= (190 feet – 93.21 feet) X .16 gallons/foot = 15.49 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): 189	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 189	PURGING INITIATED AT: 12:06	PURGING ENDED AT: 12:53	TOTAL VOLUME PURGED (gallons): 23.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. µS/cm	DISSOLVED OXYGEN mg/L	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
12:37	15.50	15.50	.50	93.21	6.89	23.63	2484	.50	1.06	NONE	NONE
12:45	4.0	19.50	.50	93.21	6.79	23.49	2487	.56	.84	↓	↓
12:53	4.0	23.50	.50	93.21	6.87	23.50	2486	.57	.66	↓	↓

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: ANDREW BALLOON / ZACK PATTERSON	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 12:53	SAMPLING ENDED AT: 13:00
PUMP OR TUBING DEPTH IN WELL (feet): 189	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y N (Dedicated)	TUBING Y N (Dedicated)	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 C.O.C. FOR SAMPLE ANALYSIS DBP =Dedicated Bladder Pump

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:** ± 5% **Dissolved Oxygen:** all readings ≤ 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 2009

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:	
WELL NO:	Duplicate	SAMPLE ID: Duplicate	DATE: 3/5/15

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:
N/A	N/A		N/A	N/A

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
N/A	N/A	N/A	N/A	N/A

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)

DUPLICATE

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: ANDREW BALLOON / ZACK PATTERSON	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: N/A	SAMPLING ENDED AT: N/A
PUMP OR TUBING DEPTH IN WELL (feet): N/A	TUBING MATERIAL CODE: T	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: ~~PUMP Y N Dedicated~~	~~TUBING Y N Dedicated~~	DUPLICATE: (Y) N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)

SEE COC FOR ANALYSIS

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:** ± 5% **Dissolved Oxygen:** all readings ≤ 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 2009

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:.	Lithia, Florida
WELL NO:	TH-76	SAMPLE ID:	TH-76
DATE:	3/5/15		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2	0.5	163.35 feet to 178.35 feet	73.48	DBP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (178.35 feet – 73.48 feet) X .16 gallons/foot = 16.80 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
177.35	177.35	11:00	11:52	26

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. µS/cm	DISSOLVED OXYGEN mg/L	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
11:34	17.0	17.0	.50	74.23	7.58	22.97	500	.40	.32	NONE	NONE
11:43	4.5	~~21.5~~ 21.5	.50	74.24	7.57	22.99	500	.40	1.01	↓	↓
11:52	4.5	26	.50	74.24	7.58	22.99	500	.39	.68	↓	↓

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
ANDREW BALLOON / ZACK PATTERSON		11:52	11:58

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
177.35	T		

FIELD DECONTAMINATION: PUMP Y N (Dedicated) TUBING Y N (Dedicated) 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 C.O.C. FOR SAMPLE ANALYSIS DBP = Dedicated bladder pump

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:** ± 5% **Dissolved Oxygen:** all readings ≤ 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 2009

Form FD 9000-24

GROUNDWATER SAMPLING LOG

SITE NAME:	SELF IAMP	SITE LOCATION:	Lithia, Florida
WELL NO:	TH-77	SAMPLE ID:	TH-77
		DATE:	3/5/15

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2	0.5	154.2 feet to 169.2 feet	81.90	DBP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

= (169.2 feet – 81.90 feet) X .16 gallons/foot = gallons 13.97

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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
168.2	168.2	9:55	10:37	21

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. µS/cm	DISSOLVED OXYGEN mg/L	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
10:23	14.00	14.00	.50	82.08	7.55	23.50	489	.50	.61	NONE	NONE
10:30	3.5	17.5	.50	82.08	7.55	23.53	489	.50	.68	↓	
10:37	3.5	21.0	.50	82.08	7.56	23.52	490	.49	.63	↓	↓

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
ANDREW BALLOON / ZACK PATTERSON	Zack Patterson	10:37	10:44

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
168.2	T		

FIELD DECONTAMINATION: PUMP Y N (Dedicated) TUBING Y N (Dedicated) DUPLICATE: (Y) ~~N~~ (20)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)

SEE C.O.C. FOR SAMPLE ANALYSIS

DBP= Dedicated bladder pump

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)

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