Williams, Elizabeth

From: Levin, Laxsamee
Sent: Tuesday, July 07, 2009 12:20 PM
To: KWills@Geosyntec.com; smccash@wasteservices.com
Cc: mkaiser@wasteservicesinc.com; Lubozynski, Tom; Heidorn, Marjorie; Williams, Elizabeth
Subject: RE: OCD-SW-09-0198 J.E.D. Class I Landfill WACS Facility I.D. 89544

Kirk:

We are pleased to hear that next semi-annual water quality monitoring report will be submitted in ADaPT electronic data deliverables format. We look forward to your next report that will include recommendations and conclusion. Also, please use DEP groundwater sampling log for future sampling activities. Despite the exceedances notation, we do not ask J.E.D. to proceed with evaluation monitoring until second bi-ennial report dated September 2008 is reviewed.

Laxsamee

From: KWills@Geosyntec.com [mailto:KWills@Geosyntec.com]
Sent: Monday, July 06, 2009 4:46 PM
To: Levin, Laxsamee; smccash@wasteservices.com
Cc: mkaiser@wasteservicesinc.com; Lubozynski, Tom; Heidorn, Marjorie; Williams, Elizabeth
Subject: RE: OCD-SW-09-0198 J.E.D. Class I Landfill WACS Facility I.D. 89544

Laxsamee,

I have reviewed your comments in the email below. We are currently working on the 10th semi-annual WQ monitoring report for the JED Facility and we would like to address your comments in this report. For the benzene and vinyl chloride in MW-9A, we have notified FDEP starting with the 6th semi-annual event of these exceedances. Historically, the biennial WQ technical reports are utilized to discuss trends in data over several monitoring events, individual reports summarize that particular event. Recommendations will be made in all future semi-annual WQ monitoring reports.

FYI – we have initiated the use of the Adapt EDD for the 10th semi-annual WQ monitoring event.

Please let me know if you should have any questions.

Thanks!

Kirk

Kirk Wills
Project Engineer

Geosyntec consultants

14055 Riveredge Drive
Suite 300
Tampa, Florida 33637
Phone: (813) 558-0990
Fax: (813) 558-9726
Mobile: (813) 918-4732
kwills@geosyntec.com

From: Levin, Laxsamee [mailto:Laxsamee.Levin@dep.state.fl.us]
Sent: Tuesday, June 30, 2009 5:29 PM
To: smccash@wasteservices.com
Cc: mkaiser@wasteservicesinc.com; Kirk Wills; Lubozynski, Tom; Heidorn, Marjorie; Williams, Elizabeth
Subject: OCD-SW-09-0198 J.E.D. Class I Landfill WACS Facility I.D. 89544

Dear Mr. McCash:

On behalf of J.E.D./Waste Services of Florida, Inc., Geosyntec Consultants submitted the 9th Semi-Annual Water Quality Monitoring Report dated February 2009. The report was received on 2/9/2009. The report represents November 2008 sampling event. We reviewed the report. Our findings and comments are listed below.

1. According to our record, initial ammonia analyses in 12/2003 from MW-3A, MW-4A, MW-4B, MW-5A, MW-7A, MW-8A, MW-9A, MW-10A and MW-11A were below GCTL , except MW-5A. Based on the first bi-ennial sampling data, the Department added condition 4 of the Monitoring plan Implementation Schedule (MPIS) dated 4/2/2009, accepting 10 mg/L as background level for ammonia for MW-5A, MW-9A, MW-10A, MW-11A and MW-13A. The November 2008 sampling event reported ammonia concentrations exceeded the background level and elevated from previous sampling event (May 2008) in wells MW-5A, MW-9A, MW-10A. Monitoring wells MW-3A, MW-4A, MW-4B, MW-7A, MW-8A also showed an increase of ammonia concentrations (comparison between May and November 2008 samplings). We do not agree with the statement " The ammonia concentrations reported for the 9th semi-annual event are typical of previous monitoring events ".

2. Both benzene and vinyl chloride are parameters listed in the primary drinking water standards found in 62-550.310 F.A.C. MW-9A was detected of benzene and vinyl chloride exceed in both sampling events (May and November 2008). Benzene concentrations have increased from 2.8 ug/L in May 2008 to 7.7 ug/L. The report did not address this happening.

3. The report summarizes parameters that were detected above method detection limits or exceeded the Groundwater Cleanup Target Levels (GCTLs). But determination or recommendation how to deal with the exceedances (e.g. ammonia, benzene etc) were not included in the report. The recommendation requirement is listed in condition 26 of the MPIS.

4. Please use attachment J DEP Groundwater Sampling log for future sampling activities.

5. On 6/9/2009, an e-mail was sent to solid waste permit holders and consultants from Tom Lubozynski, the Central District Waste Program Administrator, requesting electronic submittals of semi-annual water quality monitoring report and electronic data deliverables (EDDs) in ADaPT format. Please make sure to submit electronic report and ADaPT EDDs for next November 2009 sampling event unless the facility is ready for May 2009 sampling event.

Please respond within 15 business days of receipt of this letter. Feel free to contact me if you have further questions.

Laxsamee Levin
Compliance Engineer
3319 Maguire Blvd., Suite 232
Orlando, FL 32803
http://www.dep.state.fl.us
E-mail Laxsamee.Levin@dep.state.fl.us
Phone 407-893-3311
Fax 407-893-3124

Williams, Elizabeth

From: Levin, Laxsamee
Sent: Tuesday, June 30, 2009 5:29 PM
To: smccash@wasteservices.com
Cc: Mike Kaiser (mkaiser@wasteservicesinc.com); Kirk Willis (kwills@geosyntec.com); Lubozynski, Tom; Heidorn, Marjorie; Williams, Elizabeth
Subject: OCD-SW-09-0198 J.E.D. Class I Landfill WACS Facility I.D. 89544
Attachments: Attachment J JED Water Sampling Log 4-09.doc

Dear Mr. McCash:

On behalf of J.E.D./Waste Services of Florida, Inc., Geosyntec Consultants submitted the 9th Semi-Annual Water Quality Monitoring Report dated February 2009. The report was received on 2/9/2009. The report represents November 2008 sampling event. We reviewed the report. Our findings and comments are listed below.

1. According to our record, initial ammonia analyses in 12/2003 from MW-3A, MW-4A, MW-4B, MW-5A, MW-7A, MW-8A, MW-9A, MW-10A and MW-11A were below GCTL , except MW-5A. Based on the first bi-ennial sampling data, the Department added condition 4 of the Monitoring plan Implementation Schedule (MPIS) dated 4/2/2009, accepting 10 mg/L as background level for ammonia for MW-5A, MW-9A, MW-10A, MW-11A and MW-13A. The November 2008 sampling event reported ammonia concentrations exceeded the background level and elevated from previous sampling event (May 2008) in wells MW-5A, MW-9A, MW-10A. Monitoring wells MW-3A, MW-4A, MW-4B, MW-7A, MW-8A also showed an increase of ammonia concentrations (comparison between May and November 2008 samplings). We do not agree with the statement " The ammonia concentrations reported for the 9th semi-annual event are typical of previous monitoring events ".

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Please respond within 15 business days of receipt of this letter. Feel free to contact me if you have further questions.

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Compliance Engineer
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Orlando, FL 32803
http://www.dep.state.fl.us
E-mail Laxsamee.Levin@dep.state.fl.us
Phone 407-893-3311
Fax 407-893-3124

ATTACHMENT J

DEP-SOP-001/01
FS 2200 Groundwater Sampling
Form FD 9000-24

GROUNDWATER SAMPLING LOG

FACILITY NAME: Oak Hammock Disposal, Class I Landfill		FACILITY LOCATION:
MONITORING_SITE_NUM:	WACS_WELL:	DATE:

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:

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):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE:	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N FILTER SIZE: _____ µm Filtration Equipment Type: _____	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/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **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)

Williams, Elizabeth

From: Levin, Laxsamee
Sent: Tuesday, June 30, 2009 11:26 AM
To: Lubozynski, Tom; Williams, Elizabeth; DePradine, Gloria-Jean; Cheryan, George; Janwadkar, Sandeep; Waters, Jeff T.; Whidden, Brad; Heidorn, Marjorie
Subject: Address & phone update for Shawn McCash/J.E.D. Landfill
Attachments: Shawn McCash.vcf

J.E.D.

Shawn McCash
Waste Services of Florida, Inc.
Senior Vice President

(954) 888-4302 Work
smccash@wasteservices.com

2893 Executive Park Drive suite 305
Weston, FL 33331

Laxsamee

Williams, Elizabeth

From: Levin, Laxsamee
Sent: Monday, February 11, 2008 4:29 PM
To: Kirk Willis (kwills@geosyntec.com)
Cc: smccash@wasteservices.com; Lubozynski, Tom; Williams, Elizabeth
Subject: OCD-SW-08-0077 Oak Hammock Landfill (aka J.E.D.) WACS Facility Number 89544

Dear Kirk:

On January 24, 2008, we received a report titled Baseline Groundwater Monitoring Report, dated January 23, 2008 and sampled in September 2008. Included in the report are initial ground water monitoring results of newly installed wells, well completion report and survey drawings and other required documents. Please be advised that the report is complete and acceptable. http://depnet/deptop/default.htm In the future, please use the word "DUP" in WACS_Report_Type column for duplicate samples. Use the same well name where the sample was taken from in Monitoring_Site_Num column. Other than that the report is complete and acceptable.

Laxsamee Levin
(407) 893-3328 ext 2311

Florida Department Of

Memorandum **Environmental Protection**

CENTRAL DISTRICT

To: George Cheryan

Date: 12/14/07

Subject: JED (FKA Oak Hammock) **Application for a Permit Modification Cell 6**
County: Osecola

Notes:

1. GW has no questions for the modification RAI.
2. There are no changes to the MPIS for the Cell 6 modification.

Vickel Sugar Cane [illegible]

mod

SW—Permit R N Biennial Haz	JEP - Oak Hammock [illegible] 100 300 540	County Osceola [illegible] Date 12/19/07

2 (1) Cell 6	1) already OK'd
2 (2) Plant [illegible]	moved MW-23
7-21 [illegible]	
[illegible]	
[illegible]	
4 (3) [illegible]	
18-30 (4) V [illegible]	(2) No mention of [illegible] MPIS [illegible] will be [illegible]
-22 (5) Sect J [illegible] N/C	(3)
25b (6) N/C [illegible] Sect M	
32-33 (7) [illegible]	
36-38 (8) Settlement [illegible]	
(9)	

IO.

Geosyntec consultants

14055 Riveredge Drive
Suite 300
Tampa, FL 33637

PH 813-558-0990
FAX 813-558-9726

www.geosyntec.com

2 November 2007

Mr. F. Thomas Lubozynski, P.E.
Waste Program Administrator
Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: 7th Semi-Annual Water Quality Sampling Event
Oak Hammock Disposal Facility (OHDF)
Omni Waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-004 and SO49-0199726-005

Dear Mr. Lubozynski:

The purpose of this letter is to inform the Florida Department of Environmental Protection that the sampling of 57 groundwater monitoring wells, 2 surface water locations, and 5 leachate samples around Phases 1 through 3 at the OHDF is expected to commence during the week of 12 November 2007 and will be performed over a period of approximately 3 weeks. This will be the seventh semi-annual sampling event after completion of construction of Cell 1 (in Phase 1 development) of the facility.

If you have any questions or need additional information, please contact the undersigned.

Sincerely,

Kirk Wills
Project Engineer

cc: M. Kaiser, WSI
M. Heidorn, FDEP

Florida Department Of

Memorandum **Environmental Protection**

CENTRAL DISTRICT

To: George Cheryan

Date: 9/28/2007

Subject: JED (FKA Oak Hammock) **Application for a Permit Modification**
County: Osecola

Notes:

1. I have reviewed the application and it appears that the ground water issues have already been covered in the March 2007 permit.

2. The MPIS will be modified to reflect the current status of recently installed wells that have already been permitted for the next phase.

3. GW does not have any questions for this RAI.

T ?? 28S 32 33S
Sect 11, 13, 14, 15, 16

Lat 28 03 32
Long 81 03 46

SW—Permit R N Biennial Haz MCP	JEP 100 300 540	County Osceola Date 9/25/07

8 (16) [illegible] 178 to 330	
5 (17) [illegible] L	(1) ? 'clay'
[illegible]	
	(2) [illegible] Δ [illegible] 7,8
21 (18) List of parts in MOD Form I & X app [illegible] M	
22 (19) Lat Long	
23 (20) Address	
43 (21) Part I No Change for Hydro	
50, 51 (21) Part M – [illegible] L	(3) Refer to Drawings for MWs – some not N/C may have [illegible]
Vol 2 of 2 MPPM PS 21 (22) Water Quality Monitoring is in App E	

49-0149726-004
-005

vertical expansion

FKA (J.E.D.)

issue 3/07

SW—Permit R N Biennial Haz (MOD)	FKA Oak Hammock (100) 300 540	County Osceola Date 9/28/07

2, 4	(1) FKA Oak Hammock	
4	(2) 209 Acre	
4	(3) permit issue 3/07 expire 2012	
4	(4) per for Phase I, II, III	
4	(5) No Δ to foot print	
4	(6) vertical expansion	
5	(7) Wash Stat 1/26/04	
5	(8) Cells 1B, 2, 3, 4 (Phase 1B, 4, 2, 3) Completed certify 2006	
5	(9) I II III	
	cells 1-4 5-7 8-10	
	acres 53 35 37	
5	(10) total 125 ac	
5	(11) 178 top permitted NGVD	
5	(12) 6,000 tons/day	
6	(13) History Permit Applied	
7, 6	(14) FA 2002	
8, 9	(15) List of Mod Applications	

Heidorn, Marjorie

Talked to Mike Kiesa 8/8/07 will not request meeting until after 21st. TL back. Get forward quest

From: Heidorn, Marjorie
Sent: Wednesday, July 18, 2007 3:50 PM
To: Lubozynski, Tom
Cc: Burson, Lu (Lu.Burson@dep.state.fl.us); Levin, Laxsamee; DePradine, Gloria-Jean
Subject: Requesting a meeting--FW: Oak Hammock Disposal Facility

Tom,
Kirk Wills just called and would like to set up a meeting to discuss:

- Fe in the MWs (a meeting for Fe?)
- MW-9A (The only thing I see in DH's memos for 9A is for ammonia and DH accepted it as background.)
- Installing eight 2-wells clusters instead of eight 3-well clusters (They believe that there are only 2 zones instead of 3.)

If this is OK, when would be the best day/time for a meeting?

FYI—I have no record of having received the 7/3 e-mail prior to today.
m

From: Kirk Wills [mailto:KWills@Geosyntec.com]
Sent: Wednesday, July 18, 2007 1:59 PM
To: Heidorn, Marjorie
Subject: FW: Oak Hammock Disposal Facility

Kirk Wills
Project Engineer

14055 Riveredge Drive
Suite 300
Tampa, Florida 33637
Phone: (813) 558-0990
Fax: (813) 558-9726
Mobile: (813) 918-4732
kwills@geosyntec.com

Geosyntec consultants

'Heidorn, Marjorie'
Cc: Ayushman Gupta
Subject: Oak Hammock Disposal Facility

Marjorie,

I have been talking with our Client (Waste Services) concerning the water quality monitoring at the Oak Hammock Disposal Facility and there are a few issues we would like to sit down and discuss with you i.e., groundwater iron

levels, MW-9A, and continuing discussions pertaining to the elimination of one of the deeper monitoring zones. Would it be possible to schedule a meeting with you (and others as you feel necessary) to discuss these issues with WSI and Geosyntec. If so, could you give me some available dates?

Thank You!

If I do not here from you before tomorrow, hope you have a wonderful 4th of July!

Kirk

Kirk Wills
Project Engineer

14055 Riveredge Drive
Suite 300
Tampa, Florida 33637
Phone: (813) 558-0990
Fax: (813) 558-9726
Mobile: (813) 918-4732
kwills@geosyntec.com

Geosyntec consultants

Heidorn, Marjorie

From: Kirk Wills [KWills@Geosyntec.com]
Sent: Wednesday, July 18, 2007 1:59 PM
To: Heidorn, Marjorie
Subject: FW: Oak Hammock Disposal Facility

Kirk Wills
Project Engineer

14055 Riveredge Drive
Suite 300
Tampa, Florida 33637
Phone: (813) 558-0990
Fax: (813) 558-9726
Mobile: (813) 918-4732
kwills@geosyntec.com

Geosyntec consultants

'Heidorn, Marjorie'
Cc: Ayushman Gupta
Subject: Oak Hammock Disposal Facility

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Thank You!

If I do not here from you before tomorrow, hope you have a wonderful 4th of July!

Kirk

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Project Engineer

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Fax: (813) 558-9726
Mobile: (813) 918-4732
kwills@geosyntec.com

Geosyntec consultants

Geosyntec consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
PH 813.558.0990
FAX 813.558.9726
www.geosyntec.com

20 June 2007

Ms. Marjorie Heidorn
Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

RECEIVED
JUN 2 1 2007
DEP Central Dist.

Subject: Revise Location for Monitoring Well Cluster MW-23
Proposed Groundwater Monitoring Well Network for Phases 2 and 3
Oak Hammock Disposal Facility, Osceola County, Florida

Dear Ms. Heidorn:

Based on our conversation and e-mail communication last week, Geosyntec is submitting this letter on behalf of Omni Waste of Osceola County, LLC (a wholly owned subsidiary of Waste Services, Inc. or WSI) to revise the location of a proposed monitoring well cluster MW-23. MW-23 cluster is one of the eight groundwater monitoring well clusters that will be installed around the footprint of Phases 2 and 3 at the Oak Hammock Disposal Facility (OHDF).

Florida Department of Environmental Protection (FDEP) recently permitted the expansion of the existing OHDF into Phases 2 and 3. WSI will initiate the construction of the first cell in Phase 2 (Cell 5) next month. Proposed groundwater monitoring clusters MW-16 through MW-23 will be installed as part of the Cell 5 construction activities.

This letter is being submitted to FDEP to revise the location of monitoring well cluster MW-23. The revised location of MW-23 cluster is 200 ft directly north of the currently permitted location (see revised Sheet 24 of 40 of the Renewal Permit Drawings attached to this letter). In the revised location, MW-23 cluster will be approximately 600 ft south of the existing MW-1 cluster and approximately 1,000 ft north of the proposed MW-22 cluster. Monitoring well clusters MW-1, MW-22, and MW-23 are upgradient well clusters. It is noted that the spacing between these three upgradient monitoring well clusters (for the revised location of MW-23) is less than the spacing allowed by the Rule 62-701.510(3)(d)3.

The monitoring well clusters are typically installed after constructing the 16-ft high perimeter berm. During construction of Cell 5, the full height of the perimeter berm will be constructed up to a point that is approximately 200 ft north of the currently permitted location of

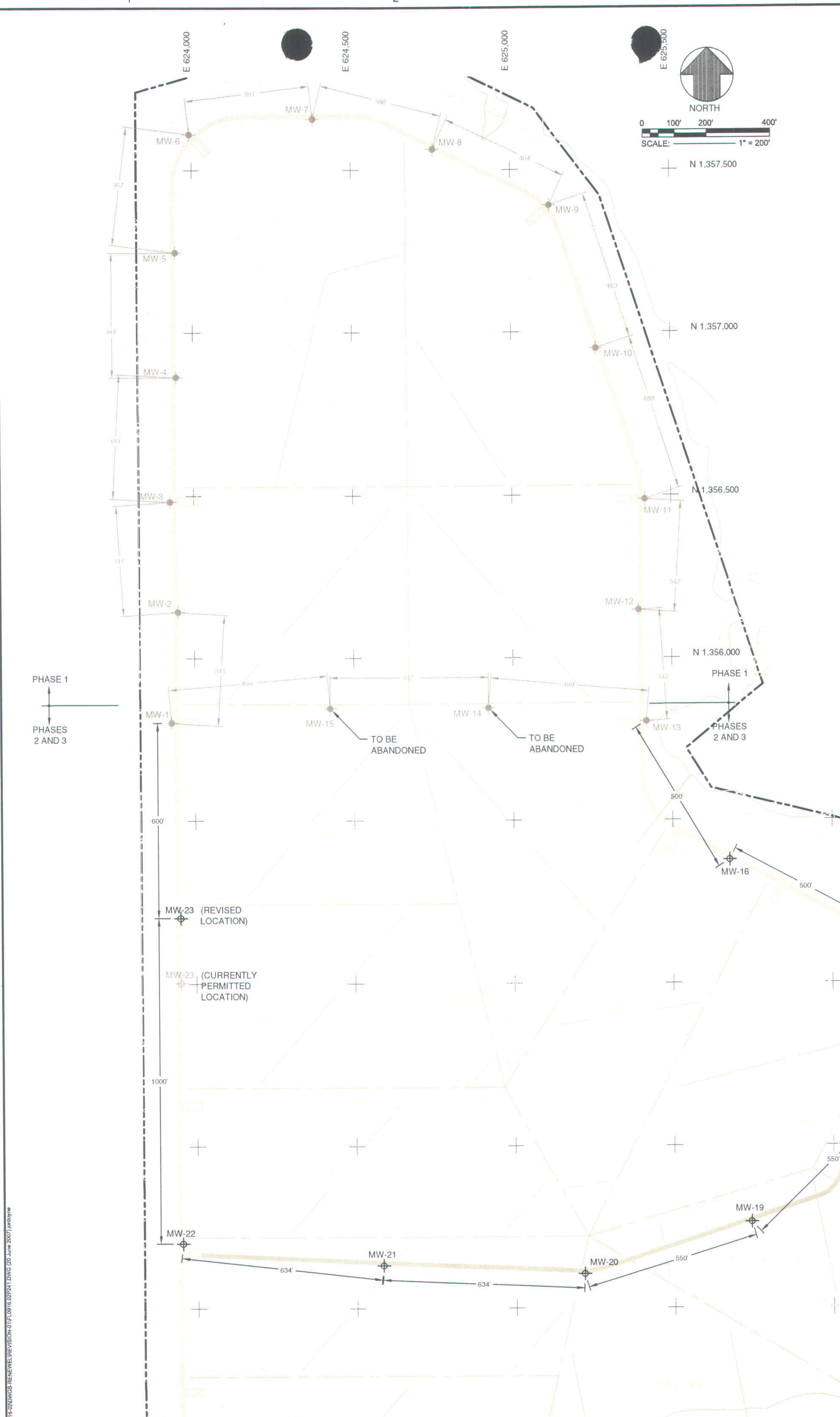
MW-23 cluster. It is noted that the cells in Phases 2 and 3 (and the associated perimeter berms) will be constructed on an as-needed basis. If MW-23 cluster is installed in the currently permitted location, the wells will need to be abandoned and re-installed during construction of Cell 7 (cell south of Cell 5), when the perimeter berm for Cell 7 is constructed. By moving the MW-23 cluster 200 ft further north, the wells can be permanently located in the perimeter berm that will be completed as part of Cell 5 construction.

Based on the above information, Geosyntec requests approval for the revised location of monitoring well cluster MW-23. If you need further information, please do not hesitate to contact the undersigned.

Sincerely,

Ayushman Gupta, P.E.
Senior Engineer

cc: Mike Kaiser, WSI



PHASES 1 THROUGH 3
GROUNDWATER MONITORING WELL LAYOUT
SCALE: 1" = 200'

LEGEND

MW-1 EXISTING GROUNDWATER MONITORING WELL LOCA

MW-16 PROPOSED GROUNDWAT MONITORING WELL LOCA

AT EACH LOCATION A GROUP OF THREE WELLS DRILLED TO SHALLOW, INTERMEDIATE, AND DE ELEVATIONS. THESE WELLS WILL BE SPACED 5 APART AND ARRANGED PARALLEL TO THE PERI MAINTENANCE ROAD OR INTERCELL BERM ALI

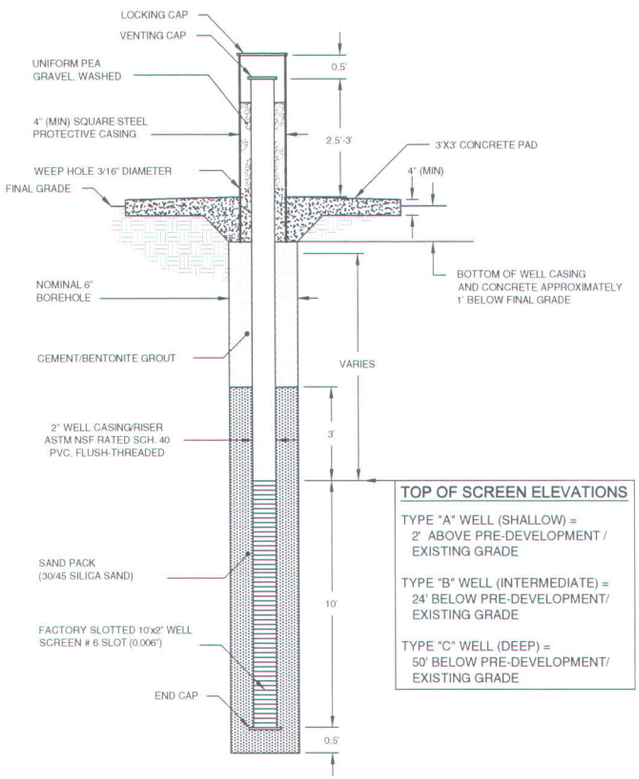
EXISTING WELLS		
WELL	NORTHING	EAST
MW-1	1355801.76	62392
MW-2	1356141.76	62394
MW-3	1356481.70	62392
MW-4	1356863.75	62394
MW-5	1357245.77	62394
MW-6	1357609.65	62399
MW-7	1357655.74	62438
MW-8	1357563.00	62475
MW-9	1357390.93	62512
MW-10	1356950.48	62526
MW-11	1356487.15	62541
MW-12	1356145.69	62539
MW-13	1355804.30	62541

WELLS TO BE ABANDONED		
WELL	NORTHING	EAST
MW-14	1355846.36	62492
MW-15	1355845.51	62442

PROPOSED WELLS		
WELL	NORTHING	EAST
MW-16	1355376.34	62567
MW-17	1355144.75	62612
MW-18	1354645.10	62613
MW-19	1354265.03	62574
MW-20	1354105.48	62521
MW-21	1354133.12	62458
MW-22	1354201.80	62395
~~MW-23~~	~~1355001.79~~	~~62395~~

CURRENTLY PERMITTED LOCATION OF MW-23
N 1355001.79
E 623951.12

REVISED LOCATION OF MW-23
N 1355201.79
E 623951.12



TOP OF SCREEN ELEVATIONS

TYPE "A" WELL (SHALLOW) = 2' ABOVE PRE-DEVELOPMENT / EXISTING GRADE

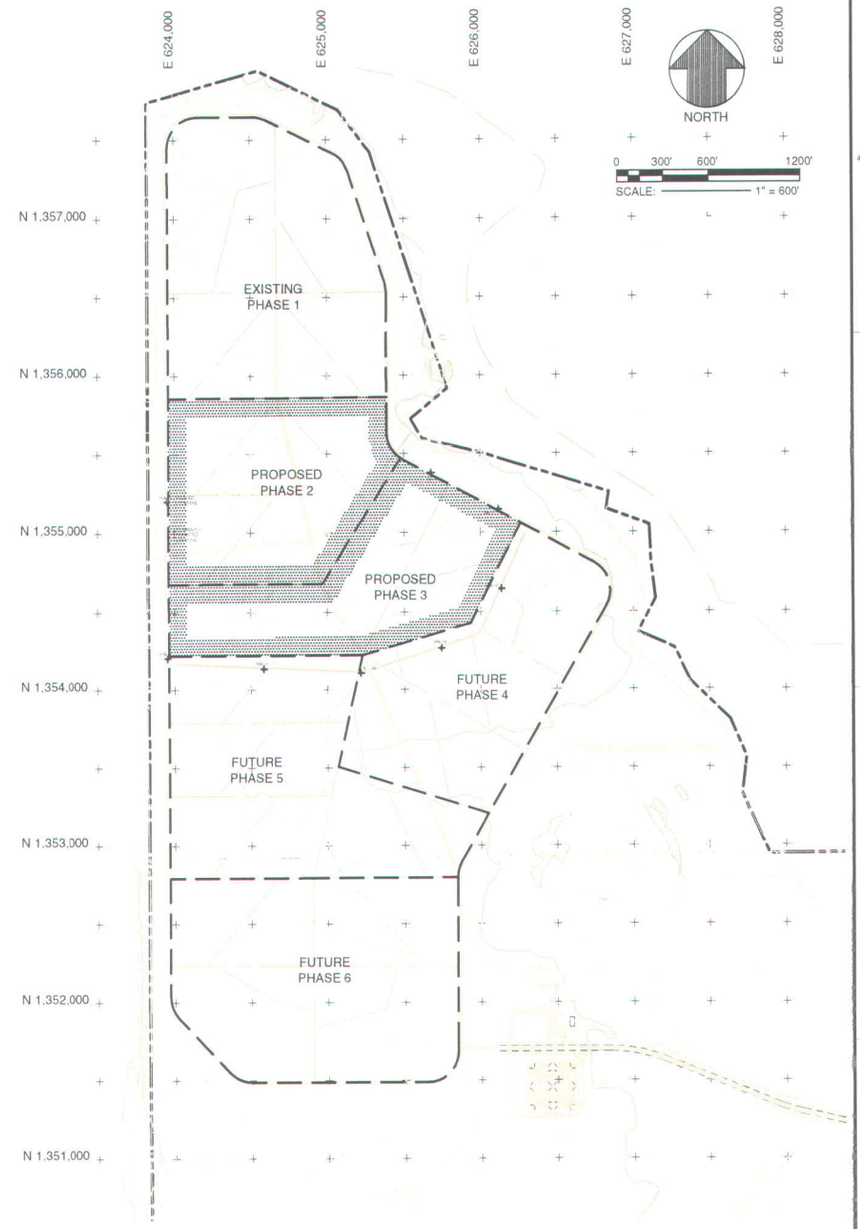
TYPE "B" WELL (INTERMEDIATE) = 24' BELOW PRE-DEVELOPMENT/ EXISTING GRADE

TYPE "C" WELL (DEEP) = 50' BELOW PRE-DEVELOPMENT/ EXISTING GRADE

13 / - DETAIL (TYPICAL)
GROUNDWATER MONITORING WELL

SCALE: NOT TO SCALE

XREF: FL0916.02X206



LANDFILL DEVELOPMENT SEQUENCE

SCALE: 1" = 600'

RECEIVED
JUN 21 2007
DEP Central Dist.

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. THE TOPOGRAPHIC INFORMATION SHOWN IN SECTION 11 AND THE NORTH HALF OF SECTION 14 WAS PROVIDED BY AERIAL CARTOGRAPHICS OF AMERICA, ORLANDO, FLORIDA BASED ON AN AERIAL PHOTOGRAPH FLOWN ON NOVEMBER 7, 2001. IN AREAS OUTSIDE THE LIMITS OF CONSTRUCTION, TOPOGRAPHIC INFORMATION WAS ADDED FROM USGS QUAD MAP FOR HOLOPAW SE, FLORIDA.
5. THE WETLAND BOUNDARY INFORMATION SHOWN IS BASED ON A FIELD SURVEY DATED MAY 15, 2002 BY JOHNSTON SURVEYING INC. OF WETLANDS BOUNDARIES FLAGGED BY BIOLOGICAL RESEARCH ASSOCIATES, INC., TAMPA, FLORIDA (BRA), AND JDS PERMIT, COMBINED WITH A PHOTO INTERPRETATION OF WETLAND BOUNDARIES BY BRA IN AREAS OF THE SITE OUTSIDE THE LIMITS OF CONSTRUCTION.
6. THE 100-YEAR FLOODPLAIN BOUNDARY SHOWN WAS PROVIDED BY THE OSCEOLA COUNTY GIS DEPARTMENT ON JANUARY 9, 2002.

PERMIT DRAWING

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
1	20.06.07	REVISED MW-23 LOCATION	AG	JWO	AG	EJN	AG
0	08.09.06	ISSUED FOR FDEP PERMITTING	AG	JWO	AG	EJN	AG

PROJECT:
OAK HAMMOCK DISPOSAL FACILITY
PHASES 2 AND 3
RENEWAL PERMIT DRAWINGS

TITLE:
GROUNDWATER MONITORING NETWORK

THESE DRAWINGS ARE ISSUED FOR PERMITTING ONLY AND SHOULD NOT BE USED FOR BID OR CONSTRUCTION

A. Gupta 6/20/07

AYUSHMAN GUPTA
LICENSE NO. 54023

Owner/Facility:
mni Waste of Osceola County ,LLC
1501 OMNI WAY - ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

Consultant/Engineer:
Geosyntec consultants
14055 RIVEREDGE DRIVE, SUITE 300,
TAMPA, FLORIDA 33637 USA
TEL: 813-558-0990 FAX: 813-558-9726
AUTHORIZATION CERTIFICATE NO. 00004321

DATE: 8 SEPTEMBER 2006
SCALE: AS SHOWN
PROJECT NO.: FL0916
FILE NO.: FL0916.02P241
PDF DOC NO.: GEAG-06-12
SHEET NO.: 24 OF 40

Heidorn, Marjorie

From: Ayushman Gupta [AGupta@Geosyntec.com]
Sent: Wednesday, June 20, 2007 4:16 PM
To: Heidorn, Marjorie
Cc: Michael Kaiser; Kirk Wills
Subject: Oak Hammock Reviased Location for MW-23
Attachments: JED MW-23 Letter.pdf; JED MW-23 Fig.pdf

Hi Marjorie,

Please see the attached letter and revised drawing (Sheet 24 of 40 of the Renewal Permit Drawings) to relocate monitoring well cluster MW-23. Two copies of the letter and the drawing (signed and sealed) are being fedexed to you for tomorrow delivery. Please let me know if you need any further information to approve the relocation request. Thanks

Ayushman Gupta, P.E.
Senior Engineer

14055 Riveredge Drive #300
Tampa, FL - 33637
Phone: 813-558-0990 x 235
Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants

7:23 AM
To: Ayushman Gupta
Subject: RE: Oak Hammock MW and Piezometers to be Abandoned

Good morning,
The Department approves the abandonment of the additional 6 piezometers (DP-7, DP-8, DP-11, DP-12, DP-13, and SZ-1) in addition to the four piezometers approved for abandonment in the previous e-mail.

MW-23 to be determined after receiving the previously requested information.

Marjorie

From: Ayushman Gupta [mailto:AGupta@Geosyntec.com]
Sent: Thursday, June 14, 2007 2:39 PM
To: Heidorn, Marjorie
Cc: Kirk Wills; Michael Kaiser
Subject: Oak Hammock MW and Piezometers to be Abandoned

Hi Marjorie,

This e-mail includes revised Sheet 18 (as requested by you) that shows ALL 10 piezometers and 6 MWs that will be abandoned at the Oak Hammock Disposal Facility during construction of Cell 5 in Phase 2. We request you to approve the same so that we can make arrangements for abandoning these wells and piezometers. If you need further information (related to abandonment), please let me know.

I'll send you a memo for relocating MW-23 separately. Thanks

Ayushman Gupta, P.E.
Senior Engineer

14055 Riveredge Drive #300
Tampa, FL - 33637
Phone: 813-558-0990 x 235
Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants

12:34 PM
To: Ayushman Gupta
Cc: Levin, Laxsamee
Subject: RE: Oak Hammock MW and Piezometers Layout

Ayushman,
For the revised MW-23 location, the facility will need to submit a signed and sealed copy of Sheet 24 of 40 with the permitted and revised locations clearly noted. Please detail the reasons for the relocation.

On the site plan, please identify all of the monitoring wells and piezometers requested to be abandoned.

Thanks,
Marjorie

Geosyntec consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
PH 813.558.0990
FAX 813.558.9726
www.geosyntec.com

20 June 2007

Ms. Marjorie Heidorn
Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: **Revise Location for Monitoring Well Cluster MW-23**
Proposed Groundwater Monitoring Well Network for Phases 2 and 3
Oak Hammock Disposal Facility, Osceola County, Florida

Dear Ms. Heidorn:

Based on our conversation and e-mail communication last week, Geosyntec is submitting this letter on behalf of Omni Waste of Osceola County, LLC (a wholly owned subsidiary of Waste Services, Inc. or WSI) to revise the location of a proposed monitoring well cluster MW-23. MW-23 cluster is one of the eight groundwater monitoring well clusters that will be installed around the footprint of Phases 2 and 3 at the Oak Hammock Disposal Facility (OHDF).

Florida Department of Environmental Protection (FDEP) recently permitted the expansion of the existing OHDF into Phases 2 and 3. WSI will initiate the construction of the first cell in Phase 2 (Cell 5) next month. Proposed groundwater monitoring clusters MW-16 through MW-23 will be installed as part of the Cell 5 construction activities.

This letter is being submitted to FDEP to revise the location of monitoring well cluster MW-23. The revised location of MW-23 cluster is 200 ft directly north of the currently permitted location (see revised Sheet 24 of 40 of the Renewal Permit Drawings attached to this letter). In the revised location, MW-23 cluster will be approximately 600 ft south of the existing MW-1 cluster and approximately 1,000 ft north of the proposed MW-22 cluster. Monitoring well clusters MW-1, MW-22, and MW-23 are upgradient well clusters. It is noted that the spacing between these three upgradient monitoring well clusters (for the revised location of MW-23) is less than the spacing allowed by the Rule 62-701.510(3)(d)3.

The monitoring well clusters are typically installed after constructing the 16-ft high perimeter berm. During construction of Cell 5, the full height of the perimeter berm will be constructed up to a point that is approximately 200 ft north of the currently permitted location of

MW-23 cluster. It is noted that the cells in Phases 2 and 3 (and the associated perimeter berms) will be constructed on an as-needed basis. If MW-23 cluster is installed in the currently permitted location, the wells will need to be abandoned and re-installed during construction of Cell 7 (cell south of Cell 5), when the perimeter berm for Cell 7 is constructed. By moving the MW-23 cluster 200 ft further north, the wells can be permanently located in the perimeter berm that will be completed as part of Cell 5 construction.

Based on the above information, Geosyntec requests approval for the revised location of monitoring well cluster MW-23. If you need further information, please do not hesitate to contact the undersigned.

Sincerely,

A Gupta

Ayushman Gupta, P.E.
Senior Engineer

cc: Mike Kaiser, WSI

Heidorn, Marjorie

From: Heidorn, Marjorie
Sent: Friday, June 15, 2007 7:23 AM
To: 'Ayushman Gupta'
Subject: RE: Oak Hammock MW and Piezometers to be Abandoned

Good morning,
The Department approves the abandonment of the additional 6 piezometers (DP-7, DP-8, DP-11, DP-12, DP-13, and SZ-1) in addition to the four piezometers approved for abandonment in the previous e-mail.

MW-23 to be determined after receiving the previously requested information.

Marjorie

From: Ayushman Gupta [mailto:AGupta@Geosyntec.com]
Sent: Thursday, June 14, 2007 2:39 PM
To: Heidorn, Marjorie
Cc: Kirk Wills; Michael Kaiser
Subject: Oak Hammock MW and Piezometers to be Abandoned

Hi Marjorie,

This e-mail includes revised Sheet 18 (as requested by you) that shows ALL 10 piezometers and 6 MWs that will be abandoned at the Oak Hammock Disposal Facility during construction of Cell 5 in Phase 2. We request you to approve the same so that we can make arrangements for abandoning these wells and piezometers. If you need further information (related to abandonment), please let me know.

I'll send you a memo for relocating MW-23 separately. Thanks

Ayushman Gupta, P.E.
Senior Engineer

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Tampa, FL - 33637
Phone: 813-558-0990 x 235
Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants
engineers | scientists | innovators

12:34 PM
To: Ayushman Gupta
Cc: Levin, Laxsamee
Subject: RE: Oak Hammock MW and Piezometers Layout

Ayushman,
For the revised MW-23 location, the facility will need to submit a signed and sealed copy of Sheet 24 of 40 with the permitted and revised locations clearly noted. Please detail the reasons for the relocation.

On the site plan, please identify all of the monitoring wells and piezometers requested to be abandoned.

Thanks,

Marjorie

From: Ayushman Gupta [mailto:AGupta@Geosyntec.com]
Sent: Thursday, June 14, 2007 12:17 PM
To: Heidorn, Marjorie
Cc: Kirk Wills
Subject: RE: Oak Hammock MW and Piezometers Layout

Hi Marjorie,

Thanks a lot for the approval. I would like to discuss two more items with you related to the permitted groundwater monitoring network for the Oak Hammock Disposal Facility.

1. WSI (the client) would like to abandon all piezometers within or adjacent to the footprint of Phases 2 and 3. These include DP-7, DP-8, DP-11, DP-12, DP-13, and SZ-1 in addition to the four noted in your e-mail below (i.e., total 10 piezometers). I would like to reiterate that these 10 piezometers are used only for water level measurements and are not sampled for groundwater quality evaluation.

2. We would also like to install the proposed MW-23 cluster approximately 200 ft further north (see Sheet 24 of 40 of the Renewal Permit Drawings). In the new proposed location, the distance between existing MW-1 cluster and proposed MW-23 cluster will decrease to approximately 600 ft and the distance between proposed MW-22 and MW-23 clusters will increase to approximately 1,000 ft. Please note that MW-1, MW-22, and MW-23 are upgradient wells wrt groundwater flow direction. Even in the new proposed location for MW-23, the distance between adjacent upgradient clusters will be less than the 1,500-ft spacing required by the FDEP regulations.

I'll call you to discuss the same. Thank you again for your prompt response.

Ayushman Gupta, P.E.
Senior Engineer

14055 Riveredge Drive #300
Tampa, FL - 33637
Phone: 813-558-0990 x 235
Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants

Heidorn, Marjorie

From: Heidorn, Marjorie
Sent: Thursday, June 14, 2007 12:34 PM
To: 'Ayushman Gupta'
Cc: Levin, Laxsamee
Subject: RE: Oak Hammock MW and Piezometers Layout

Ayushman,
For the revised MW-23 location, the facility will need to submit a signed and sealed copy of Sheet 24 of 40 with the permitted and revised locations clearly noted. Please detail the reasons for the relocation.

On the site plan, please identify all of the monitoring wells and piezometers requested to be abandoned.

Thanks,
Marjorie

From: Ayushman Gupta [mailto:AGupta@Geosyntec.com]
Sent: Thursday, June 14, 2007 12:17 PM
To: Heidorn, Marjorie
Cc: Kirk Wills
Subject: RE: Oak Hammock MW and Piezometers Layout

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Thanks a lot for the approval. I would like to discuss two more items with you related to the permitted groundwater monitoring network for the Oak Hammock Disposal Facility.

1. WSI (the client) would like to abandon all piezometers within or adjacent to the footprint of Phases 2 and 3. These include DP-7, DP-8, DP-11, DP-12, DP-13, and SZ-1 in addition to the four noted in your e-mail below (i.e., total 10 piezometers). I would like to reiterate that these 10 piezometers are used only for water level measurements and are not sampled for groundwater quality evaluation.

2. We would also like to install the proposed MW-23 cluster approximately 200 ft further north (see Sheet 24 of 40 of the Renewal Permit Drawings). In the new proposed location, the distance between existing MW-1 cluster and proposed MW-23 cluster will decrease to approximately 600 ft and the distance between proposed MW-22 and MW-23 clusters will increase to approximately 1,000 ft. Please note that MW-1, MW-22, and MW-23 are upgradient wells wrt groundwater flow direction. Even in the new proposed location for MW-23, the distance between adjacent upgradient clusters will be less than the 1,500-ft spacing required by the FDEP regulations.

I'll call you to discuss the same. Thank you again for your prompt response.

Ayushman Gupta, P.E.
Senior Engineer

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Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants
engineers | scientists | innovators

11:35 AM
To: Ayushman Gupta
Subject: RE: Oak Hammock MW and Piezometers Layout

Ayushman,
I have reviewed the information. It is my understanding that your request is for abandonment of:

- 6 monitoring wells (MW-14A, MW-14B, MW-14C, MW-15A, MW-15B, and MW-15C) as previously noted on Attachments A & B of the permit.
- 4 piezometers (DP-5, DP-6, DP-9, and DP-10) as shown on the pdf file you just sent to me.

Your request is approved.

Please keep a copy of the attached revised Attachment A MPIS Well List with your permit and provide copies of the well abandonment logs to the Department for the monitoring wells and piezometers.

Marjorie

From: Ayushman Gupta [mailto:AGupta@Geosyntec.com]
Sent: Thursday, June 14, 2007 9:36 AM
To: Heidorn, Marjorie
Subject: Oak Hammock MW and Piezometers Layout

Hi Marjorie,

Please see the attached figure for layout of existing MWs and piezometers at the Oak Hammock Disposal Facility in Osceola County, FL. I'll call you soon to discuss further. Thanks for your time

Ayushman Gupta, P.E.
Senior Engineer

14055 Riveredge Drive #300
Tampa, FL - 33637
Phone: 813-558-0990 x 235
Fax: 813-558-9726
www.Geosyntec.com

Geosyntec consultants

Heidorn, Marjorie

From: Heidorn, Marjorie
Sent: Thursday, June 14, 2007 11:35 AM
To: 'Ayushman Gupta'
Subject: RE: Oak Hammock MW and Piezometers Layout
Attachments: Attachment A Oak Hammock Well List 6-07.doc

Ayushman,
I have reviewed the information. It is my understanding that your request is for abandonment of:

- 6 monitoring wells (MW-14A, MW-14B, MW-14C, MW-15A, MW-15B, and MW-15C) as previously noted on Attachments A & B of the permit.
- 4 piezometers (DP-5, DP-6, DP-9, and DP-10) as shown on the pdf file you just sent to me.

Your request is approved.

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Marjorie

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Ayushman Gupta, P.E.
Senior Engineer

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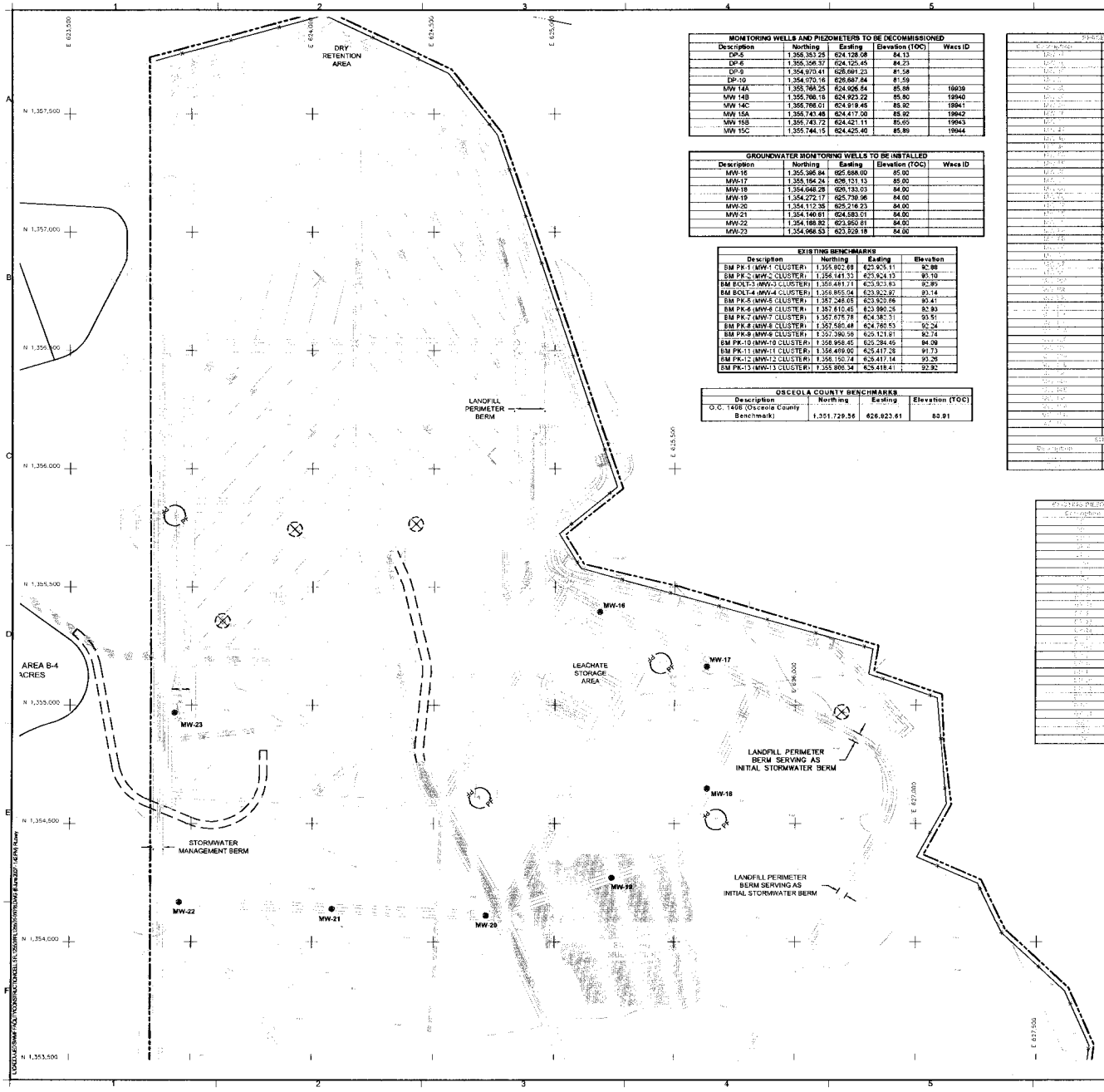


MONITORING WELLS AND PIEZOMETERS TO BE DECOMMISSIONED

Description	Northing	Easting	Elevation (TOC)	Wacs ID
DP-5	1,356,353.25	624,128.08	84.13	
DP-6	1,355,396.37	624,125.45	84.23	
DP-9	1,354,970.41	626,691.23	81.58	
DP-10	1,354,970.16	626,687.84	81.59	
MW-14A	1,355,769.25	624,906.84	85.88	19939
MW-14B	1,355,766.18	624,923.22	85.80	19940
MW-14C	1,355,766.01	624,919.46	85.92	19941
MW-15A	1,355,743.46	624,417.00	85.92	19942
MW-15B	1,355,743.72	624,421.11	85.69	19943
MW-15C	1,355,744.15	624,425.40	85.89	19944

GROUNDWATER MONITORING WELLS TO BE INSTALLED

Description	Northing	Easting	Elevation (TOC)	Wacs ID
MW-16	1,355,396.84	625,668.00	85.00	
MW-17	1,355,164.24	626,133.13	85.00	
MW-18	1,354,648.28	626,133.03	84.00	
MW-19	1,354,272.17	625,738.96	84.00	
MW-20	1,354,112.35	625,216.23	84.00	
MW-21	1,354,140.81	624,583.01	84.00	
MW-22	1,354,188.82	623,950.81	84.00	
MW-23	1,354,968.53	623,929.18	84.00	

EXISTING BENCHMARKS

Description	Northing	Easting	Elevation
BM PK-1 (MW-1 CLUSTER)	1,355,802.68	625,925.11	92.88
BM PK-2 (MW-2 CLUSTER)	1,356,141.33	625,924.13	93.10
BM BOLT-3 (MW-3 CLUSTER)	1,356,481.71	625,923.83	92.89
BM BOLT-4 (MW-4 CLUSTER)	1,356,855.04	625,922.97	93.14
BM PK-5 (MW-5 CLUSTER)	1,357,248.05	625,920.86	93.41
BM PK-6 (MW-6 CLUSTER)	1,357,610.45	625,990.26	92.93
BM PK-7 (MW-7 CLUSTER)	1,357,675.78	624,385.31	93.51
BM PK-8 (MW-8 CLUSTER)	1,357,580.48	624,760.53	92.24
BM PK-9 (MW-9 CLUSTER)	1,357,390.58	625,121.91	92.74
BM PK-10 (MW-10 CLUSTER)	1,356,958.45	625,284.49	94.09
BM PK-11 (MW-11 CLUSTER)	1,356,469.00	625,417.28	91.73
BM PK-12 (MW-12 CLUSTER)	1,356,150.74	625,417.14	93.26
BM PK-13 (MW-13 CLUSTER)	1,355,800.34	625,418.41	92.92

OSCEOLA COUNTY BENCHMARKS

Description	Northing	Easting	Elevation (TOC)
O.C. 1406 (Osceola County Benchmark)	1,351,729.56	626,923.61	83.91

NORTH

SCALE: 1" = 200'

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- EXISTING FENCE
- WETLAND BOUNDARY BY PHOTO INTERPRETATION BY BRA
- WETLAND BOUNDARY PER BRA FLAGGING AND SURVEY BY JOHNSTON SURVEYING INC.
- STORMWATER MANAGEMENT POND
- BORROW AREA BOUNDARY
- PROPOSED FENCE
- PIEZOMETER / MONITORING WELL LOCATION
- PIEZOMETER / MONITORING WELL LOCATION (REMOVED)
- PIEZOMETER / MONITORING WELL LOCATION TO BE DECOMMISSIONED (NOT PART OF THIS CONTRACT)
- SHELL ZONE WELL LOCATION
- GROUNDWATER MONITORING WELL TOP OF CONCRETE PAD BENCHMARK
- EXISTING GROUNDWATER MONITORING WELL CLUSTER
- EXISTING WELL OR PIEZOMETER TO BE PROTECTED BY THE CONTRACTOR
- MW-21 GROUNDWATER MONITORING WELL CLUSTER TO BE INSTALLED (NOT PART OF THIS CONTRACT)

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. PROPOSED GRADING IS SHOWN IN THE BACKGROUND TO ILLUSTRATE MONITORING WELL LOCATIONS RELATIVE TO LANDFILL.

GROUNDWATER MONITORING WELLS AND PIEZOMETERS INSTALLATION AND DECOMMISSIONING IS NOT PART OF THIS CONTRACT. THIS SHEET IS TO ALLOW CONTRACTOR TO PLAN WORK TO FACILITATE THE INSTALLATION AND DECOMMISSIONING OF THE MONITORING WELLS/PIEZOMETERS. HOWEVER, THE CONTRACTOR SHALL PROVIDE PROTECTIVE FENCE AROUND THE INDICATED MONITORING WELLS/PIEZOMETERS.

BID DRAWINGS
(NOT FOR CONSTRUCTION)

REV	DATE	DESCRIPTION	DRN	APP
0	JUNE 07	ISSUED FOR BIDS	RWL	AG

Geosyntec consultants
14055 RIVEREDGE DRIVE, SUITE 300
TAMPA, FLORIDA 33637 USA
PHONE: 813.558.9860 FAX: 813.558.9728
AUTHORIZATION CERTIFICATE NO. 4321

WS
1901 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GROUNDWATER MONITORING NETWORK

PROJECT: PHASE 2 – CELL 5 CONSTRUCTION
J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AND SEALED BY THE ENGINEER

SIGNATURE AND DATE
AYUSHMAN GUPTA
LICENSE NO. 64023

DESIGN BY:	AG/RWL	DATE:	JUNE 2007
DRAWN BY:	RWL	PROJECT NO.:	FL1256.01
CHECKED BY:	AG	FILE:	FL1255.01-01018
REVIEWED BY:	EJN	DRAWING NO.:	
APPROVED BY:	AG	18 OF 18	

ATTACHMENT A

OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
GROUND WATER					
MW-1A	19900	PZ	UPPER SURFICIAL	G-II	WATER ELEV
MW-1B	19901	PZ	INTERMEDIATE SURIFICAL	G-II	WATER ELEV
MW-1C	19902	PZ	DEEP SURFICIAL	G-II	WATER ELEV
MW-2A	19903	BG	UPPER SURFICIAL	G-II	SEMGW
MW-2B	19904	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-2C	19905	BG	DEEP SURFICIAL	G-II	SEMGW
MW-3A	19906	BG	UPPER SURFICIAL	G-II	SEMGW
MW-3B	19907	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-3C	19908	BG	DEEP SURFICIAL	G-II	SEMGW
MW-4A	19909	BG	UPPER SURFICIAL	G-II	SEMGW
MW-4B	19910	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-4C	19911	BG	DEEP SURFICIAL	G-II	SEMGW
MW-5A	19912	BG	UPPER SURFICIAL	G-II	SEMGW
MW-5B	19913	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-5C	19914	BG	DEEP SURFICIAL	G-II	SEMGW
MW-6A	19915	PZ	UPPER SURFICIAL	G-II	WATER ELEV
MW-6B	19916	PZ	INTERMEDIATE SURIFICAL	G-II	WATER ELEV
MW-6C	19917	PZ	DEEP SURFICIAL	G-II	WATER ELEV
MW-7A	19918	DE	UPPER SURFICIAL	G-II	SEMGW
MW-7B	19919	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-7C	19920	DE	DEEP SURFICIAL	G-II	SEMGW
MW-8A	19921	DE	UPPER SURFICIAL	G-II	SEMGW
MW-8B	19922	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-8C	19923	DE	DEEP SURFICIAL	G-II	SEMGW
MW-9A	19924	DE	UPPER SURFICIAL	G-II	SEMGW
MW-9B	19925	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-9C	19926	DE	DEEP SURFICIAL	G-II	SEMGW
MW-10A	19927	DE	UPPER SURFICIAL	G-II	SEMGW
MW-10B	19928	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-10C	19929	DE	DEEP SURFICIAL	G-II	SEMGW
MW-11A	19930	DE	UPPER SURFICIAL	G-II	SEMGW

ATTACHMENT A

OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
MW-11B	19931	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-11C	19932	DE	DEEP SURFICIAL	G-II	SEMGW
MW-12A	19933	DE	UPPER SURFICIAL	G-II	SEMGW
MW-12B	19934	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-12C	19935	DE	DEEP SURFICIAL	G-II	SEMGW
MW-13A	19936	DE	UPPER SURFICIAL	G-II	SEMGW
MW-13B	19937	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-13C	19938	DE	DEEP SURFICIAL	G-II	SEMGW
MW-16A	22342	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-16B	22343	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-16C	22344	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-17A	22345	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-17B	22346	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-17C	22347	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-18A	22348	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-18B	22349	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-18C	22350	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-19A	22351	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-19B	22352	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-19C	22353	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-20A	22354	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-20B	22355	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-20C	22356	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-21A	22357	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-21B	22358	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-21C	22359	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-22A	22360	BG	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-22B	22361	BG	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-22C	22362	BG	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-23A	22363	BG	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-23B	22364	BG	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-23C	22365	BG	DEEP SURFICIAL	G-II	INTGW/SEMGW

ATTACHMENT A

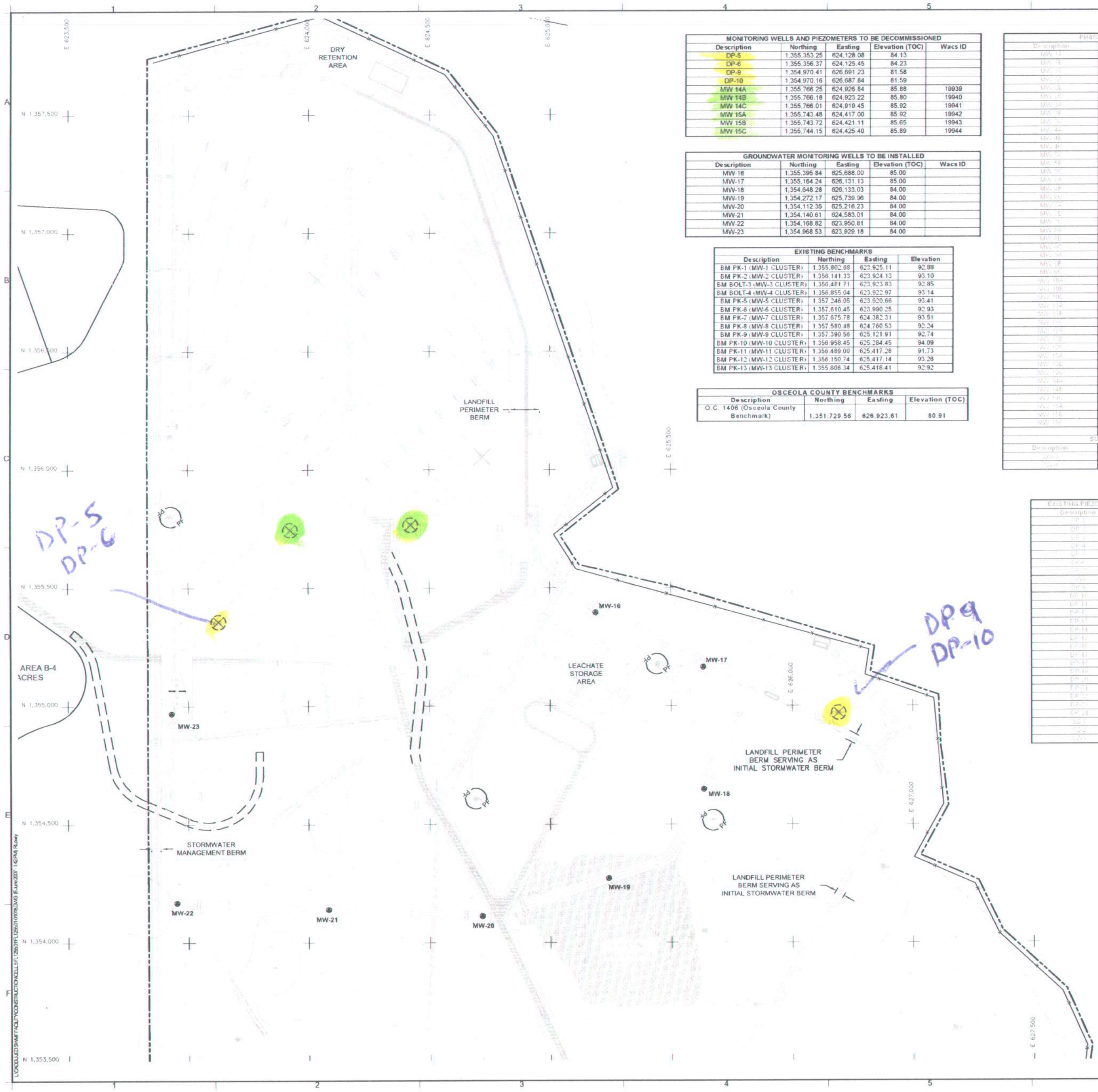
OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
SURFACE WATER					
SW-3	19945	CO	DOWN STREAM ON BULL CREEK	SW-IIIF	SEMSW
SW-4	19946	BG	UP STREAM NW OF SITE	SW-IIIF	SEMSW
LEACHATE					
L-1	19947	CO	CELL 1 PRIMARY RISER	LC	ANNLC
L-2	19948	CO	CELL 2 PRIMARY RISER	LC	ANNLC
L-3	19949	CO	CELL 3 PRIMARY RISER	LC	ANNLC
L-4	19950	CO	CELL 4 PRIMARY RISER	LC	ANNLC
L-5	22369	CO	CELL 5 PRIMARY RISER	LC	ANNLC
L-6	22370	CO	CELL 6 PRIMARY RISER	LC	ANNLC
L-7	22371	CO	CELL 7 PRIMARY RISER	LC	ANNLC
L-8	22372	CO	CELL 8 PRIMARY RISER	LC	ANNLC
L-9	33273	CO	CELL 9 PRIMARY RISER	LC	ANNLC
L-10	22374	CO	CELL 10 PRIMARY RISER	LC	ANNLC

Well Type Codes
(AS) Assessment (BG) Background (CO) Compliance (DE) Detection
(DG) Downgradient (IM) Intermediate (IW) Irrigation Well (OT) Other (PZ)Piezometer
(SO) Source (UP) Upgradient (WS) Water supply



MONITORING WELLS AND PIEZOMETERS TO BE DECOMMISSIONED				
Description	Northing	Easting	Elevation (TOC)	Wacs ID
DP-5	1,355,353.25	624,128.08	84.13	
DP-6	1,355,356.37	624,125.45	84.23	
DP-9	1,354,970.41	626,691.23	81.58	
DP-10	1,354,970.16	626,687.84	81.59	
MW 14A	1,355,766.25	624,926.84	85.88	19939
MW 14B	1,355,766.18	624,923.22	85.80	19940
MW 14C	1,355,766.01	624,919.45	85.92	19941
MW 15A	1,355,743.48	624,417.00	85.92	19942
MW 15B	1,355,743.72	624,421.11	85.65	19943
MW 15C	1,355,744.15	624,425.40	85.89	19944

GROUNDWATER MONITORING WELLS TO BE INSTALLED				
Description	Northing	Easting	Elevation (TOC)	Wacs ID
MW-16	1,355,395.84	625,688.00	85.00	
MW-17	1,355,164.24	626,131.13	85.00	
MW-18	1,354,648.28	626,133.03	84.00	
MW-19	1,354,272.17	625,739.96	84.00	
MW-20	1,354,112.35	625,216.23	84.00	
MW-21	1,354,140.61	624,583.01	84.00	
MW-22	1,354,168.82	623,950.81	84.00	
MW-23	1,354,968.53	623,929.18	84.00	

EXISTING BENCHMARKS			
Description	Northing	Easting	Elevation
BM PK-1 (MW-1 CLUSTER)	1,355,802.68	623,925.11	92.88
BM PK-2 (MW-2 CLUSTER)	1,356,141.33	623,924.13	93.10
BM BOLT-3 (MW-3 CLUSTER)	1,356,481.71	623,923.83	92.85
BM BOLT-4 (MW-4 CLUSTER)	1,356,855.04	623,922.97	93.14
BM PK-5 (MW-5 CLUSTER)	1,357,246.05	623,920.66	93.41
BM PK-6 (MW-6 CLUSTER)	1,357,610.45	623,990.25	92.93
BM PK-7 (MW-7 CLUSTER)	1,357,675.78	624,382.31	93.51
BM PK-8 (MW-8 CLUSTER)	1,357,580.48	624,760.53	92.24
BM PK-9 (MW-9 CLUSTER)	1,357,390.56	625,121.91	92.74
BM PK-10 (MW-10 CLUSTER)	1,356,958.45	625,284.45	94.09
BM PK-11 (MW-11 CLUSTER)	1,356,489.00	625,417.28	91.73
BM PK-12 (MW-12 CLUSTER)	1,356,150.74	625,417.14	93.26
BM PK-13 (MW-13 CLUSTER)	1,355,806.34	625,418.41	92.92

OSCEOLA COUNTY BENCHMARKS			
Description	Northing	Easting	Elevation (TOC)
O.C. 1406 (Osceola County Benchmark)	1,351,729.56	626,923.61	80.91

PHASE I GROUNDWATER MONITORING WELL				
Description	Northing	Easting	Elevation (TOC)	Wacs ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SURFACE WATER MONITORING SITES				
Description	Northing	Easting	Elevation	Wacs ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

EXISTING PIEZOMETERS / GROUNDWATER MONITORING WELLS			
Description	Northing	Easting	Elevation (TOC)
[illegible]	[illegible]	[illegible]	[illegible]

NORTH

SCALE: 0 100' 200' 400' 1" = 200'

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET) (SEE NOTE 4)
- EXISTING FENCE
- WETLAND BOUNDARY BY PHOTO INTERPRETATION BY BRA
- WETLAND BOUNDARY PER BRA FLAGGING AND SURVEY BY JOHNSTON SURVEYING INC.
- STORMWATER MANAGEMENT POND
- BORROW AREA BOUNDARY
- PROPOSED FENCE
- PIEZOMETER / MONITORING WELL LOCATION
- PIEZOMETER / MONITORING WELL LOCATION (REMOVED)
- PIEZOMETER / MONITORING WELL LOCATION TO BE DECOMMISSIONED (NOT PART OF THIS CONTRACT)
- SHELL ZONE WELL LOCATION
- GROUNDWATER MONITORING WELL TOP OF CONCRETE PAD BENCHMARK
- EXISTING GROUNDWATER MONITORING WELL CLUSTER
- EXISTING WELL OR PIEZOMETER TO BE PROTECTED BY THE CONTRACTOR
- MW-21 GROUNDWATER MONITORING WELL CLUSTER TO BE INSTALLED (NOT PART OF THIS CONTRACT)

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. PROPOSED GRADING IS SHOWN IN THE BACKGROUND TO ILLUSTRATE MONITORING WELL LOCATIONS RELATIVE TO LANDFILL.

GROUNDWATER MONITORING WELLS AND PIEZOMETERS INSTALLATION AND DECOMMISSIONING IS NOT PART OF THIS CONTRACT. THIS SHEET IS TO ALLOW CONTRACTOR TO PLAN WORK TO FACILITATE THE INSTALLATION AND DECOMMISSIONING OF THE MONITORING WELLS/PIEZOMETERS. HOWEVER, THE CONTRACTOR SHALL PROVIDE PROTECTIVE FENCE AROUND THE INDICATED MONITORING WELLS/PIEZOMETERS.

REV	DATE	DESCRIPTION	DRN	APP
0	JUNE 07	ISSUED FOR BIDS	RWL	AG

Geosyntec consultants
14055 RIVEREDGE DRIVE, SUITE 300
TAMPA, FLORIDA 33637 USA
PHONE: 813.558.0990 FAX: 813.558.9726
AUTHORIZATION CERTIFICATE NO. 4321

WSI
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

TITLE: GROUNDWATER MONITORING NETWORK

PROJECT: PHASE 2 – CELL 5 CONSTRUCTION
J.E.D. SOLID WASTE MANAGEMENT FACILITY

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AND SEALED BY THE ENGINEER

SIGNATURE AND DATE
AYUSHMAN GUPTA
LICENSE NO. 54023

DESIGN BY:	AG/RWL	DATE:	JUNE 2007
DRAWN BY:	RWL	PROJECT NO.:	FL1255.01
CHECKED BY:	AG	FILE:	FL1255.01-01018
REVIEWED BY:	EJN	DRAWING NO.:	
APPROVED BY:	AG	18 OF 18	

BID DRAWINGS
(NOT FOR CONSTRUCTION)

ATTACHMENT B

NOTES:
1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).

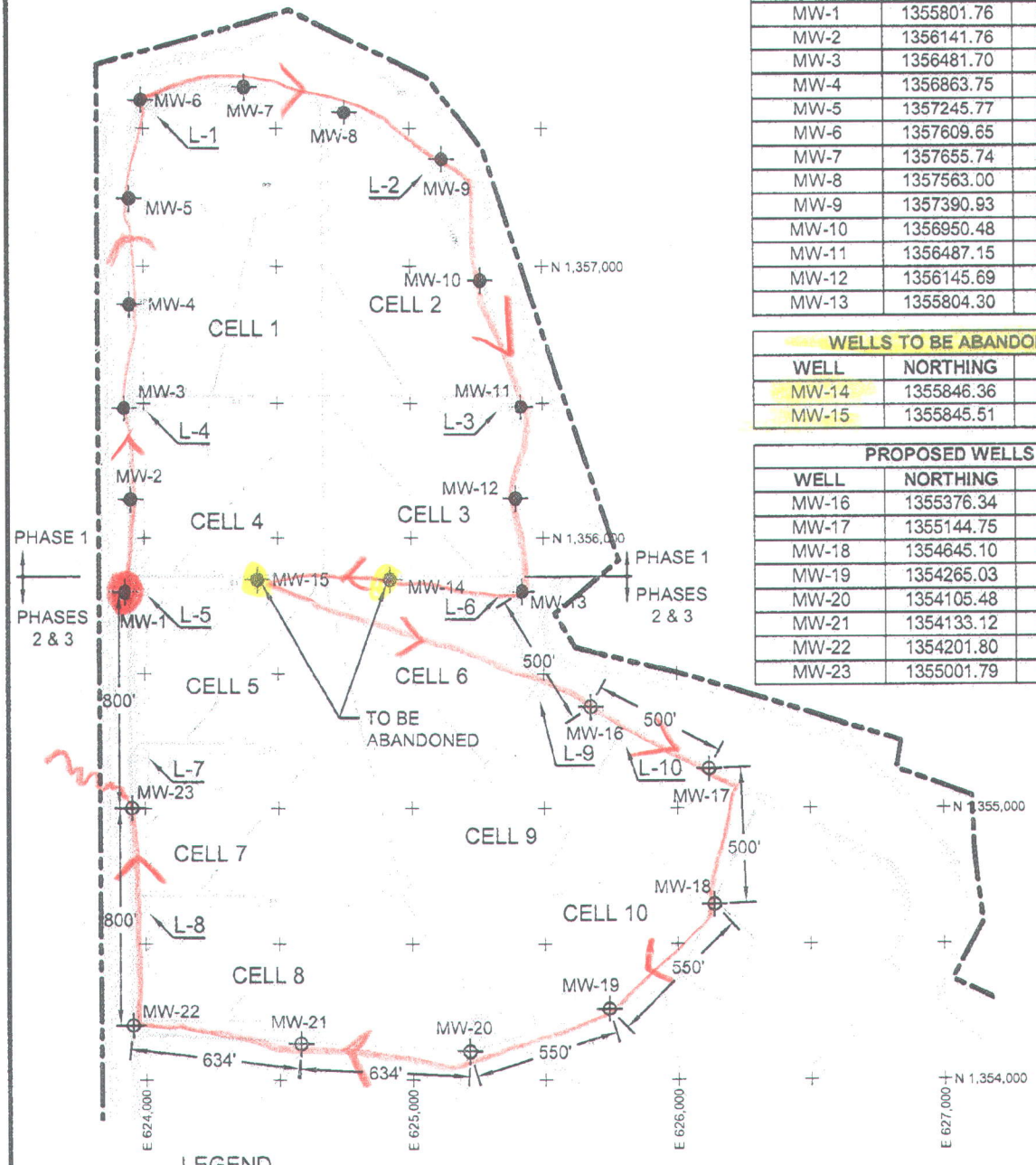
NORTH

0 300' 600' 1200'
SCALE: 1" = 600'

EXISTING WELLS		
WELL	NORTHING	EASTING
MW-1	1355801.76	623927.76
MW-2	1356141.76	623949.18
MW-3	1356481.70	623926.60
MW-4	1356863.75	623947.95
MW-5	1357245.77	623947.30
MW-6	1357609.65	623992.77
MW-7	1357655.74	624380.68
MW-8	1357563.00	624757.34
MW-9	1357390.93	625122.57
MW-10	1356950.48	625266.36
MW-11	1356487.15	625418.09
MW-12	1356145.69	625396.67
MW-13	1355804.30	625419.26

WELLS TO BE ABANDONED		
WELL	NORTHING	EASTING
MW-14	1355846.36	624922.02
MW-15	1355845.51	624424.85

PROPOSED WELLS		
WELL	NORTHING	EASTING
MW-16	1355376.34	625677.81
MW-17	1355144.75	626120.94
MW-18	1354645.10	626139.82
MW-19	1354265.03	625742.27
MW-20	1354105.48	625215.92
MW-21	1354133.12	624582.67
MW-22	1354201.80	623952.49
MW-23	1355001.79	623951.12



LEGEND

MW-1 EXISTING GROUNDWATER MONITORING WELL LOCATION

MW-16 PROPOSED GROUNDWATER MONITORING WELL LOCATION

(AT EACH LOCATION A GROUP OF THREE WELLS WILL BE DRILLED TO SHALLOW, INTERMEDIATE, AND DEEP ELEVATIONS. THESE WELLS WILL BE SPACED 5 FEET APART AND ARRANGED PARALLEL TO THE PERIMETER MAINTENANCE ROAD OR INTERCELL BERM ALIGNMENTS.)

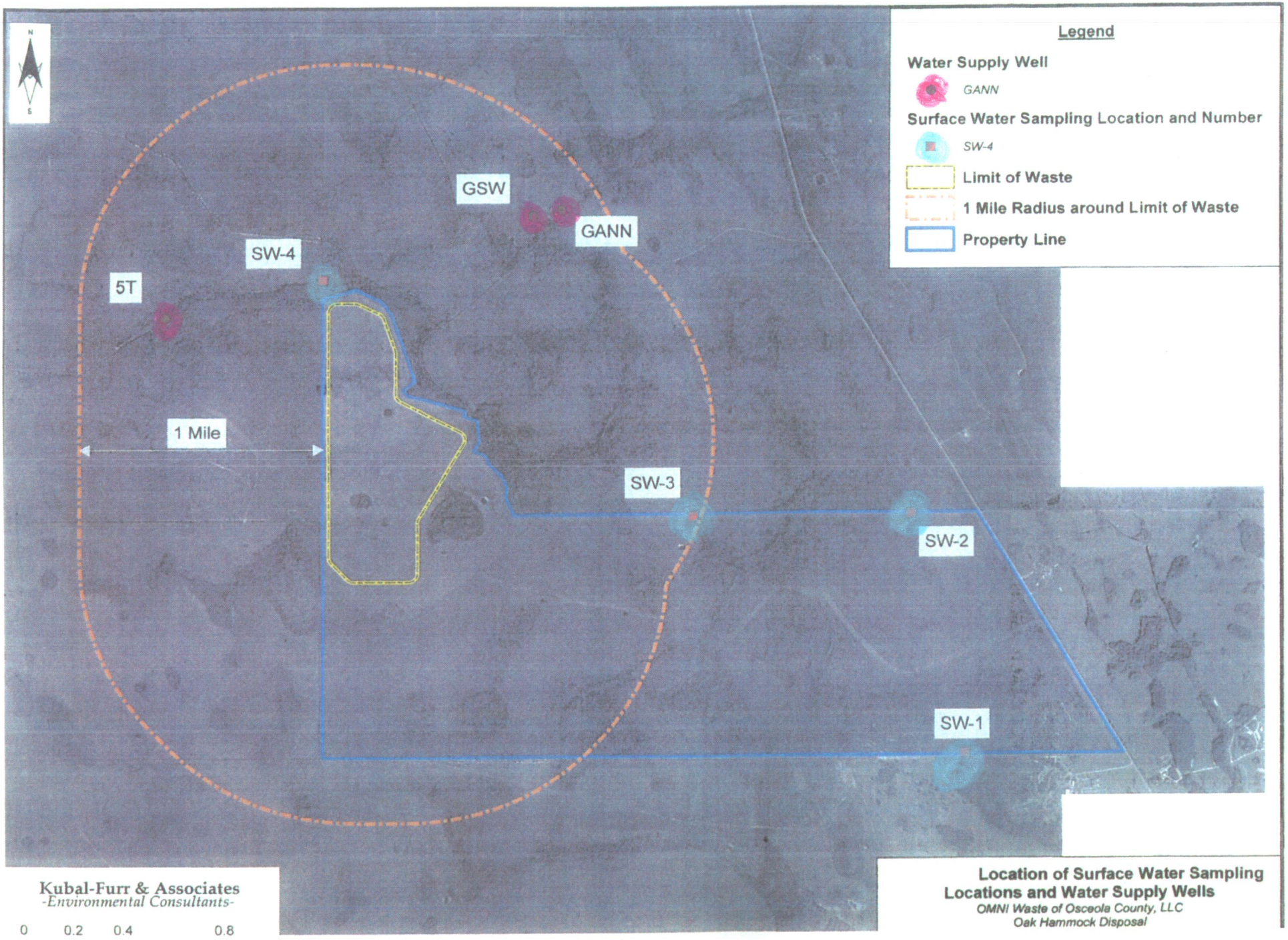
L-1 LEACHATE SAMPLE LOCATION

(LEACHATE SAMPLES WILL BE OBTAINED FROM THE PRIMARY LEACHATE SUMP OF EACH WELL)

LAYOUT OF PHASES 1 THROUGH 3
GROUNDWATER MONITORING WELLS
AND LEACHATE SAMPLING LOCATIONS

GEOSYNTEC CONSULTANTS
TAMPA, FLORIDA

PROJECT NO.	FL0916.02		
DATE.	27 SEPT 2006	FILE NO.	FL0916.02F002



Kubal-Furr & Associates
-Environmental Consultants-

Location of Surface Water Sampling Locations and Water Supply Wells
OMNI Waste of Osceola County, LLC
Oak Hammock Disposal

ATTACHMENT C

ATTACHMENT A

OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
GROUND WATER					
MW-1A	19900	PZ	UPPER SURFICIAL	G-II	WATER ELEV
MW-1B	19901	PZ	INTERMEDIATE SURIFICAL	G-II	WATER ELEV
MW-1C	19902	PZ	DEEP SURFICIAL	G-II	WATER ELEV
MW-2A	19903	BG	UPPER SURFICIAL	G-II	SEMGW
MW-2B	19904	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-2C	19905	BG	DEEP SURFICIAL	G-II	SEMGW
MW-3A	19906	BG	UPPER SURFICIAL	G-II	SEMGW
MW-3B	19907	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-3C	19908	BG	DEEP SURFICIAL	G-II	SEMGW
MW-4A	19909	BG	UPPER SURFICIAL	G-II	SEMGW
MW-4B	19910	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-4C	19911	BG	DEEP SURFICIAL	G-II	SEMGW
MW-5A	19912	BG	UPPER SURFICIAL	G-II	SEMGW
MW-5B	19913	BG	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-5C	19914	BG	DEEP SURFICIAL	G-II	SEMGW
MW-6A	19915	PZ	UPPER SURFICIAL	G-II	WATER ELEV
MW-6B	19916	PZ	INTERMEDIATE SURIFICAL	G-II	WATER ELEV
MW-6C	19917	PZ	DEEP SURFICIAL	G-II	WATER ELEV
MW-7A	19918	DE	UPPER SURFICIAL	G-II	SEMGW
MW-7B	19919	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-7C	19920	DE	DEEP SURFICIAL	G-II	SEMGW
MW-8A	19921	DE	UPPER SURFICIAL	G-II	SEMGW
MW-8B	19922	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-8C	19923	DE	DEEP SURFICIAL	G-II	SEMGW
MW-9A	19924	DE	UPPER SURFICIAL	G-II	SEMGW
MW-9B	19925	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-9C	19926	DE	DEEP SURFICIAL	G-II	SEMGW
MW-10A	19927	DE	UPPER SURFICIAL	G-II	SEMGW
MW-10B	19928	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-10C	19929	DE	DEEP SURFICIAL	G-II	SEMGW

ATTACHMENT A

OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
MW-11A	19930	DE	UPPER SURFICIAL	G-II	SEMGW
MW-11B	19931	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-11C	19932	DE	DEEP SURFICIAL	G-II	SEMGW
MW-12A	19933	DE	UPPER SURFICIAL	G-II	SEMGW
MW-12B	19934	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-12C	19935	DE	DEEP SURFICIAL	G-II	SEMGW
MW-13A	19936	DE	UPPER SURFICIAL	G-II	SEMGW
MW-13B	19937	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
MW-13C	19938	DE	DEEP SURFICIAL	G-II	SEMGW
*MW-14A	19939	DE	UPPER SURFICIAL	G-II	SEMGW
*MW-14B	19940	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
*MW-14C	19941	DE	DEEP SURFICIAL	G-II	SEMGW
*MW-15A	19942	DE	UPPER SURFICIAL	G-II	SEMGW
*MW-15B	19943	DE	INTERMEDIATE SURIFICAL	G-II	SEMGW
*MW-15C	19944	DE	DEEP SURFICIAL	G-II	SEMGW
MW-16A	22342	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-16B	22343	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-16C	22344	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-17A	22345	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-17B	22346	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-17C	22347	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-18A	22348	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-18B	22349	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-18C	22350	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-19A	22351	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-19B	22352	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-19C	22353	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-20A	22354	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-20B	22355	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-20C	22356	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-21A	22357	DE	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-21B	22358	DE	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW

ATTACHMENT A

OAK HAMMOCK DISPOSAL, CLASS I LANDFILL

WACS_FACILITY: 89544

MONITORING SITES

MONITORING SITE_NUM	WACS_ WELL	WELL_ TYPE	ZONE/LOCATION MONITORED	GW/SW CLASS	WACS REPORT TYPE
MW-21C	22359	DE	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-22A	22360	BG	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-22B	22361	BG	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-22C	22362	BG	DEEP SURFICIAL	G-II	INTGW/SEMGW
MW-23A	22363	BG	UPPER SURFICIAL	G-II	INTGW/SEMGW
MW-23B	22364	BG	INTERMEDIATE SURIFICAL	G-II	INTGW/SEMGW
MW-23C	22365	BG	DEEP SURFICIAL	G-II	INTGW/SEMGW

* To be abandoned prior to filling Cells 2 and 3

SURFACE WATER

SW-3	19945	CO	DOWN STREAM ON BULL CREEK	SW-IIIF	SEMSW
SW-4	19946	BG	UP STREAM NW OF SITE	SW-IIIF	SEMSW

LEACHATE

L-1	19947	CO	CELL 1 PRIMARY RISER	LC	ANNLC
L-2	19948	CO	CELL 2 PRIMARY RISER	LC	ANNLC
L-3	19949	CO	CELL 3 PRIMARY RISER	LC	ANNLC
L-4	19950	CO	CELL 4 PRIMARY RISER	LC	ANNLC
L-5	22369	CO	CELL 5 PRIMARY RISER	LC	ANNLC
L-6	22370	CO	CELL 6 PRIMARY RISER	LC	ANNLC
L-7	22371	CO	CELL 7 PRIMARY RISER	LC	ANNLC
L-8	22372	CO	CELL 8 PRIMARY RISER	LC	ANNLC
L-9	33273	CO	CELL 9 PRIMARY RISER	LC	ANNLC
L-10	22374	CO	CELL 10 PRIMARY RISER	LC	ANNLC

Well Type Codes
(AS) Assessment (BG) Background (CO) Compliance (DE) Detection
(DG) Downgradient (IM) Intermediate (IW) Irrigation Well (OT) Other (PZ)Piezometer
(SO) Source (UP) Upgradient (WS) Water supply

5002 T-Rex Avenue, Suite 200, Boca Raton, FL 33431

April 13, 2007

Mr. James N. Bradner, P.E.
Program Manager, Solid/Hazardous Waste
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: Water Quality Monitoring
Oak Hammock Disposal Facility (OHDF) - Omni Waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-001 and SO49-0199726-002

Dear Mr. Bradner:

The purpose of this letter is to inform the Florida Department of Environmental Protection (FDEP) that three monitoring parameters exceeded the Department's water quality standards in one of the shallow detection wells (MW-9A) at the Oak Hammock Disposal Facility. This well was originally sampled on February 6, 2007 during the 6th semi-annual monitoring event. Analytical test results showed that the sample from MW-9A contained concentrations of benzene, vinyl chloride, and ammonia above the regulatory limit. The monitoring well was resampled on March 26, 2007 for volatile organic compounds (Appendix I parameters) and ammonia. The results of the resampling confirmed the original sample results.

These results will be discussed in further detail in the semi-annual water quality monitoring report that will be submitted to FDEP upon completion. Please note that WSI has already begun working to assess the causes and will work diligently with the FDEP to evaluate and resolve this issue in a timely manner.

If you have any questions, or require any additional information, please contact me at (561) 237-3414 [office] or smccash@wsii.us [email] at your earliest convenience.

Sincerely,

R. Shawn McCash
Sr. Vice President, Landfill Operations & Engineering
Waste Services, Inc.

Copies to: Matt Orr, WSI
Dennis Pantano
K. Wills, Geosyntec
A. Gupta, Geosyntec

Williams, Elizabeth

From: Matt Orr [MOrr@wasteservicesinc.com]
To: Williams, Elizabeth
Sent: Tuesday, March 06, 2007 8:02 AM
Subject: Read: Oak Hammock Landfill - Class I review of response to DEP's review of first biennial water quality mon. report ltr 0098

Your message

To: MOrr@wasteservicesinc.com
Subject:

was read on 3/6/2007 8:02 AM.

Florida Department of Environmental Protection

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

BY ELECTRONIC MAIL
morr@wasteservicesinc.com

March 5, 2007

Mr. Matthew Orr
Omni Waste of Osceola County, LLC
1501 Omni Way
St Cloud, FL 34773-9177

OCD-SW-07-0098

Osceola County - SW
Oak Hammock Landfill (J.E.D.) – Class I
Permit #0199726001SC, 0199726002SO, 0199726003SO
Review of "Response to the Department's
Review of the 'First Biennial Water Quality Monitoring Report'"

Dear Mr. Orr:

Based upon our review of the above referenced document from your consultant, Geosyntec, dated January 5, 2007 and received January 8, 2007, we have the following comments following the numbered comments in your letter:

1. The corrected longitudes are acceptable.

2. Please call or e-mail to schedule a meeting to discuss the necessity of monitoring all three zones (A, B, C) of the surficial aquifer.

3. An updated MPIS showing MW-1 and MW-6 as piezometers is attached.

4. The revision is acceptable.

5. The latitude and longitude of the surface water monitoring sites, SW-3 and SW-4, have been entered into WACS.

6. The latitude and longitude of the leachate sampling sites, L-1, L-2, L-3 and L-4, have been entered into WACS.

7. Your list of possible sources for the arsenic exceedances in MW-11A and MW-13A is acceptable and these levels will be considered background for future compliance determinations.

8. Your list possible sources for the ammonia exceedances in MW-5A, MW-9A, MW-10A and MW-11A is acceptable and these levels will be considered background for future compliance determinations.

9a. Your explanation of high turbidity for exceedances of chromium, vanadium, TDS, beryllium and lead in various wells at various times is acceptable.

9b. The supposition that heavy equipment used at the site previously and during landfill construction caused the toluene exceedances is acceptable. However, evaluation monitoring may be required if toluene starts trending upward.

9c. Your recommendation to statistically determine background iron levels is acceptable and should be submitted within 60 days of receipt of this letter.

Please contact me at (407) 893-3320 or by e-mail at deborah.helle@dep.state.fl.us, if you have any questions concerning this letter.

Sincerely,

Deborah B. Helle

Deborah B. Helle, P.G.
Solid and Hazardous Waste

DBH/dh

cc: Kirk Wills, Geosyntec, KWills@geosyntec.com

Geosyntec
consultants

14055 Riveredge Drive
Suite 300
Tampa, FL 33637

813-558-0990
813-558-9726

29 January 2007

Mr. James N. Bradner, P.E.
Program Manager, Solid/Hazardous Waste
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: 6th Semi-Annual Water Quality Sampling Event
Oak Hammock Disposal Facility (OHDF)
Omni Waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-001 and SO49-0199726-002

Dear Mr. Bradner:

The purpose of this letter is to inform the Florida Department of Environmental Protection that the sampling of 45 groundwater monitoring wells and 2 surface water locations around Phase 1 of the OHDF is expected to commence on 5 February 2007 and will be performed over a period of approximately 2 weeks. This will be the sixth semi-annual sampling event after completion of construction of Cell 1 (in Phase 1 development) of the facility.

If you have any questions or need additional information, please contact the undersigned.

Sincerely,

Kirk Wills
Project Engineer

cc: S. McCash, WSI

Geosyntec
consultants

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Tampa, FL 33637

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5 January 2007

Mr. James Bradner, P.E.
Manager, Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Response to the Department's Review of the "First Biennial Water Quality Monitoring Report"
Oak Hammock Disposal Facility
Osceola County, Florida

Dear Mr. Bradner:

On behalf of our client, Omni Waste of Osceola County, LLC (Omni), Geosyntec Consultants (Geosyntec) is providing responses to the Departments comments detailed in a letter to Mr. Matthew Orr of Omni, dated 4 December 2006. A copy of this letter has been attached to this document. Each of the Department's comments is listed below in italics followed by Geosyntec's response.

Comment 1. The longitudes on Table 2-1 do not appear to be correct.

Response 1. Geosyntec verified that the longitudes presented in Table 2-1 are inaccurate. Geosyntec has converted the monitoring well locations from State Plane coordinates to latitude and longitude using the U.S. Army Corps of Engineers (USACOE) *Corpscon* program. The results generated by the *Corpscon* program have been double-checked using GPS survey data from the site. Table 2-1 has been revised to incorporate these new coordinates. Copies of the revised Table 2-1 are included as an attachment to this letter.

Comment 2. The recommendation to evaluate the necessity of monitoring all three zones (A, B, C) of the surficial aquifer is acceptable.

Response 2. Geosyntec proposes to schedule a meeting with the Department in early 2007 to discuss this topic further.

Comment 3. The request to decrease the number of background wells is acceptable. However, since MW-2, MW-3, MW-4, and MW-5 all have shown exceedances of various parameters they should be kept. MW-1 and MW-6 may be converted to piezometers. That way, if future sampling requires it, they can be sampled for analysis again.

Response 3. Comment is noted.

Comment 4. On Page 11 it states, "The arsenic concentration for the MW-11A during the fourth semi-annual event was lower than the baseline event." Table 5-1 shows MW-111A with arsenic at 17 µg/L in the baseline event while it is 18 µg/L in the 4th event.

Response 4. The sentence referred to in Comment 4 is inaccurate. The sentence should read "The arsenic concentration for MW-11A during the fourth semi-annual event was slightly higher than that of the baseline event." This revision has been incorporated into the report text. A revised Page 11 has been attached to this letter.

Comment 5. Submit the latitude and longitude of the surface water monitoring sites, SW-3 and SW-4.

Response 5. The latitude and longitude of the surface water monitoring locations has been included in Table 2-2, a copy of which has been attached to this letter.

Comment 6. Submit the latitude and longitude of the leachate sampling sites, L-1, L-2, L-3, and L-4.

Response 6. The latitude and longitude of the leachate sampling site locations has been included in Table 2-3, a copy of which has been attached to this letter.

Comment 7. Offer possible sources for the arsenic exceedances in MW-11A and MW-13A.

Response 7. As stated in Section 9 of the biennial technical report, the presence of soluble (ferrous) iron is an excellent predictor of arsenic concentrations. Figure 9-3 shows the correlation plot between iron and arsenic. The correlation coefficient of 0.86 indicates a positive correlation between the two analytes. The positive correlation observed in Figure 9-3 has also been observed at many other landfills statewide. Geosyntec participated as geochemical experts on a Technical Advisory Group (TAG) to evaluate potential rulemaking options for CCA-treated wood along with FDEP Solid Waste Division and other interested stakeholders. A review of FDEP's database for C&D landfills shows a similar correlation at virtually every site that has arsenic impacts. From a geochemical perspective, this is not surprising. One of the primary solubility controls over arsenic is the presence of iron (ferric) hydroxides (FeOH(x)) in the aquifer. These oxy-hydroxides have a strong affinity for arsenic and, even at relatively low levels, serve to render arsenic insoluble in groundwater systems. However, under low oxygen

(reducing) conditions, the oxidized (ferric) form is reduced to the soluble ferrous form. Iron levels go up and arsenic is solubilized.

This is precisely what has happened in shallow groundwater at Oak Hammock. There have been 75 analyses for arsenic in shallow groundwater and 76 analyses for iron. Eight detections of arsenic have exceeded the GCTL of 10 µg/L. There have also only been eight detections of iron above 10 mg/L. Sixty-seven of 68 detections have been below 5 mg/L. Each of the arsenic exceedances occurred when iron was higher than 10 mg/L. No arsenic exceedances occur under any other conditions. This is also true for two of the three exceedances in the deep wells. One exceedance does occur when iron concentrations are low (MW-2C in the baseline event), however, this well has not had an arsenic detection in the past 4 events.

The Department has requested that other possible sources be offered for the arsenic exceedances. It is not out of the realm of possibility that arsenic could be the result of dissolution of sulfide mineral via oxidation, however, geochemical conditions are not consistent with this hypothesis. Likewise, leachate cannot be the source since 9 of the 11 detections were either previous to or contemporaneous with the detection of arsenic in leachate at 16 µg/L in July of 2005 (see attached Table 5-18). An additional discussion about the possibility of leachate impacts to groundwater quality is included in our response to Comment 8.

Comment 8. Offer possible sources for the ammonia exceedances in MW-5A and MW-9A, MW-10A, and MW-11A

Response 8. It is very unlikely that the ammonia reported in groundwater from certain shallow ("A" zone) monitoring wells (MW-5A, MW-9A, MW-10A, and MW-11A) resulted from landfill operations. It is suspected that the source of ammonia reported in groundwater is related to previous activity at the site and/or land use in the adjacent area. Prior to construction of the landfill, the property was used as a sod farm. Any number of nitrogen-based compounds that can easily be converted to ammonia or can be applied in an ammonia form were likely used to fertilize the grass to achieve optimum growth. Though nitrate has not been consistently detected in groundwater, the use of nitrate fertilizer is likely masked by the reducing groundwater conditions at and in the vicinity of the landfill. Under reducing conditions, nitrate undergoes a denitrification process whereby nitrogen gas is released to the atmosphere. In addition to the sod farming activities discussed above, the adjacent property was and continues to be used for cattle grazing, which may provide an additional ammonia source. Cattle manure contains

between 2 and 2.5 percent organic nitrogen (Singer and Munns, 1991[1]), which if converted to an inorganic form may serve as another potential groundwater ammonia source.

Other geochemical parameters that are currently monitored in groundwater were evaluated to determine if other constituent levels in groundwater provide evidence of a landfill operations-derived release.

Leachate generated in landfills can generally be characterized as reducing, with a high concentration of organic material, and various ions. The following four groups of constituents are generally found in landfill leachate, and if present at elevated levels, may be indicative of leachate migration to groundwater (Christensen, et al, 2001[2]). The four groups include:

- dissolved organic matter
- inorganic macro-components – Ca, Mg, Na, K, ammonia, Fe, Mn, Cl, sulfate, and bicarbonate;
- heavy metals – Cd, Cr, Cu, Pb, Ni, and Zn; and
- xenobiotic organic compounds – aromatic hydrocarbons, phenols, and chlorinated aliphatics.

Although other constituents may be present in leachate from landfills, they are likely to be present at very low concentrations and are generally viewed as having a secondary importance (Christensen, et al 2001). Some metals and organic compounds have been infrequently detected previously in A Zone groundwater. However; subsequent groundwater monitoring events indicated that these detections were not representative of Zone A groundwater and/or not associated with landfill operations.

Chloride and sodium levels in A Zone groundwater were evaluated for evidence of landfill impacts to groundwater. Chloride and sodium are inorganic constituents that are generally present at elevated levels in leachate and have been widely used as tracers for landfill impacts to groundwater. Figure 1 provides a summary of chloride concentrations reported in A Zone groundwater from the baseline event (January 2004), prior to liner installation and the acceptance of waste, to the February 2006 sampling event. The reported concentration of chloride for monitoring wells MW-5A, MW-9A, MW-10A, and MW-11A has been consistently less than the average chloride concentration and appear

[1] Singer M.J. and D.N. Munns. 1991. Soils an Introduction. MacMillan Publishing Company, New York, 472 pp.
[2] Christensen T.H., P. Kjeldsen, P.L. Bjerg, D.L. Jensen, J.B. Christensen, A. Baun, H-J. Albrechtsen, and G. Heron. 2001. Biogeochemistry of landfill leachate plumes. *Applied Geochemistry* 16:659-718.

Figure 1
Chloride Concentrations Over Time in A Zone Wells

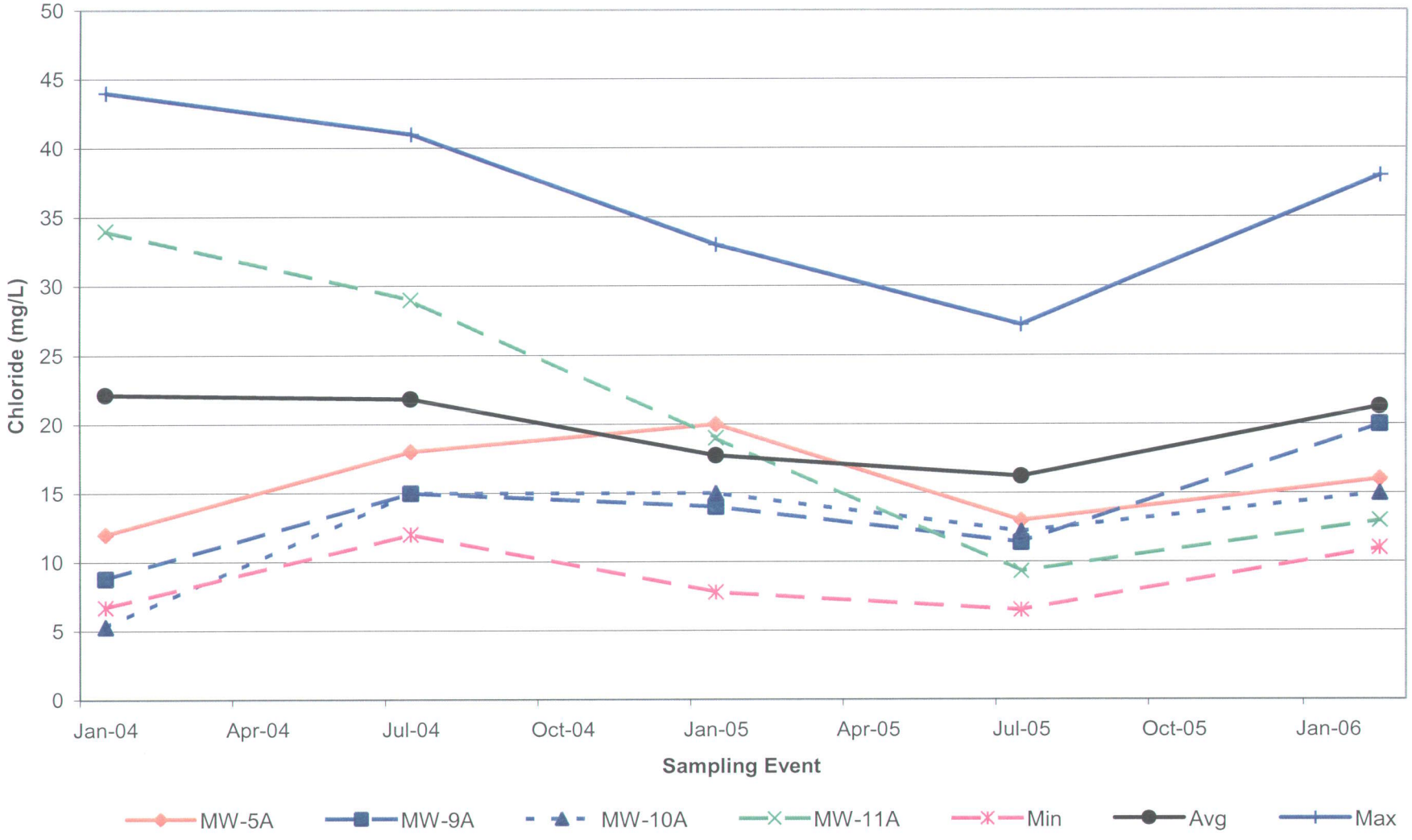
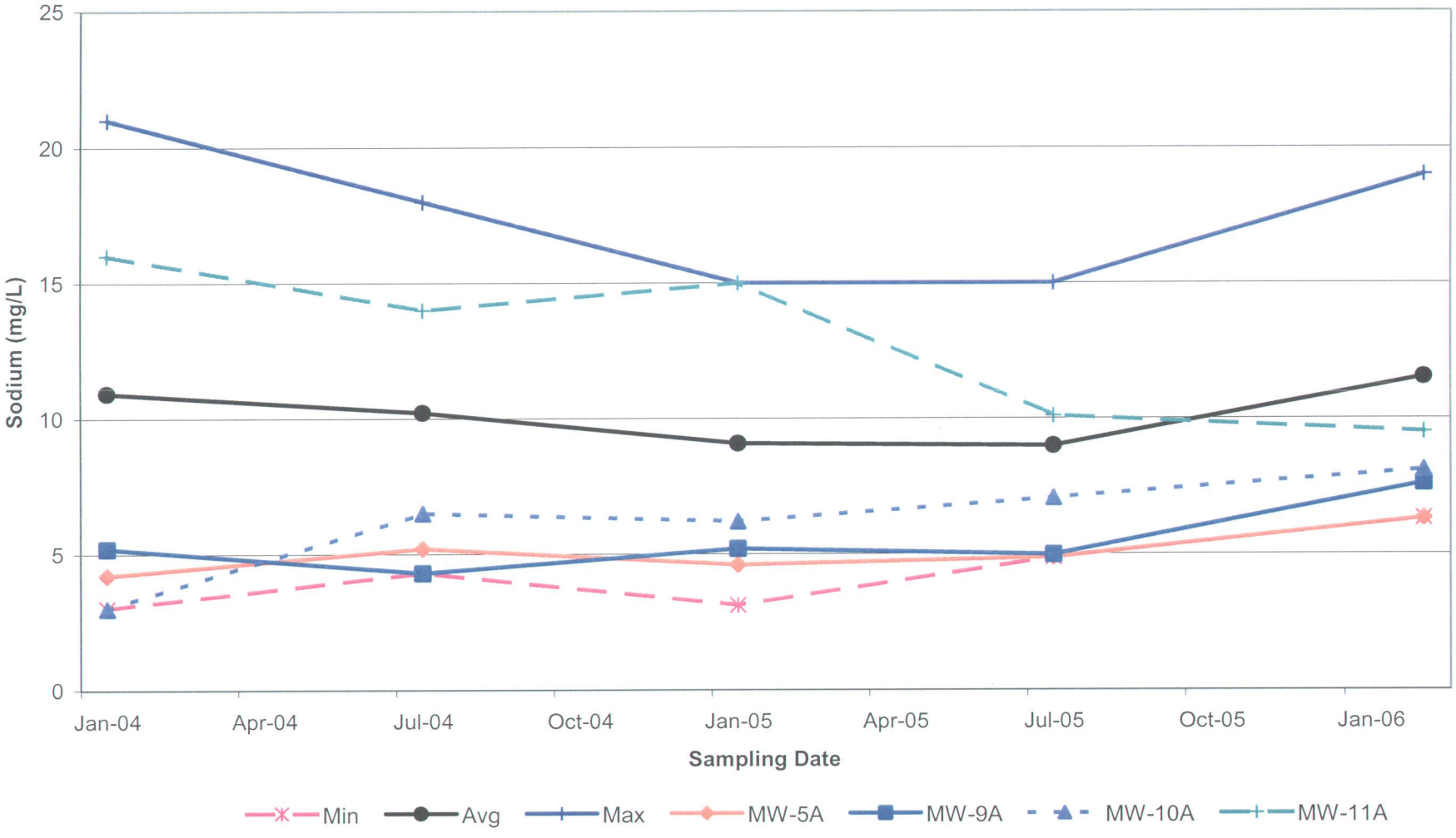


Figure 2
Sodium Concentrations Over Time in Zone A Wells



to decrease over time rather than increase. If leachate were impacting groundwater, the chloride concentration would be expected to increase as the reported chloride concentration in leachate (2,300 mg/L during January 2006) is almost two orders of magnitude higher than background chloride levels. Sodium concentrations over time (Figure 2) also indicate a non-leachate source as the reported concentrations of sodium in monitoring wells MW-5A, MW-9A, MW-10A, and MW-11A are within the range of the site average with little to no change over time.

Comment 9. The report did not offer an explanation for the results that are considered exceedances. Unless you can explain why the waste placed in the landfill could not have caused the exceedances, the Department must assume the exceedances are a result of landfill operations. Modeling or rough calculations using groundwater flow rates are ways to discount the probability that the landfill operations caused the exceedances. However, if the results are not due to the landfill, then the report should also discuss how these measurements should be used in determining the background concentrations of each parameter.

Response 9. Section 6 of the report discusses the parameters where the GWCTL was exceeded at a minimum of one well location for all monitoring events. Other than arsenic and ammonia, which have been addressed in responses 7 and 8 above, the only other parameters where the GWCTL was exceeded are chromium, vanadium, toluene, TDS, beryllium, iron, and lead. The detections of each of these parameters are addressed below.

Chromium..... The GWCTL for chromium (0.1 mg/L) was only exceeded in three wells (MW-7A, 7B and 4C) during the first semi-annual monitoring event performed in July 2004. The chromium concentrations in these three wells ranged between 0.12 and 0.17 mg/L. The turbidity levels for these three wells ranged between 1,184 NTU and 1,321 NTU. Filtered samples collected and analyzed for these three wells during the July 2004 event all had chromium concentrations below the GWCTL. Chromium was not detected in the leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event). It is Geosyntec's position that these three exceedances are attributable to the high turbidity levels and not associated with landfill operations.

Vanadium..... The GWCTL for vanadium (0.049 mg/L) was exceeded in two wells (MW-8B and MW-7C) during the baseline monitoring event and nine wells (MW-7A, 3B, 7B, 8B, 9B, 11B, 12B, 4C, and 7C) during the first semi-annual monitoring event performed in July 2004. Geosyntec will not focus on the two wells where the GWCTL was exceeded in the baseline monitoring event, since these samples were collected prior to the completion of Cell 1 construction and prior to the placement of any waste at the

facility. The vanadium concentrations for the nine wells in the first semi-annual monitoring event ranged between 0.051 and 0.27 mg/L. The turbidity levels for these nine wells ranged between 130 NTU and 1,321 NTU. Filtered samples collected and analyzed for these nine wells during the July 2004 event all had vanadium concentrations below the GWCTL. Vanadium was not detected in the leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event). It is Geosyntec's position that these nine exceedances are attributable to the high turbidity levels and not associated with landfill operations.

Toluene..... The GWCTL for toluene (40 µg/L) was exceeded in two wells (MW-2A and MW-5A) during the baseline monitoring event and two wells (MW-4A and 5A during the first semi-annual monitoring event performed in July 2004. Geosyntec will not focus on the two wells where the GWCTL was exceeded in the baseline monitoring event, since these samples were collected prior to the completion of Cell 1 construction and prior to the placement of any waste at the facility. The toluene concentrations for the two wells in the first semi-annual monitoring event ranged between 170 and 190 µg/L. Toluene was detected in the leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event) at a concentration of 5.2 µg/L. Based upon the toluene concentration in the leachate, it is highly unlikely that the leachate is the source of the toluene. It should be noted that toluene was also detected in Direct Push (DP) samples collected during the initial hydrogeological investigation associated with the permit application. Toluene is commonly found in petroleum products. The detections of the toluene exceeding the GWCTL have been limited to the shallow groundwater ("A" zone) monitoring wells and are likely the result of extensive heavy equipment usage during landfill construction and previous land use practices (e.g. sod farm). It is Geosyntec's position that these exceedances are not associated with landfill operations.

Total Dissolved Solids (TDS)..... The GWCTL for TDS (500 mg/L) was exceeded in ten wells (MW-2B, 3B, 6B, 7B, 8B, 12B, 13B, 4C, 6C, and 7C) during the baseline monitoring event, seven wells (MW-7A, 3B, 7B, 8B, 11B, 12B, and 7C) during the first semi-annual monitoring event performed in July 2004, and one well (MW-1A) during the third semi-annual monitoring event performed in July 2005. Geosyntec will not focus on the ten wells where the GWCTL was exceeded in the baseline monitoring event, since these samples were collected prior to the completion of Cell 1 construction and prior to the placement of any waste at the facility. The TDS concentrations for the seven wells in the first semi-annual monitoring event ranged between 530 and 1,800 mg/L. The turbidity levels for these seven wells ranged between 625 NTU and 1,321 NTU. The TDS concentration for MW-1A in the third semi-annual monitoring event was 5,900 mg/L. The turbidity for MW-1A was 0.5 NTU for this event. The TDS concentration in

the leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event) was 280 mg/L. Based upon the TDS concentration in the leachate, it is highly unlikely that the leachate is the source of the high TDS levels. It is Geosyntec's position that the exceedances encountered during the first semi-annual monitoring event are attributable to high turbidity levels and are not associated with landfill operations. The spike in TDS detected in MW-1A during the third semi-annual event appears to be a spurious result and not representative of TDS results for the same well during the other four monitoring events where the TDS ranged between 6 and 110 mg/L. The TDS of leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event where waste was placed) was 133 mg/L. This leachate data confirms that the spike in TDS is not attributable to the landfill operations.

Beryllium..... The GWCTL for beryllium (0.004 mg/L) was only exceeded in one well (MW-7A) during the first semi-annual monitoring event performed in July 2004. The beryllium concentration in this well was 0.0051 mg/L. The turbidity level for this well was 1,321 NTU. Beryllium was not detected in a filtered sample collected and analyzed for this well during the July 2004 event. Beryllium was not detected in the leachate sample collected from Cell 1 (the only cell constructed at the time of the monitoring event). It is Geosyntec's position that this exceedance is attributable to the high turbidity level and not associated with landfill operations.

Iron..... Exceedances of the GWCTL for iron in the State of Florida are quite common. A detailed study completed in 1992 and published by the Florida Geological Survey (Special Publication No. 34) showed that 428 of 569 samples from the "surficial aquifer systems" of the State had exceedances of the GWCTL for iron. This represents a little more than 75% of all samples collected. At the Oak Hammock site, all of the samples have exceeded the GWCTL for iron since well before any waste was placed at the facility. In non-turbid samples, the iron contained in groundwater is present predominantly in the reduced (ferrous) state. This is consistent with the dissolved oxygen results, which are typically less than 1 mg/L.

We would recommend a two-fold approach to establishing a background value for iron at the site. First, it must be demonstrated that the population of iron results from the background wells is not statistically different from the non-background wells. This can be done with the current data set using statistical tests such as the Wilcoxon Rank-Sum test. Once it has been established that the two populations (background and non-background) are statistically the same, it is recommended that these first 5 sampling events become the "background" data set against which future results are tested.

Lead..... The GWCTL for lead (0.015 mg/L) was exceeded in ten wells (MW-7A, 3B, 6B, 7B, 8B, 9B, 11B, 12B, 4C, and 7C) during the first semi-annual monitoring event performed in July 2004 and one well (MW-8B) during the third semi-annual monitoring event performed in July 2005. The lead concentrations for the ten wells in the first semi-annual monitoring event ranged between 0.019 and 0.13 mg/L. The turbidity levels for these ten wells ranged between 130 NTU and 1,321 NTU. Filtered samples collected and analyzed for these ten wells during the July 2004 event all had lead concentrations below the GWCTL. The lead concentration for MW-8B for the third semi-annual monitoring event performed in July 2005 was 0.02 mg/L. The turbidity level for this well was 157 NTU. Lead was not detected in the leachate samples collected from Cell 1 (the only cell constructed with waste at the time of the first and third monitoring events). It is Geosyntec's position that these exceedances are attributable to the high turbidity levels and not associated with landfill operations.

Sincerely,

Kirk Wills
Project Engineer

Attachments

cc: Matt Orr, WSI
Shawn McCash, WSI
Deborah Helle, FDEP

Department of Environmental Protection

Jeb Bush
Governor

Central District
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Colleen Castille
Secretary

BY ELECTRONIC MAIL
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December 4, 2006

Mr. Matthew Orr
Omni Waste of Osceola County, LLC
1501 Omni Way
St Cloud, FL 34773-9177

OCD-SW-06-0575

Osceola County - SW
Oak Hammock Landfill (J.E.D.) – Class I
Review of "First Biennial Water Quality Monitoring Report"

Dear Mr. Orr:

Based upon our review of the above referenced document from your consultant, Geosyntec, dated November 21, 2006 and received November 22, 2006, we have the following comments:

1. The longitudes on Table 2-1 do not appear to be correct.

2. The recommendation to evaluate the necessity of monitoring all three zones (A, B, C) of the surficial aquifer is acceptable.

3. The request to decrease the number of background wells is acceptable. However, since MW-2, MW-3, MW-4, and MW-5 all have shown exceedances of various parameters, they should be kept. MW-1 and MW-6 may be converted to piezometers. That way, if future sampling requires it, they can be sampled for analysis again.

4. On Page 11 it states, "The arsenic concentration for the MW-11A during the fourth semi-annual event was lower than the baseline event." Table 5-1 shows MW-11A with arsenic at 17 µg/l in the baseline event while it is 18 µg/l in the 4th event.

5. Submit the latitude and longitude of the surface water monitoring sites, SW-3 and SW-4.

6. Submit the latitude and longitude of the leachate sampling sites, L-1, L-2, L-3 and L-4.

7. Offer possible sources for the arsenic exceedances in MW-11A and MW-13A.

8. Offer possible sources for the ammonia exceedances in MW-5A, MW-9A, MW-10A and MW-11A.

9. The report did not offer an explanation for results that are considered exceedances. Unless you can explain why the waste placed in the landfill could not have caused the exceedances, the Department must assume the exceedances are the result of landfill operations. Modeling or rough calculations using ground water flow rates are ways to discount the probability that landfill operations caused the exceedances. However, if the results are not due to the landfill, then the report should also discuss how these measurements should be used in determining the background concentrations of each parameter.

Please respond to the above comments within 21 days of receiving this letter. Contact me at (407) 893-3320 or by e-mail at deborah.helle@dep.state.fl.us, if you have any questions.

Sincerely,

Deborah B. Helle, P.G.
Solid and Hazardous Waste

DBH/dh

cc: Kirk Wills, Geosyntec, KWills@geosyntec.com

Table 2-1 (Updated Latitude and Longitude)
(1 of 2)
Summary of Monitoring Well Construction Details
2006 Biennial Technical Report on Water Quality
Oak Hammock Disposal Facility
Osceola County, Florida

Well Designation	Latitude (NAD 1983)	Longitude (NAD 1983)	WACS ID	Date Installed	Top of Casing Elevation, TOC (feet)	Total Depth (feet BTOC)	Screen Setting				Sand Pack (feet BTOC)	Fine-Grained Sand Seal (feet BTOC)
							(feet BTOC)		(feet Elevation)			
							Top	Bottom	Top	Bottom		
MW-1A	28 03 48.55237	81 05 59.88988	19900	9-Dec-03	95.1	23.0	13.0	23.0	82.1	72.1	10.6	8.2
MW-2A	28 03 51.99121	81 05 59.90290	19903	10-Dec-03	95.2	22.6	12.6	22.6	82.6	72.6	10.3	8.9
MW-3A	28 03 55.34966	81 05 59.91070	19906	11-Dec-03	94.6	22.8	12.8	22.8	81.9	71.9	10.4	9.0
MW-4A	28 03 58.97960	81 05 59.92634	19909	12-Dec-03	95.5	23.1	13.1	23.1	82.4	72.4	10.8	9.4
MW-5A	28 04 02.92712	81 05 59.95455	19912	24-Nov-03	95.3	22.5	12.5	22.5	82.8	72.8	10.1	9.1
MW-6A	28 04 06.50569	81 05 59.15047	19915	25-Nov-03	94.7	22.6	12.6	22.6	82.2	72.2	10.6	8.6
MW-7A	28 04 07.13153	81 05 54.78246	19918	26-Nov-03	95.5	23.3	13.3	23.3	82.2	72.2	10.3	9.3
MW-8A	28 04 06.20263	81 05 50.64184	19921	5-Dec-03	94.7	22.5	12.5	22.5	82.2	72.2	10.2	8.6
MW-9A	28 04 04.34488	81 05 46.60414	19924	4-Dec-03	94.7	22.4	12.4	22.4	82.3	72.3	10.0	8.6
MW-10A	28 04 00.07961	81 05 44.77101	19927	3-Dec-03	96.3	22.1	12.1	22.1	84.1	74.1	9.8	7.6
MW-11A	28 03 55.43763	81 05 43.27192	19930	3-Dec-03	93.6	22.8	12.8	22.8	80.7	70.7	10.5	9.1
MW-12A	28 03 52.08212	81 05 43.26964	19933	2-Dec-03	95.1	23.0	13.0	23.0	82.1	72.1	10.7	9.3
MW-13A	28 03 48.67951	81 05 43.25265	19936	8-Dec-03	95.2	22.5	12.5	22.5	82.7	72.7	10.2	7.7
MW-14A	28 03 48.24109	81 05 48.72268	19939	1-Dec-03	85.9	15.4	5.4	15.4	80.5	70.5	4.4	4.1
MW-15A	28 03 48.01163	81 05 54.41367	19942	2-Dec-03	85.9	23.0	13.0	23.0	72.9	62.9	10.0	9.0
MW-1B	28 03 48.59293	81 05 59.89287	19901	9-Dec-03	95.0	47.9	37.9	47.9	57.1	47.1	35.6	33.1
MW-2B	28 03 51.94648	81 05 59.90141	19904	10-Dec-03	95.2	48.3	38.3	48.3	56.9	46.9	36.0	34.6
MW-3B	28 03 55.31620	81 05 59.91038	19907	11-Dec-03	94.7	47.6	37.6	47.6	57.1	47.1	35.3	33.9
MW-4B	28 03 59.01395	81 05 59.92626	19910	12-Dec-03	95.2	47.4	37.4	47.4	57.8	47.8	35.1	33.5
MW-5B	28 04 02.88442	81 05 59.95272	19913	24-Nov-03	95.3	47.1	37.1	47.1	58.2	48.2	34.4	32.7
MW-6B	28 04 06.48395	81 05 59.18668	19916	25-Nov-03	94.6	47.4	37.4	47.4	57.2	47.2	34.9	33.5
MW-7B	28 04 07.13241	81 05 54.81835	19919	26-Nov-03	95.3	47.5	37.5	47.5	57.8	47.8	34.5	33.5
MW-8B	28 04 06.19155	81 05 50.60157	19922	5-Dec-03	94.6	49.6	39.6	49.6	55.0	45.0	37.1	35.6
MW-9B	28 04 04.31561	81 05 46.56856	19925	4-Dec-03	94.6	49.1	39.1	49.1	55.5	45.5	36.8	35.3
MW-10B	28 04 00.04370	81 05 44.75597	19928	3-Dec-03	96.2	48.3	38.3	48.3	58.0	48.0	35.9	33.9
MW-11B	28 03 55.40161	81 05 43.27035	19931	2-Dec-03	93.6	47.9	37.9	47.9	55.7	45.7	35.5	34.0
MW-12B	28 03 52.05258	81 05 43.27057	19934	1-Dec-03	95.0	49.0	39.0	49.0	56.1	46.1	36.6	35.1
MW-13B	28 03 48.64209	81 05 43.24865	19937	8-Dec-03	95.1	47.2	37.2	47.2	58.0	48.0	34.8	33.4
MW-14B	28 03 48.24042	81 05 48.76307	19940	1-Dec-03	85.8	37.8	27.8	37.8	58.0	48.0	25.4	23.1
MW-15B	28 03 48.01397	81 05 54.36777	19943	2-Dec-03	85.7	48.4	38.4	48.4	47.3	37.3	35.4	34.4

Table 2-1 (Updated Latitude and Longitude)
(2 of 2)
Summary of Monitoring Well Construction Details
2006 Biennial Technical Report on Water Quality
Oak Hammock Disposal Facility
Osceola County, Florida

Well Designation	Latitude (NAD 1983)	Longitude (NAD 1983)	WACS ID	Date Installed	Top of Casing Elevation, TOC (feet)	Total Depth (feet BTOC)	Screen Setting				Sand Pack (feet BTOC)	Fine-Grained Sand Seal (feet BTOC)
							(feet BTOC)		(feet Elevation)			
							Top	Bottom	Top	Bottom		
MW-1C	28 03 48.63035	81 05 59.88771	19902	9-Dec-03	95.2	75.2	65.2	75.2	30.0	20.0	62.9	61.4
MW-2C	28 03 51.90933	81 05 59.89960	19905	10-Dec-03	95.3	68.4	58.4	68.4	36.9	26.9	56.1	53.7
MW-3C	28 03 55.28184	81 05 59.91057	19908	11-Dec-03	94.7	68.7	58.7	68.7	36.0	26.0	56.3	54.8
MW-4C	28 03 59.04962	81 05 59.92460	19911	12-Dec-03	95.4	72.5	62.5	72.5	32.9	22.9	61.2	59.6
MW-5C	28 04 02.83896	81 05 59.95012	19914	24-Nov-03	95.4	73.0	63.0	73.0	32.4	22.4	60.7	58.7
MW-6C	28 04 06.46143	81 05 59.22108	19917	25-Nov-03	94.6	73.2	63.2	73.2	31.4	21.4	60.2	57.7
MW-7C	28 04 07.13154	81 05 54.86282	19920	25-Nov-03	94.9	73.3	63.3	73.3	31.6	21.6	60.3	59.3
MW-8C	28 04 06.17680	81 05 50.55377	19923	5-Dec-03	94.5	73.9	63.9	73.9	30.6	20.6	61.6	59.8
MW-9C	28 04 04.29127	81 05 46.53756	19926	4-Dec-03	94.5	73.8	63.8	73.8	30.8	20.8	61.4	59.4
MW-10C	28 04 00.01254	81 05 44.74519	19929	3-Dec-03	96.4	73.7	63.7	73.7	32.7	22.7	61.4	60.0
MW-11C	28 03 55.36584	81 05 43.26899	19932	2-Dec-03	93.7	73.4	63.4	73.4	30.3	20.3	61.0	59.6
MW-12C	28 03 52.01775	81 05 43.26972	19935	1-Dec-03	95.1	73.6	63.6	73.6	31.5	21.5	60.2	58.7
MW-13C	28 03 48.60503	81 05 43.25049	19938	8-Dec-03	95.0	73.0	63.0	73.0	32.1	22.1	60.7	58.2
MW-14C	28 03 48.23868	81 05 48.80509	19941	26-Nov-03	85.9	62.2	52.2	62.2	33.7	23.7	48.9	45.9
MW-15C	28 03 48.01833	81 05 54.31989	19944	1-Dec-03	85.9	72.6	62.6	72.6	23.3	13.3	59.6	58.6

6. TREND ANALYSES

6.1 Overview

Section 4 presented a summary of the field-measured parameters and Section 5 provided a summary of the detected parameters, as compared to the regulatory criteria for groundwater, surface water, and leachate samples collected during the water quality monitoring events from January 2004 (Baseline) to February 2006. Exhibit I requires trend analyses to be completed for any monitoring parameters detected. For this report, only those field measured or detected parameters exceeding the regulatory criteria are addressed. Graphical plots of all field measured or detected parameters have been included in Appendix C. The subsequent sections present discussions of the visual trends for the parameters detected exceeding regulatory criteria for groundwater, surface water, and leachate samples.

6.2 Groundwater

Trend analyses have been completed for parameters that exceeded the GWCTL at a minimum of one well location for all monitoring events. These parameters include; arsenic, chromium, iron, vanadium, ammonia-N, toluene, total dissolved solids (TDS), beryllium, and lead. The results are discussed below for each parameter with respect to either the GWCTL or secondary drinking water standards (SDWS), whichever is applicable.

6.2.1 Arsenic

Figure 6-1 indicates that the GWCTL for arsenic (10 ug/L) was exceeded in at least one monitoring event for five (5) monitoring wells (MW-2C, 4C, 7C, 11A, and 13A). MW-2C, 4C and 7C all had arsenic concentrations slightly exceeding the GWCTL during the baseline or first semi-annual event and all three show a similar visual downward trend over the last three monitoring events. The turbidity levels for these three wells were well above the SDWS of 20 NTUs (350 to 1,130 NTUs) for the sampling event(s) that exceeded the arsenic GWCTL. A dissolved (filtered) sample from these three wells was analyzed for arsenic, and only MW-2C had a dissolved arsenic concentration above the GWCTL. Dissolved arsenic was non-detect in MW-4C and 7C. Arsenic was detected in MW-11A (17 ug/L) for the baseline monitoring event (performed prior to placement of any waste in landfill) which exceeded the GWCTL. The arsenic levels in MW-11A have varied between 16 and 31 ug/L with no obvious visual trend. The arsenic concentration for ~~the~~ MW-11A during the fourth semi-annual event was ~~lower~~ slightly higher than the baseline event. Arsenic has been detected in MW-13A for the last three monitoring

Oak Hammock Disposal Facility
Osceola County, Florida

Entered

Table 2-2 Surface Water Monitoring Geographic Locations		
Surface Water Monitoring Location	**Latitude (NAD 1983)**	**Longitude (NAD 1983)**
SW - 3	28 03 20.63973	81 04 33.16311
SW - 4	28 04 11.71727	81 06 01.16679

Table 2-3 Leachate Sampling Sites Geographic Locations		
Leachate Sampling Site Location	**Latitude (NAD 1983)**	**Longitude (NAD 1983)**
L - 1	28 04 06.29227	81 05 40.08305
L - 2	28 04 04.14722	81 05 46.75141
L - 3	28 03 55.34894	81 05 43.54716
L - 4	28 03 55.33060	81 05 59.59289

Williams, Elizabeth

From: Bradner, James
Sent: Tuesday, January 02, 2007 11:16 AM
To: KWills@Geosyntec.com
Cc: MOrr@wasteservicesinc.com; SMcCash@wasteservicesinc.com; AGupta@Geosyntec.com; Helle, Deborah; DePradine, Gloria-Jean; Williams, Elizabeth
Subject: RE: Response to FDEP Comments Concerning Biennial Water Quality Report

Good morning, Kirk:

As we discussed by telephone this morning, January 5 is acceptable. Call or send a reply by email if you have further questions.

Thanks,

Jim

James N. Bradner, P.E.
Manager, Solid and Hazardous Waste Program
Central District
Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767
Phone: 407-893-3329
Fax: 407-893-3167
SunCom: 325-3329
Central District Switchboard: 407-894-7555
Email: James.Bradner@floridadep.net
Web Site: www.dep.state.fl.us

From: KWills@Geosyntec.com [mailto:KWills@Geosyntec.com]
Sent: Tuesday, January 02, 2007 11:01 AM
To: Bradner, James
Cc: MOrr@wasteservicesinc.com; SMcCash@wasteservicesinc.com; AGupta@Geosyntec.com
Subject: Response to FDEP Comments Concerning Biennial Water Quality Report

Jim,

We received a copy of Ms. Deborah Helle's comments concerning the Oak Hammock Biennial Water Quality Technical Report, dated 4 December 2006. The letter requested that responses be submitted within 21 days of receipt of the letter. Due to the scheduled vacations of our office personnel around the Holidays we would like to request some additional time to respond to the comments. Responses can be forwarded to the Department by the fifth of January 2007. Please let me know if this is acceptable to the Department.

Thank You!

Kirk

Kirk Wills
Project Engineer

14055 Riveredge Drive
Suite 300
Tampa, Florida 33637
Phone: (813) 558-0990
Fax: (813) 558-9726
Mobile: (813) 918-4732

Geosyntec consultants

Williams, Elizabeth

From: Matt Orr [MOrr@wasteservicesinc.com]
To: Williams, Elizabeth
Sent: Monday, December 04, 2006 9:51 AM
Subject: Read: Oak Hammock Landfill review of first biennial water quality monitoring report ltr 0575

Your message

To: MOrr@wasteservicesinc.com
Subject:

was read on 12/4/2006 9:51 AM.

Department of Environmental Protection

Jeb Bush
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Colleen Castille
Secretary

BY ELECTRONIC MAIL
morr@wasteservicesinc.com

December 4, 2006

Mr. Matthew Orr
Omni Waste of Osceola County, LLC
1501 Omni Way
St Cloud, FL 34773-9177

OCD-SW-06-0575

Osceola County - SW
Oak Hammock Landfill (J.E.D.) – Class I
Review of "First Biennial Water Quality Monitoring Report"

Dear Mr. Orr:

Based upon our review of the above referenced document from your consultant, Geosyntec, dated November 21, 2006 and received November 22, 2006, we have the following comments:

1. The longitudes on Table 2-1 do not appear to be correct.

2. The recommendation to evaluate the necessity of monitoring all three zones (A, B, C) of the surficial aquifer is acceptable.

3. The request to decrease the number of background wells is acceptable. However, since MW-2, MW-3, MW-4, and MW-5 all have shown exceedances of various parameters, they should be kept. MW-1 and MW-6 may be converted to piezometers. That way, if future sampling requires it, they can be sampled for analysis again.

4. On Page 11 it states, "The arsenic concentration for the MW-11A during the fourth semi-annual event was lower than the baseline event." Table 5-1 shows MW-11A with arsenic at 17 µg/l in the baseline event while it is 18 µg/l in the 4th event.

5. Submit the latitude and longitude of the surface water monitoring sites, SW-3 and SW-4.

6. Submit the latitude and longitude of the leachate sampling sites, L-1, L-2, L-3 and L-4.

7. Offer possible sources for the arsenic exceedances in MW-11A and MW-13A.

8. Offer possible sources for the ammonia exceedances in MW-5A, MW-9A, MW-10A and MW-11A.

9. The report did not offer an explanation for results that are considered exceedances. Unless you can explain why the waste placed in the landfill could not have caused the exceedances, the Department must assume the exceedances are the result of landfill operations. Modeling or rough calculations using ground water flow rates are ways to discount the probability that landfill operations caused the exceedances. However, if the results are not due to the landfill, then the report should also discuss how these measurements should be used in determining the background concentrations of each parameter.

Please respond to the above comments within 21 days of receiving this letter. Contact me at (407) 893-3320 or by e-mail at deborah.helle@dep.state.fl.us, if you have any questions.

Sincerely,

Deborah B. Helle, P.G.
Solid and Hazardous Waste

DBH/dh

cc: Kirk Wills, Geosyntec, KWills@geosyntec.com

Geosyntec
consultants
engineers | scientists | innovators

14055 Riveredge Drive, Suite 300
Tampa, FL 33637
PH: 813-558-0990
FAX: 813-558-9726
www.geosyntec.com

21 November 2006

Mr. James N. Bradner, P.E.
Manager, Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: First Biennial Water Quality Monitoring Report
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.SO49-0199726-002

Dear Mr. Bradner:

Transmitted herewith are two copies of the subject report. GeoSyntec Consultants has prepared the biennial report on behalf of Omni Waste of Osceola County, LLC (Omni). If you have questions or need additional information, please do not hesitate to contact the undersigned at 813 558 0990.

Sincerely,

Kirk Wills
Project Manager

Copy: M. Orr, WSI
S. McCash, WSI

GEOSYNTEC CONSULTANTS

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

29 September 2006

Ms. Deborah B. Helle, P.G.
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Fifth Semi-Annual Water Quality Monitoring
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.SO49-0199726-002

Dear Ms. Helle:

Forwarded herewith for your review and records are two copies of the subject report. If you have questions or need additional information, please do not hesitate to contact the undersigned at 813 558 0990.

Sincerely,

Kirk Wills
Project Manager

Copy: M. Orr, WSI
S. McCash, WSI

GD

GEOSYNTEC CONSULTANTS

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

28 June 2006

Mr. James N. Bradner, P.E.
Program Manager, Solid/Hazardous Waste
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: 5th Semi-Annual Water Quality Sampling Event
Oak Hammock Disposal Facility (OHDF)
Omni Waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-001 and SO49-0199726-002

Dear Mr. Bradner:

The purpose of this letter is to inform the Florida Department of Environmental Protection that the sampling of 45 groundwater monitoring wells, 2 surface water samples and 3 leachate sumps around Phase 1 of the OHDF is expected to commence on 17 July 2006 and will be performed over a period of approximately 2 weeks. This will be the fifth semi-annual sampling event after completion of construction of Cell 1 (in Phase 1 development) of the facility.

If you have any questions or need additional information, please contact the undersigned.

Sincerely,

Kirk Wills
Project Engineer

cc: S. McCash, WSI

GEOSYNTEC CONSULTANTS

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

10 May 2006

Ms. Deborah B. Helle, P.G.
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Fourth Semi-Annual Water Quality Monitoring
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.SO49-0199726-002

Dear Ms. Helle:

Forwarded herewith for your review and records are two copies of the subject report. If you have questions or need additional information, please do not hesitate to contact the undersigned at 813 558 0990.

Sincerely,

for Kirk Wills
Assistant Project Manager

Copy: M. Orr, WSI
S. McCash, WSI

GeoSyntec Consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

10 January 2006

Mr. James N. Bradner, P.E.
Program Manager, Solid/Hazardous Waste
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: 4th Semi-Annual Water Quality Sampling Event
Oak Hammock Disposal Facility (OHDF)
Omni Waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-001 and SO49-0199726-002

Dear Mr. Bradner:

The purpose of this letter is to inform the Florida Department of Environmental Protection that the sampling of 45 groundwater monitoring wells and 2 surface water samples around Phase 1 of the OHDF is expected to commence on 23 January 2006 and will be performed over a period of approximately 2 weeks. This will be the fourth semi-annual sampling event after completion of construction of Cell 1 (in Phase 1 development) of the facility.

If you have any questions or need additional information, please contact the undersigned.

Sincerely,

A Gupta

for Kirk Wills
Asst. Project Engineer

cc: S. McCash, WSI

WQ Sampling Notice

GEOSYNTEC CONSULTANTS

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

27 December 2005

Ms. Deborah B. Helle, P.G.
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Third Semi-Annual Water Quality Monitoring
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.sO49-0199726-002

Dear Ms. Helle:

Forwarded herewith for your review and records are two CDs containing the required tab-delimited files for the Validator program. If you have questions or need additional information please do not hesitate to contact the undersigned at 813 558 0990.

Sincerely,

Kirk Wills
Assistant Project Manager

Copy: M. Orr, WSI
S. McCash, WSI

GeoSyntec Consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

9 November 2005

Ms. Deborah B. Helle, P.G.
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Third Semi-Annual Water Quality Monitoring
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.SO49-0199726-002

Dear Ms. Helle:

Forwarded herewith for your review and records is a copy of the water quality monitoring report for the August 2005 semi-annual sampling event. It should be noted that the files for a Validator program are not included in this report. We will provide the files to Mr. Randall Cunningham as soon as we get them from the lab. If you have questions or need additional information please do not hesitate to contact the undersigned at 813 558 0990.

Sincerely,

Kirk Wills
Assistant Project Manager

GeoSyntec Consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

05 July 2005

Mr. Randall Cunningham
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Revised Semi-Annual Water Quality Monitoring Data
Oak Hammock Disposal Facility, WACS Facility ID: 89544
Permit No.SO49-0199726-002

Dear Mr. Cunningham:

Forwarded herewith for your review and records are two data CDs for the semi-annual water quality monitoring events performed in July 2004 (1st semi-annual event) and January 2005 (2nd semi-annual event). Corrections of the files have been made using a Validator program (version 3.7.49 'Miami') downloaded from the FDEP web site. If you have questions or need additional information, please do not hesitate to contact the undersigned at (813) 558 0990.

Sincerely,

Kirk Wills
Assistant Project Engineer

Attachments
Copy: Mr Lenny Marion, Omni Waste

GeoSyntec Consultants

14055 Riveredge Drive, Suite 300
Tampa, Florida 33637
Tel. 813.558.0990 • Fax 813.558.9726

24 March 2005

Ms. Deborah B. Helle, P.G.
Solid/Hazardous Waste
Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Second Semi-Annual Water Quality Monitoring
Oak Hammock Disposal Facility, WACS Facility ID: 89455
Permit No.SO49-0199726-002

Dear Ms. Helle:

Forwarded herewith for your review and records are two copies of the subject report. If you have questions or need additional information please do not hesitate to contact the undersigned or Mr. Kirk Wills at 813 558 0990.

Sincerely,

Kenneth W. Cargill, P.E.
Principal

Copy: Mr Lenny Marion, Omni Waste

Osceola County SW
Oak Hammock LF

DATA PACKAGE REGARDING MONITORING WELL INSTALLATION AND DEVELOPMENT

Prepared for:

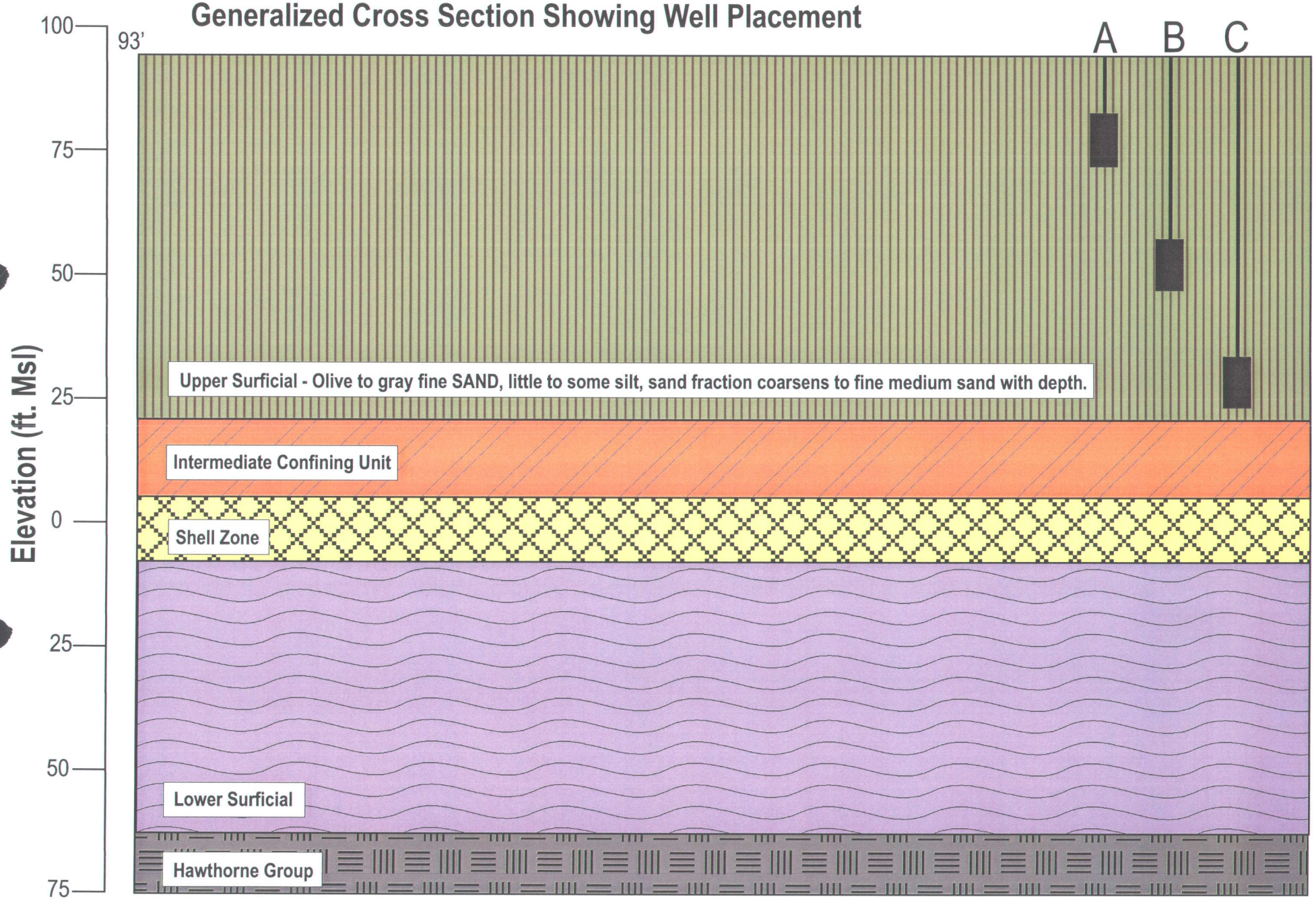
Meeting with FDEP
January 12, 2004

Prepared by:

GEOSYNTEC CONSULTANTS

14055 Riveredge Dr., Suite 300
Tampa, FL 33637

January 2004


Generalized Cross Section Showing Well Placement
100
93'
75
50
25
0
25
50
75
Elevation (ft. Msl)
A
B
C
Upper Surficial - Olive to gray fine SAND, little to some silt, sand fraction coarsens to fine medium sand with depth.
Intermediate Confining Unit
Shell Zone
Lower Surficial
Hawthorne Group

EXCERPTS FROM HYDROGEOLOGIC INVESTIGATION REPORT

KUBAL-FURR & ASSOCIATES

APRIL 2002

sand cap (30/45 sand) and the remaining annular space was pressure grouted with a tremie line back to land surface. The piezometers were finished at the surface with an approximate 3-ft stick up inside a locked, protective steel casing. A summary of the piezometer construction details is provided in Table 1 and shown graphically in the boring logs contained in Attachment 1.

Each piezometer was developed by alternately pumping and surging with a submersible pump in an attempt to obtain a clear discharge. Because the upper surficial aquifer beneath the site consists principally of fine to medium silty sands, a number of piezometers (16 out of 24 in the upper surficial, and 1 out of 3 in the shell zone) remained turbid even after an extended period of development. While the turbidity did not compromise the piezometers use to accurately measure water levels, it did require that several ground-water samples collected for general, background water-quality information be filtered in the laboratory and run for dissolved as well as total metals. As described in the water-quality monitoring plan, the piezometers will be replaced by monitor wells installed around the first phase of the landfill for the purpose of obtaining high quality ground-water samples to establish background water quality. These wells will be installed and sampled during landfill construction and prior to the site receiving any waste.

3.3 Physical Testing of Formation Materials

Two Shelby tube samples were collected from the Hawthorn Group and three from the first confining unit/clay layer (intermediate clay) encountered beneath the site. A Shelby tube of the Hawthorn was pushed from 145-ft to 147-ft bls at sonic boring location SB-2 and from 155-ft to 157-ft at sonic boring location SB-3. A Shelby tube was also pushed at sonic boring location SB-1 from 175-ft to 177ft, but the tube was crushed during pushing and produced no useable sample.

Shelby tube samples were also collected from the locations where shell zone piezometers were installed. These included samples from 66-ft to 68-ft at SZ-1, from 60-ft to 62-ft at SZ-2, and from 64-ft to 66-ft at SZ-3. All Shelby tube samples were delivered to PSI Laboratories in Tampa for testing of vertical permeability in a back pressure permeameter.

The vertical permeabilities of the Hawthorn Group samples ranged from 4.49×10^{-6} cm/sec at SB-2 to 3.65×10^{-7} cm/sec at SB-3. Vertical permeabilities of the intermediate clay ranged from 3.03×10^{-4} cm/sec at SZ-2 to 6.27×10^{-7} cm/sec at SZ-3. Complete results of the vertical permeability testing by PSI Laboratories is contained in Attachment 2.

from this well, which is located approximately 3800-ft northeast of the landfill (Table 4). This well provided essentially all of the water used for drilling, piezometer installation, grouting and rig clean-up.

No volatile or semivolatile constituents were reported as present in the Ganarelli Ranch (GSW) well sample. The Boart and Precision Mobile Combo samples reportedly contained low levels of several disinfection by-products including bromodichloromethane, dibromochloromethane and chloroform, none of which exceeded any applicable water-quality standard or MCL. These constituents are typically found in chlorinated, municipal water supplies and were not unexpected. The Boart rig and one of the Precision Mobile Combo rigs (Prec. Mob. Combo Rig) also contained low levels of bis(2-ethylhexyl)phthalate, possibly from the fire hose used to fill the Boart water truck and either the hose or polyethylene storage tank used by Precision. Neither of the reported bis(2-ethylhexyl)phthalate results were above the MCL.

The analytical results for all drilling water samples are contained in Attachment 4 along with a data assessment summary, sampling logs, and chains of custody. A summary of the constituents detected in the drilling water samples is provided in Table 4.

3.6.2 Ground Water

In order to establish general, site-wide ground-water quality conditions in the upper surficial aquifer, piezometers distributed across the site were sampled using low-flow sampling techniques. Ten water samples (five each from the upper surficial aquifer A- and C-zones) and 1 duplicate were collected from piezometers DP-1, DP-2, DP-9, DP-10, DP-11, DP-12, DP-18, DP-19, DP-19 Dupe, DP-22 and DP-23. The samples were analyzed in the field for pH, temperature, conductivity, oxidation/reduction potential (ORP), dissolved oxygen and turbidity; and, in the laboratory (Accutest Laboratories) for total and dissolved metals, nitrates, volatile organics and semivolatile organics, herbicides and pesticides. The nitrates, herbicides and pesticides were analyzed specifically to assess any impacts to ground water from operation of the former sod farm which occupied the site.

As noted earlier, many piezometers remained turbid after development. In general, the A-zone and the shell zone piezometers developed out best but 17 of 27 piezometers remained turbid even after an extended period of development. Although the field indicator parameters stabilized in all of the piezometers sampled during low-flow purging, the turbidities remained above 20 NTUs in

most piezometers and it required that eight of the ten ground-water samples collected for general, background water-quality information be filtered in the laboratory and analyzed for dissolved metals as well as total metals. Piezometers DP-2 and DP-19, both A-zone (15-ft) piezometers, produced the samples with the lowest turbidities and were analyzed only for total metals.

The analytical results for all ground-water samples are contained in Attachment 4 along with a data assessment summary, sampling logs, and chains of custody. A summary of the constituents detected in the ground-water samples is provided in Table 5.

3.6.3 Surface Water

Surface water samples were collected in an attempt to establish background surface water quality at four locations (plus one duplicate). Three sampling locations were situated along Bull Creek (SW-1, SW-3 and SW-4) and one was located along an unnamed tributary to Bull Creek (SW-2) where it enters OMNI property (Figure 14). At the time the surface water samples were collected, there was no flow in either Bull Creek or the unnamed tributary. The surface water samples and results, therefore, represent standing, rather than flowing, surface water conditions.

All surface water samples were analyzed for the parameters specified in Chapter 62-701.510(8)(b), F.A.C. The analytical results for all surface water samples are contained in Attachment 4 along with a data assessment summary, sampling logs and chains of custody. A summary of constituents detected in the surface water samples is provided in Table 6.

3.7 Water Well Inventory

No potable water wells are located within 500-ft of the landfill footprint (Chapter 62-701-300(2)(c), F.A.C.) nor are there any potable water wells serving a community water system within 1000-ft (Chapter 62-702.300(2)(h), F.A.C.) of the footprint. A request was made of the South Florida Water Management District (SFWMD) to search its GIS system and database to identify any public or private water wells within a one mile radius of the limit of waste as provided in Chapter 62-701.410(1)(b), F.A.C.

The SFWMD has no record of any wells within this one-mile search radius although three water supply wells are known to exist within a mile of the limit of waste (Figure 14). Two of these wells (GSW and GANN) are located approximately 3800-ft northeast of the landfill footprint on

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-1
Weather Condition SUNNY - 70's

Sample Date 12/3/01 Arrival Time 0950 Sample Time 1130

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1021 Purge Stop Time 1126 Purge Rate ~~~300~~ GTK ml/min 250ml/min

Water-Level Measurements

Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F) °C	Specific Conductance ~~umhos/cm~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.62	0	0	—	—	—	—	—	—
1	5	5.66	1	5	24.0	0.079	4.91	281.0	0.22	93
2	10	5.66	2	10	24.0	0.075	4.90	340.0	0.33	84
3	15	5.66	3	15	24.1	0.071	4.90	430.0	0.42	78
4	20	5.66	4	20	24.0	0.069	4.87	239	0.08	75
5	25	5.66	5	25	24.0	0.069	4.87	294	0.11	74
6	30	5.66	6	30	23.9	0.068	4.86	*999.0	0.09	72
7	35	5.66	7	35	23.9	0.067	4.87	*999.0	0.00	71
8	40	5.66	8	40	24.0	0.067	4.88	*999.0	0.00	71
9	45	5.66	9	45	24.0	0.067	4.88	837	0.00	71
10	50	5.66	10	50	24.0	0.067	4.89	787	0.04	71
11	55	5.66	11	55	24.3	0.067	4.88	621	0.07	71
12	60	5.66	12	60	24.3	0.067	4.89	683	0.10	71
13	65	5.66	13	65	24.1	0.067	4.87	677	0.09	70
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOC - 8260	3 x 40ml VOA	HCl
SVOC - 8270	2 x 1L AMBER JAR	NONE
METALS	1 x 1L PLASTIC BOTTLE	HNO_3
ANIONS	1 x 500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2 x 1L AMBER JAR	NONE

Remarks * FLASHING READING OF 999.0 - IN MANUAL EXPLANATION IS SENSOR NEEDS CLEANING + CALIBRATION, - WILL RE-CALIBRATE BEFORE NEXT WELL. (READING MIGHT BEEN OUT OF RANGE) - TURBID WATER

TOTAL PURGED ~56

Parameter Conditions: pH +/- 0.1 standard unit COND +/- 3% DO +/- 10%
Turbidity +/- 10% above 10 NTU +/- 1 NTU below 10 NTU ORP +/- 10mV

OOPS

ACID. - 8151 — 2 x 1L AMBER JAR — NONE
DISS. METALS — 1 x 1L PLASTIC BOTTLE — NONE
Total purge: ≈5 gallons

GTK

~~BUCC - Augusta Chemical Ground Water Sampling Log~~

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-2
Weather Condition SUNNY- 80

Sample Date 12/3/01 Arrival Time 0950 Sample Time 1340

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1227 Purge Stop Time 1335 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°C)	Specific Conductance ~~(µmhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.35	0	0	—	—	—	—	—	—
1	5	5.47	1	5	24.3	0.071	4.71	65.7	0.70	62
2	10	5.48	2	10	24.3	0.070	4.70	30.0	0.46	56
3	15	5.48	3	15	24.4	0.071	4.71	17.1	~~0.46~~	51 → 0.28
4	20	5.48	4	20	24.4	0.070	4.73	10.8	0.46	47
5	25	5.48	5	25	24.5	0.070	4.73	18.3	0.24	43
6	30	5.48	6	30	24.4	0.070	4.73	10.1	0.18	42
7	35	5.48	7	35	24.3	0.070	4.74	-9.2	0.23	39
8	40	5.48	8	40	24.3	0.070	4.75	-5.0	0.23	37
9	45	5.48	9	45	24.3	0.070	4.77	65.1	0.24	34
10	50	5.48	10	50	24.3	0.070	4.77	79.2	0.17	34
11	55	5.48	11	55	24.2	0.070	4.78	35.8	0.14	33
12	60	5.48	12	60	24.2	0.070	4.77	41.1	0.12	33
13	65	5.48	13	65	24.3	0.069	4.78	41.9	0.13	31
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs 8260	3 x 40ml	HCl
SVOCs 8270	2 x 1L AMBER JAR	NONE
METALS	1 x 1L PLASTIC BOTTLE	HNO_3
ANIONS	1 x 500ml PLASTIC BOTTLE	NONE
PEST- 8081	2 x 1L AMBER JAR	NONE

Remarks NO DISSOLVED METALS SAMPLED - TURBIDITY WAS LOW - LESS THAN 50 NTU
TOTAL PURGED ~56

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

HERB - 8151 — 2x 1L AMBER JAR — NONE

~~DISS. METALS~~ GTK — ~~1x 1L PLASTIC BOTTLE~~ GTK — ~~NONE~~ GTK GTK

~~DUGG - Augusta Chemical Ground-Water Sampling Log~~

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-10
Weather Condition SUNNY - 80°F

Sample Date 12/3/01 Arrival Time 1423 Sample Time 1522

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1433 Purge Stop Time 1520 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F/C)	Specific Conductance (~~µmhos/cm~~ mS/cm)	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.08	0	0	—	—	—	—	—	—
1	5	5.21	1	5	24.0	0.129	5.35	*999.0	1.16	-2
2	10	5.19	2	10	24.0	0.135	5.46	*999.0	2.04	-20
3	15	5.19	3	15	24.1	0.134	5.47	*999.0	0.86	-26
4	20	5.19	4	20	24.1	0.134	5.45	*999.0	0.38	-27
5	25	5.20	5	25	24.1	0.134	5.47	*999.0	0.64	-29
6	30	5.21	6	30	24.1	0.134	5.46	*999.0	0.63	-29
7	35	5.21	7	35	24.0	0.133	5.45	*999.0	1.20	-29
8	40	5.21	8	40	24.0	0.132	5.44	*999.0	1.16	-27
9	45	5.20	9	45	24.0	0.130	5.43	*999.0	1.08	-25
10			10							
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs 8260	3 x 40ml VOA	HCl
SVOCs 8270	2 x 1L AMBER JAR	NONE
METALS	1 x 1L PLASTIC BOTTLE	HNO_3
ANIONS	1 x 500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2 x 1L AMBER JAR	NONE

Remarks *FLASHING 999.0 - READING OUT OF RANGE - WILL RE-CALIBRATE BEFORE NEXT WELL - TURBID WATER

TOTAL PURGED ~46

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

CONT.

HERB. - 8151	2 x 1L AMBER JAR	NONE
DISS. METALS	1 x 1L PLASTIC BOTTLE	NONE

GTK

~~BUGG - Augusta Chemical Ground Water Sampling Log~~

OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-22
Weather Condition SUNNY - 80
Sample Time 1650

Sample Date 12/3/01 Arrival Time 1609

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1613 Purge Stop Time 1640 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°C)	Specific Conductance ~~(umhos/cm)~~	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	4.57	0	0	—	—	—	—	—	—
1	5	4.78	1	5	23.7	0.102	5.23	672.0	0.28	23
2	10	4.74	2	10	23.7	0.101	5.22	638.0	0.14	19
3	15	4.74	3	15	23.7	0.101	5.26	652	0.07	14
4	20	4.75	4	20	23.7	0.101	5.25	645	0.05	12
5	25	4.75	5	25	23.7	0.101	5.26	682	0.05	10
6	30	4.75	6	30	23.7	0.101	5.26	694	0.04	9
7			7							
8			8							
9			9							
10			10							
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs - 8260	3 x 40ml VOA	HCl
SVOCs - 8270	2 x 1L AMBER JAR	NONE
METALS	1 x 1L PLASTIC BOTTLE	HNO_3
ANIONS (NITRATE)	1 x 500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2 x 1L AMBER JAR	NONE

Remarks TURBID WATER

TOTAL PURGED ~ 2.5 G

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

(cont)

HERB. - 8151 — 2 x 1L AMBER JAR — NONE

DISS. METALS — 1 x 1L PLASTIC BOTTLE — NONE

~~BUCS - Augusta Chemical Ground Water Sampling Log~~

OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 480H01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-9
Weather Condition SUNNY-70s
Sample Date 12/4/01 Arrival Time 0725 Sample Time 0905

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 0753 Purge Stop Time 0859 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F)	Specific Conductance ~~(umhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	4.96	0	0	—	—	—	—	—	—
1	5	5.05	1	5	22.6	0.364	6.40	17.3	0.39	-47
2	10	5.05	2	10	22.6	0.351	6.40	31.8	0.31	-56
3	15	5.05	3	15	22.7	0.312	6.28	114.0	0.81	-52
4	20	5.06	4	20	22.7	0.241	6.01	225.0	0.81	-33
5	25	5.06	5	25	22.8	0.223	5.88	301.0	0.72	-27
6	30	5.06	6	30	22.9	0.218	5.85	421.0	0.70	-27
7	35	5.08	7	35	23.1	0.212	5.80	*999.0	0.64	-23
8	40	5.09	8	40	23.2	0.218	5.80	*999.0	0.56	-18
9	45	5.08	9	45	23.3	0.217	5.79	*999.0	0.49	-17
10	50	5.08	10	50	23.4	0.216	5.79	*999.0	0.44	-17
11	55	5.09	11	55	23.5	0.215	5.78	*999.0	0.11	-16
12	60	5.09	12	60	23.5	0.211	5.77	*999.0	0.05	-16
13	65	5.09	13	65	23.6	0.209	5.75	*999.0	0.13	-16
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs - 8260	3x40ml	HCl
SVOCs - 8270	2x1L AMBER JAR	NONE
METALS (TOTAL)	1x1L PLASTIC BOTTLE	HNO_3
ANIONS (NITRATE)	1x500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2x1L AMBER JAR	NONE

Remarks: * FLASHING 999.0 ON METER - READING OUT OF RANGE. WATER HAS GOTTEN MORE TURBID AS PUMPING CONTINUED, - TURBID WATER

DO FLUCTUATING - DECIDED TO SAMPLE TOTAL PURGED ~5G

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

HERB - 8151 — 2x1L AMBER JAR — NONE
DISS. METALS — 1x1L PLASTIC BOTTLE — NONE

~~SUGG - Augusta Chemical Ground Water Sampling Log~~
OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-23
Weather Condition SUNNY 80

Sample Date 12/4/01 Arrival Time 0952 Sample Time 1040

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1002 Purge Stop Time 1035 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F/C)	Specific Conductance ~~(mmhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	4.27	0	0	—	—	—	—	—	—
1	5	4.41	1	5	23.8	0.203	5.86	901.0	0.57	-11
2	10	4.42	2	10	23.8	0.195	5.82	983.0	0.25	-13
3	15	4.41	3	15	23.8	0.180	5.73	*999.0	0.11	-6
4	20	4.42	4	20	23.8	0.176	5.69	*999.0	0.07	-5
5	25	4.42	5	25	23.8	0.175	5.68	*999.0	0.08	-7
6	30	4.41	6	30	23.8	0.174	5.66	*999.0	0.08	-8
7			7							
8			8							
9			9							
10			10							
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs 8260	3 X 40ml	HCl
SVOCs 8270	2 x 1L AMBER JAR	NONE
METALS (TOTAL)	1x 1L PLASTIC BOTTLE	HNO_3
ANIONS (NITRATE)	1X500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2 X 1L AMBER JAR	NONE

Remarks *FLASHING 999.0 ON HORIBA - TURBIDITY OUT OF RANGE - TURBID WATER

TOTAL GALLONS PURGED ~36

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

(cont)

HERB - 8151	2X1L AMBER JAR	NONE
DISS. METALS	1X1L PLASTIC BOTTLE	NONE

~~BUCC - Augusta Chemical Ground Water Sampling Log~~
OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-12
Weather Condition SUNNY - 80's

Sample Date 12/4/01 Arrival Time 1142 Sample Time 1240

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1146 Purge Stop Time 1236 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F/C)	Specific Conductance ~~(umhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.45	0	0	—	—	—	—	—	—
1	5	5.53	1	5	24.3	0.186	5.55	473.0	2.34	-40
2	10	5.52	2	10	24.4	0.182	5.52	447.0	1.89	-41
3	15	5.52	3	15	24.4	0.180	5.52	443.0	1.80	-43
4	20	5.52	4	20	24.4	0.174	5.49	388.0	1.51	-42
5	25	5.52	5	25	24.4	0.172	5.46	368.0	1.26	-41
6	30	5.52	6	30	24.4	0.167	5.44	332.0	0.97	-40
7	35	5.53	7	35	24.3	0.168	5.44	326.0	0.79	-41
8	40	5.52	8	40	24.4	0.160	5.39	301.6	0.63	-39
9	45	5.52	9	45	24.4	0.159	5.38	290.0	0.57	-39
10	50	5.53	10	50	24.3	0.158	5.39	285.0	0.56	-39
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs - 8260	3x40ML	HCl
SVOCs - 8270	2x1L AMBER JAR	NONE
METALS (TOTAL)	1x 1L PLASTIC BOTTLE	HNO_3
ANIONS (NITRATE)	1x500ML PLASTIC BOTTLE	NONE
PEST. - 8081	2x1L AMBER JAR	NONE

Remarks TURBID WATER

TOTAL PURGED ~46

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

(CONT)

HERB. - 8151	2x1L AMBER JAR	NONE
DISS. METALS	1x 1L PLASTIC BOTTLE	NONE

~~BUGE - Augusta Chemical Ground-Water Sampling Log~~

OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-11
Weather Condition PARTLY SUNNY - 80's

Sample Date 12/4/01 Arrival Time 1142 Sample Time 1405

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1328 Purge Stop Time 1359 Purge Rate ~250 ml/min

Water-Level Measurements

Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°C)	Specific Conductance ~~(mmhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.58	0	0	—	—	—	—	—	—
1	5	5.67	1	5	24.2	0.131	5.59	*999.0	0.90	-9
2	10	5.66	2	10	24.3	0.131	5.59	*999.6	0.47	-11
3	15	5.66	3	15	24.2	0.129	5.56	*999.0	0.42	-11
4	20	5.67	4	20	24.0	0.130	5.56	*999.0	0.20	-15
5	25	5.67	5	25	24.0	0.130	5.56	*999.0	0.23	-16
6	30	5.67	6	30	23.9	0.131	5.56	*999.0	0.21	-18
7			7							
8			8							
9			9							
10			10							
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs - 8260	3x 40ML VOA	HCl
SVOCs - 8270	2X1L AMBER JAR	NONE
METALS (TOTAL)	1x1L PLASTIC BOTTLE	HNO_3
ANIONS (NITRATE)	1x500ML PLASTIC BOTTLE	NONE
PEST. - 8081	2x1L AMBER JAR	NONE

Remarks * FLASHING 999.0 ON METER - TURBIDITY OUT OF RANGE - TURBID WATER

TOTAL PURGED ~ 26

Parameter Conditions: pH +/- 0.1 standard unit; COND +/- 3%; DO +/- 10%; Turbidity +/- 10% above 10 NTU; +/- 1 NTU below 10 NTU; ORP +/- 10mV

CONT

HERB. - 8151	2x1L AMBER JAR	NONE
DISS. METALS	1x1L PLASTIC BOTTLE	NONE

~~BUCC - Augusta Chemical Ground Water Sampling Log~~
OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-19
Weather Condition PARTLY SUNNY - 80's

Sample Date 12/4/01 Arrival Time 1505 Sample Time 1615

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 1511 Purge Stop Time 1611 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F)	Specific Conductance ~~(umhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.10	0	0	—	—	—	—	—	—
1	5	5.29	1	5	23.8	0.207	5.78	36.5	0.41	-25
2	10	5.26	2	10	23.8	0.226	5.85	34.5	0.33	-41
3	15	5.27	3	15	23.7	0.239	5.89	27.4	0.29	-53
4	20	5.27	4	20	23.7	0.253	5.94	18.9	0.27	-62
5	25	5.27	5	25	23.7	0.244	5.91	16.2	0.25	-62
6	30	5.27	6	30	23.7	0.241	5.91	13.3	0.24	-65
7	35	5.27	7	35	23.7	0.233	5.88	14.4	0.22	-65
8	40	5.27	8	40	23.7	0.236	5.89	10.0	0.21	-66
9	45	5.28	9	45	23.7	0.226	5.86	7.9	0.20	-65
10	50	5.27	10	50	23.6	0.222	5.86	11.6	0.19	-66
11	55	5.28	11	55	23.6	0.216	5.83	11.3	0.20	-65
12	60	5.28	12	60	23.6	0.217	5.84	11.3	0.19	-64
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs - 8260	3x40ml VOA	HCl
SVOCs 8270	2x1L AMBER JAR	NONE
METALS (TOTAL)	1x1L PLASTIC BOTTLE	HNO3
ANIONS (NITRATE)	1x500ml PLASTIC BOTTLE	NONE
PEST. - 8081	2x1L AMBER JAR	NONE

Remarks SAMPLED DUPLICATE - BLIND DUPLICATE
SINCE SAMPLE WAS CLEAR DID NOT SAMPLE DISSOLVED METALS
TOTAL PURGED ~46

Parameter Conditions: pH +/- 0.1 standard unit COND +/- 3% DO +/- 10%
Turbidity +/- 10% above 10 NTU +/- 1 NTU below 10 NTU ORP +/- 10mV

HERB. - 8151 2x1L AMBER JAR NONE

~~SVEC - Augusta Chemical Ground Water Sampling Log~~
OMNI WASTE - OAK HAMMOCK

Purged Well Sampling Log

Kubal-Furr & Associates
—Environmental Consultants—

Project No. 48OH01
Site Location Oak Hammock
Field Personnel G. Kinsman/S. Nix
Well / Sample ID DP-18
Weather Condition PARTLY SUNNY - 70s

Sample Date 12/5/01 Arrival Time 0735 Sample Time 0835

Description of Measuring Point (MP) TOC Casing Type PVC Locking Cap ✓ Casing Diameter 2 inches

Purge Method PERISTALTIC Sampling Method SAME

Purge Start Time 0748 Purge Stop Time 0830 Purge Rate ~250 ml/min

Water-Level Measurements / Field Parameters

Interval	Elapse Time (mins)	DTW (feet)	Interval	Elapse Time (mins)	Temperature (°F/C)	Specific Conductance ~~(umhos/cm)~~ mS/cm	pH (su)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
0	0	5.08	0	0	—	—	—	—	—	—
1	5	5.51	1	5	21.8	0.200	5.86	*999.0	0.63	9
2	10	5.55	2	10	22.8	0.241	6.15	*999.0	0.03	-36
3	15	5.57	3	15	23.0	0.341	6.44	*999.0	0.00	-68
4	20	5.57	4	20	23.1	0.359	6.49	*999.0	0.00	-75
5	25	5.58	5	25	23.2	0.377	6.54	*999.0	0.00	-82
6	30	5.59	6	30	23.2	0.389	6.55	*999.0	0.00	-86
7	35	5.60	7	35	23.3	0.396	6.56	*999.0	0.00	-90
8	40	5.61	8	40	23.4	0.398	6.56	*999.0	0.00	-93
9			9							
10			10							
11			11							
12			12							
13			13							
14			14							
15			15							
16			16							
17			17							
18			18							
19			19							
20			20							

Samples Collected	Container Description	Preservative
VOCs 8260	3x40ml	HCl
SVOC. 8270	2x1L AMBER JAR	NONE
METALS (TOTAL)	1x1L PLASTIC BOTTLE	1+NO3
ANIONS (NITRATE)	1x500ml ~~AMBER~~ PLASTIC BOTTLE	NONE
PEST. -8081	2x1L AMBER JAR	NONE

Remarks *FLASHING 999.0 ON METER - TURBIDITY OUT OF RANGE. - WATER IS TURBID

TOTAL PURGED ~ 36

Parameter Conditions: pH +/- 0.1 standard unit COND +/- 3% DO +/- 10%
Turbidity +/- 10% above 10 NTU +/- 1 NTU below 10 NTU ORP +/- 10mV

(cont)

HERB. -8151	2x1L AMBER JAR	NONE
DISS. METALS	1x1L PLASTIC BOTTLE	NONE

~~BUCC - Augusta Chemical Ground Water Sampling Log~~
OMNI WASTE - OAK HAMMOCK

FILTER PACK DESIGN

GRAIN SIZE DISTRIBUTION TEST REPORT

PROFESSIONAL SERVICE INDUSTRIES, INC.

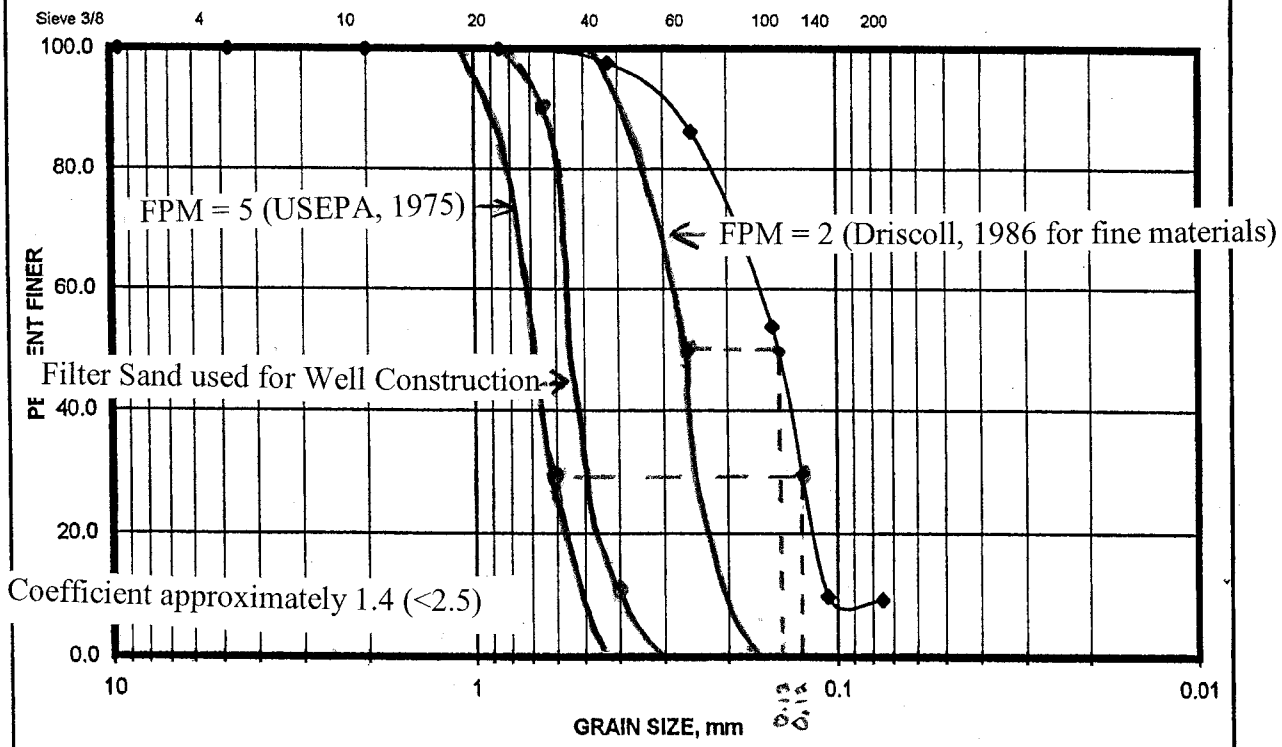
Project No. 779-10225 Date: 12/3/01

Project: Omni Oak Hammock Landfill

Sample Location: DP 20/21@14'-16'

Porosity: 42.6%

GRAIN SIZE DISTRIBUTION



Uniformity Coefficient approximately 1.4 (<2.5)

% Gravel	% Sand	%-200
0.0	90.7	9.3

GRAIN SIZE DISTRIBUTION TEST REPORT

PROFESSIONAL SERVICE INDUSTRIES, INC.

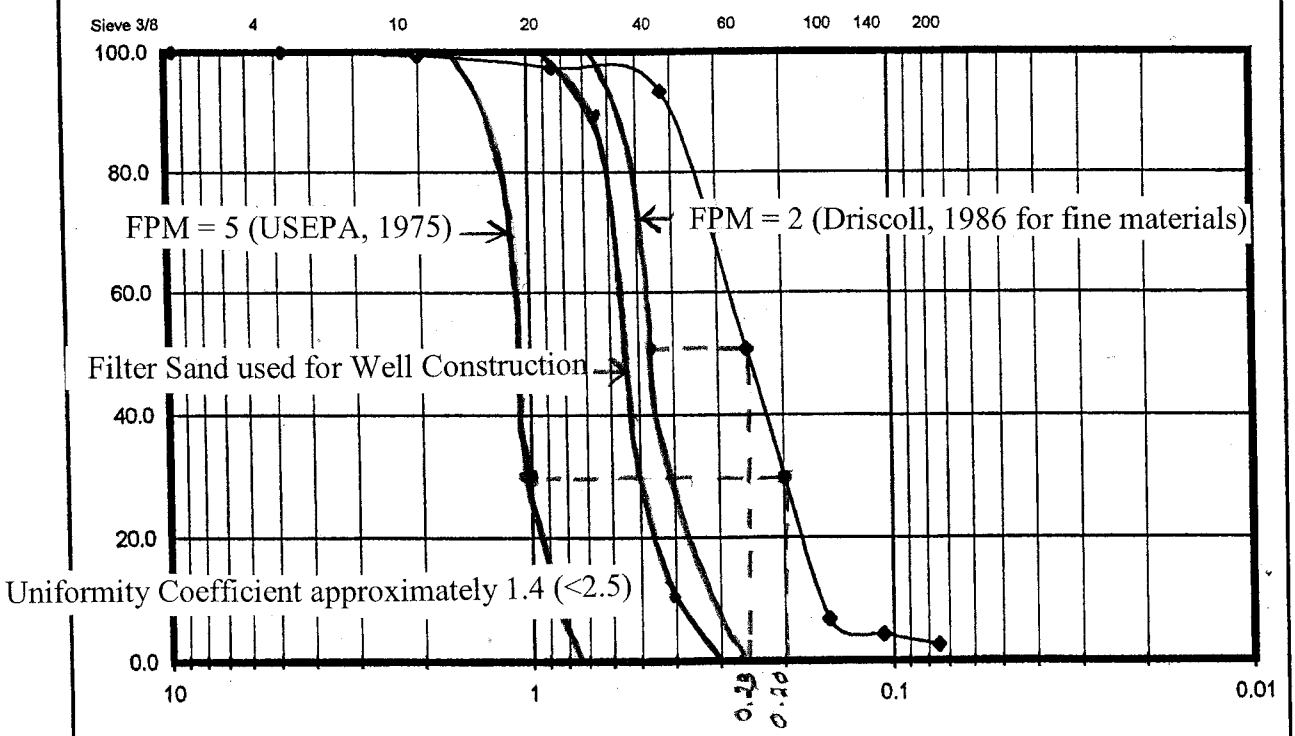
Project No. 779-10225 Date: 12/3/01

Project: Omni Oak Hammock Landfill

Sample Location: DP 1/2@46'-48'

Porosity: 49.6%

GRAIN SIZE DISTRIBUTION



% Gravel	% Sand	%-200
0.0	97.4	2.6

WELL CONSTRUCTION DETAILS

Pertinent Details regarding well construction:

- Wells were installed using 6.25 I.D. (10.25 O.D) hollow stem augers;
- Well screen - 10 ft of No. 6 slot (0.006");
- Filter pack – 30/45 graded silica sand;
- Approximately 1 foot of sand was placed beneath well screen;
- Filter sand was placed by pouring through a tremie line with a hopper attached to the top and washing in with potable water;
- Augers were kept such that there was always some sand in bottom;
- Average sand pack length was approximately 14 feet;
- Number of bags of filter pack sand was 10;
- Based on above, average annular thickness of filter pack is approximately 4 inches;
- Filter pack extends 2 to 3 ft above top of screen;
- A finer sand (30/65) was placed on top as a seal (typically 2 to 3 feet;
- Wells were grouted with cement/bentonite grout

WELL DEVELOPMENT RECORDS

Oak Hammock Monitoring
OMNI

Well ID	Completion Date	Final Turbidity Reading (NTU)	Development Method(s)	Developm Time (hou
MW-1A	week of 12/08/2003	17	a,b	NA
MW-1B	1/9/2004	32	a,d	14
MW-1C	1/9/2004	31	c,d	14
MW-2A	week of 12/08/2003	1	a,b	NA
MW-2B	1/9/2004	41	d	14
MW-2C	1/9/2004	11	d	14
MW-3A	week of 12/08/2003	5	b	NA
MW-3B	1/8/2004	96	d	9
MW-3C	1/8/2004	26	d	9
MW-4A	week of 12/08/2003	7	b	NA
MW-4B	1/8/2004	55	d	9
MW-4C	1/8/2004	95	d	9
MW-5A	12/23/2003	12	b	8
MW-5B	1/7/2004	25	d	10
MW-5C	1/7/2004	41	d	10
MW-6A	week of 12/08/2003	6	a,b	NA
MW-6B	1/7/2004	21	d	12
MW-6C	1/7/2004	329	d	12
MW-7A	week of 12/08/2003	5	a,b	NA
MW-7B	1/8/2004	191	b,d	20
MW-7C	1/6/2004	36	d	10
MW-8A	week of 12/08/2003	8	b	NA
MW-8B	1/6/2004	>1000	d	6
MW-8C	1/6/2004	35	d	6
MW-9A	week of 12/08/2003	5	a,b	NA
MW-9B	1/2/2004	64	d	9
MW-9C	1/2/2004	5	d	9
MW-10A	week of 12/08/2003	3	a,b	NA
MW-10B	12/31/2003	153	d	6
MW-10C	12/31/2003	28	d	6
MW-11A	week of 12/08/2003	9	a,b	NA
MW-11B	week of 12/08/2003	13	a,b	NA
MW-11C	12/31/2003	120	d	8
MW-12A	week of 12/08/2003	4	a,b	NA
MW-12B	12/30/2003	588	a,d	10
MW-12C	12/30/2003	19	c,d	10
MW-13A	week of 12/08/2003	3	a,b	NA
MW-13B	12/31/2003	320	a,d	11
MW-13C	12/31/2003	37	c,d,e	29
MW-14A	week of 12/08/2003	0	a,b	NA
MW-14B	12/23/2003	53	a,b,c,e	16
MW-14C	12/23/2003	110	b,c,e	16
MW-15A	week of 12/08/2003	13	a,b	NA
MW-15B	12/19/2003	11	a,b,c,e	10
MW-15C	12/22/2003	13	b,c,e	10

Development Methods:

a: small trash pump
b: whale submersible pump
c: 50 cfm air compressor equiped air lift system
d: 185 cfm air compressor equiped air lift system
e: Grundfos submersible pump

Well Development Summary
Waste

ent urs)	Maximum Flow Rate (GPM)	Total Volume Removed (gallons)	Comments
	NA	540	Sampled
	12	10080	
	9	7560	
	NA	162	Sampled
	7	5880	
	10	8400	
	NA	NA	Sampled
	5	2700	
	10	5400	
	NA	NA	Sampled
	6	3240	
	12	6480	
	3	2164	
	5	3000	
	10	6000	
	NA	116	Sampled
	2	1440	
	11	7920	
	NA	74	Sampled
	2	2000	
	15	9000	
	NA	NA	Sampled
	1	360	
	10	3600	
	NA	180	Sampled
	1	540	
	11	5940	
	NA	231	Sampled
	5	1800	
	12	4320	
	NA	346	Sampled
	NA	1084	Sampled
	10	4800	
	NA	NA	Sampled
	3	1500	
	15	6600	
	NA	194	Sampled
	6	4200	
	11	13380	
	NA	108	Sampled
	7	6720	
	10	9600	
	NA	100	Sampled
	5	3000	Sampled
	9	5400	Sampled

GEOSYNTEC CONSULTANTS

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3 December 2003

RECEIVED
DEC 4 2003
Central Dist. - DEP

Mr. James N. Bradner, P.E.
Program Manager, Solid/Hazardous Waste
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: Groundwater Sampling of Monitoring Wells Around Phase 1
Oak Hammock Disposal Facility (OHDF)
Omni waste of Osceola County, LLC
Permit Application Nos. SC49-0199726-001 and SO49-0199726-002

Dear Mr. Bradner:

The purpose of this letter is to inform the Florida Department of Environmental Protection that the sampling of 15 groundwater monitoring wells around Phase 1 of the OHDF is expected to commence on 10 December 2003 and will be performed over a period of approximately a week. This sampling event is being performed prior to completion of construction of Cell 1 in Phase 1 to establish the background water quality.

If you have any questions or need additional information, please contact the undersigned.

Sincerely,

Kenneth W. Cargill, P.E.
Principal

cc: Mr. Lenny Marion, Omni Waste

FX0521/Regulatory Related/Notice4