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CITRUS COUNTY CENTRAL LANDFILL
SITE ASSESSMENT REPORT
IN ACCORDANCE WITH
CHAPTER 62-780.600(8) FAC

RESPONSE TO FDEP REQUEST FOR ADDITIONAL INFORMATION

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Prepared for:

CITRUS COUNTY BOARD OF COUNTY COMMISSIONERS

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P.E. Certificate of Authorization #1841
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Florida P.G. No. 2203
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The following information is provided in response to the Florida Department of Environmental Protection (FDEP), request for additional information prepared by Susan J. Pelz, P.E., and John Morris, P.G. and Stephanie Watson. Information is provided in the order requested in the referenced correspondence. In each case, the FDEP request is repeated with the response immediately following.

A new survey was conducted for all monitoring sites at the Citrus County Central Landfill on December 10, 2008. The survey was submitted to FDEP on December 15, 2008. The new survey is discussed in Comment 7 of Part II of this document. Figures and tables submitted with the original SAR document that needed to be updated with the new elevation measurements are included in Attachment 7 of Part II. Attachment 7 also includes the three groundwater contour maps and groundwater elevation determination tables submitted since the last biennial report updated using the elevations shown in the new survey. The text of the SAR—Attachment 1 of Part II—has also been updated as needed to reflect the new survey. As Attachment 7 shows, the groundwater flow direction and velocities are similar to what was reported. The new elevations do not change any of the conclusions reached in the original SAR document.

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ATTACHMENTS

PART I

RESPONSES TO COMMENTS FROM SUSAN J. PELZ, P.E.

Comment 1: *The SAR does not adequately determine or confirm the origin of the source of contamination as per Rule 62-780.600(3)(c), F.A.C. Although the SAR indicates that landfill gas is the source of contamination of groundwater in the vicinity of compliance well MW- 10, information was not provided to support this conclusion, such as:*

a. *Data to demonstrate that landfill gas is present in the vicinity of compliance well MW-1O;*

b. *If landfill gas is present, a proposed pathway and supporting calculations that demonstrates that the volume of landfill gas is sufficient to cause groundwater quality impacts in the vicinity of MW-1O;*

c. *Analytical results that demonstrate that volatile organic compounds in landfill gas are similar to those in groundwater in the affected area.*

Response 1: The SAR submitted to the FDEP on October 22, 2007 assumes that the source of the VOC detected in MW-10 is the landfill based on the lack of known alternative sources. Beyond the question of source is how the contaminant traveled from the landfill to the groundwater sampled in MW-10. While the 2007 SAR mentions that the mode of transport was VOC partitioning from landfill gas, there is little supporting discussion. The following discussion provides the evidence used to determine that landfill gas is the mechanism of transport of contamination to MW-10. This discussion is divided into a general discussion of groundwater impacts by landfills and a more specific discussion of the impacts found at MW-10 at the Citrus County Central Landfill Facility

GENERAL DISCUSSION

Groundwater Impacts by Landfills

Contaminant plumes may include two major divisions of contaminants here described as *source* and *displacement*. The source contaminants are those that originate in the waste. The displacement contaminants are those originating in the sediments outside of the landfill but are mobilized by the conditions caused by the source contaminant. The conditions that cause displacement mobilization are typically ion exchange or reductive dissolution, but they can also include bacterial methylation. Displacement contaminants typically include loosely bound ions, redox-sensitive metals, and heavy metals and always depend on mineral availability in the aquifer.

The Standard Landfill Leachate Plume

The source contaminants are those found in the leachate, including salts, ammonia, iron, trace VOC, and trace heavy metals. The most important source constituent in the leachate plume for diagnostic purposes is chloride.

The following lists some generalities used to contrast the typical leachate plume from the typical landfill gas plume:

1) The leachate plume will always extend downgradient of the source, and the width will decrease as flow velocity increases.

2) The leachate plume can be delineated using chloride as a conservative tracer.

3) The dilution of both source and displacement constituents can be correlated with the dilution of chloride, and chloride will always be the last constituent to attenuate below background.

4) As the plume migrates, the redox conditions are also diluted. The character of the plume forms a specific and well-documented redox zonation pattern with redox sensitive contaminants (both source and displacement) dropping out of the plume as it migrates downgradient.

<u>The Standard Landfill Gas Plume</u>

The source contaminants for the typical landfill gas plume include carbon dioxide, methane, trace VOC, and trace heavy metals. The displacement contaminants include bicarbonate, pH buffering, redox-sensitive metals, and methylated heavy metals. In a landfill gas plume, the source contaminants and the conditions that mobilize the displacement contaminants are independent of groundwater gradient until they have entered the groundwater. Because the concentrations of the source contaminants of VOC and heavy metals are already low all across the plume, there is no discernable dilution pattern.

The following lists some generalities used to contrast the typical landfill gas plume from the typical leachate plume:

1) Landfill gas plumes spread independent of groundwater gradient.

2) There is typically no defined 'center' or dilution pattern evident in a landfill gas plume.

3) Constituents with high molecular weight and low solubility (such as the chlorinated benzenes and mercury) that would quickly attenuate in a leachate plume are able to travel in gaseous form before partitioning into the groundwater.

4) Dissolved carbon dioxide in the groundwater will preferentially dissolve amorphous carbonates, producing a high concentration of bicarbonate along with whatever anion was attached to the mineral carbonate (Calcium, Iron,

Manganese, etc.) In Florida, where groundwater pH tends to be less than neutral, the excess bicarbonate may increase pH toward neutrality. However, because groundwater pH tends to be acidic in Florida, the availability of amorphous carbonates may be limited.

5) Sodium and chloride will only be released by ion exchange. VOC degradation provides chloride ions in amounts that are usually not discernable above background and are therefore insignificant.

VOC Behavior in Landfills

Table 1 presents three characteristics important for understanding the behavior of the most common families of VOCs found in landfill leachate.

Table 1 Selected VOC Characteristics

Parameter	Vapor Pressure (mmHg)	Solubility (%)	Boiling Point (F)
1,4-Dichlorobenzene	1.3	0.008	345
1,2-Dichlorobenzene	1	0.01	357
Chlorobenzene	9	0.05	270
Benzene	75	0.07	176
Toluene	21	slight	232
Ethylbenzene	7	0.01	277
m-Xylene	9	slight	282
o-Xylene	7	0.02	292
p-Xylene	9	0.02	281
Tetrachloroethene	14	0.02	250
Trichloroethene	58	slight	189
1,1-Dichloroethene	500	0.04	89
cis-1,2-Dichloroethene	180-265	0.4	118-140
trans-1,2-Dichloroethene	180-265	0.4	118-140
1,1-Dichloroethane	182	0.6	135
1,2-Dichloroethane	64	0.9	182
Vinyl Chloride	2508	slight	7

Data from the NIOSH Pocket Guide to Chemical Hazards

VOCs with high vapor pressures will more easily partition between gaseous and liquid forms; those with higher solubility will have a higher affinity to be dissolved in water. Low boiling points mean that the VOC will have a higher ratio in a gaseous state over a particular temperature. Solubility is measured in percent; however, this is a measure of saturation of pure materials under laboratory conditions. In the case of a landfill, the leachate contains only a trace amount of these VOCs because the water is typically saturated with the major ions (chloride, sodium, bicarbonate, iron, calcium, etc.) and cannot maintain additional solute. The solubility measurements given in Table 1 should be used as a relative guide to compare how much a VOC is likely to be dissolved in the leachate in respect to another VOC.

The vapor pressures of Vinyl Chloride, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,1-Dichloroethane, Benzene, 1,2-Dichloroethane, and Trichloroethene show that these parameters are likely to have high concentrations in both gaseous and liquid phases, though Vinyl Chloride, because of its low boiling point, is likely to have most of its mass in gaseous form. The boiling points of many other VOCs are lower than the temperatures expected within a landfill, but higher than the temperatures outside the landfill. This means that once a gas laden with these VOCs in vapor form escapes the landfill many of the VOCs will have more of an affinity to condense in liquid form on any available 'cool' surface.

Another aspect of VOC migration is solubility in gas. In a landfill the available gas is a roughly 50:50 mix of methane to carbon dioxide. Both of these gases are non-polar, with methane being tetrahedral and carbon dioxide being linear. Therefore the VOCs that are non-polar will have an affinity to dissolve in the gas and travel with the landfill gas regardless of their vapor pressure or boiling point. Of the VOCs listed in Table 1, Benzene and 1,4-Dichlorobenzene are non-polar. Because of its stability and its affinity to dissolve in landfill gases, 1,4-Dichlorobenzene is a good indicator of landfill gas impact to groundwater.

EVIDENCE OF IMPACT AT MW-10

The volatile organic compounds (VOC) of most concern at MW-10 are Benzene and Vinyl Chloride. These are representative of the most common VOC contaminants at landfills because they are both at the last stages of degradation. While Benzene is a common light petroleum distillate along with Toluene, Ethylbenzene, and Xylenes, it is also the last stage of the dechlorination of the chlorinated benzenes. Vinyl Chloride is the last stage of the reductive dechlorination of the chlorinated ethenes and ethanes such as Tetrachloroethene (PCE) and Trichloroethene (TCE).

Table 2 includes parameters associated with Benzene and Vinyl Chloride with the ranges of the concentrations detected in MW-10 and in the untreated leachate.

Table 2 VOC Ranges Detected in MW-10 Compared to Leachate

MW-10	ug/L		ug/L
Benzene	0.2-2.5	Vinyl Chloride	ND-5.4
Chlorobenzene	ND-BDL	cis-1,2-Dichloroethene	BDL-12
1,4-Dichlorobenzene	4.0-6.0	trans-1,2-Dichloroethene	ND
Toluene	ND	1,1-Dichloroethane	ND-2.4
Ethylbenzene	ND	Trichloroethene	ND-BDL
Xylenes	ND-9.3	Tetrachloroethene	ND

Table 2	VOC Ranges Detected in MW-10 Compared to Leachate		
Untreated Leachate	ug/L		ug/L
Benzene	ND-34	Vinyl Chloride	ND-17
Chlorobenzene	ND-3.5	cis-1,2-Dichloroethene	ND-6
1,4-Dichlorobenzene	ND-15	trans-1,2-Dichloroethene	ND
Toluene	ND-110	1,1-Dichloroethane	ND-5.8
Ethylbenzene	ND-62	Trichloroethene	ND-BDL
Xylenes	ND-84	Tetrachloroethene	ND-1.2

(ND = Non-Detect; BDL = Below Detection Limit)

Chloride Comparison

The Citrus Central Landfill facility has collected and analyzed samples of leachate from the Phases1/1A Master Lift Station, the Phase 2 primary pump sampling port, and at the treatment plant influent. These samples are considered representative of the leachate before on-site treatment.

After the treatment, effluent samples are collected at the chlorine contact tank discharge. The permit allows the effluent to exceed groundwater standards of chloride, sodium, and TDS because these are conservative ions that resist chemical and physical attenuation during the treatment process and the direction of groundwater flow allows dilution of the effluent through several hundred feet of aquifer before reaching the zone of discharge on the west side of the site. Table 3 compares the leachate indicators with groundwater background and MW-10 results collected from 2000 to 2008.

Table 3	Comparison of Leachate Indicators to Groundwater Background and MW-10					
	Chloride (mg/L)		Sodium (mg/L)		TDS (mg/L)	
	Range	Average	Range	Average	Range	Average
Pre-Treatment	380-1200	714	252-810	554	1300-3300	2318
Post-Treatment	370-1400	900	343-746	541	950-2900	2035
Background	ND-31	5.5	ND-90.8	13.6	ND-3760	133
MW-10	3.5-6.8	6.1	3.5-6.1	5.14	30-114	63
	Ammonia (mg/L)		Benzene (ug/L)		VC (ug/L)	
	Range	Average	Range	Average	Range	Average
Pre-Treatment	12-740	264	ND-34	7	ND-17	3.4
Post-Treatment	0.02-13	1.5	(ND)	(ND)	(ND)	(ND)
Background	ND-0.88	0.07	(ND)	(ND)	(ND)	(ND)
MW-10	ND-0.039	0.01	0.2-2.5	1.5	ND-5.4	2.4

Note: Data from 2000 to 2008

As the table indicates, Chloride, Sodium, and TDS make it through the leachate treatment process without much change in concentration. The high levels of Ammonia in the untreated leachate are treated to less than the groundwater standard and the low levels of Benzene and Vinyl Chloride are treated to non-detect. These data show the ability of Chloride and Sodium

to resist attenuation (TDS includes both Sodium and Chloride along with other dissolved ions and compounds). The EPA's "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water" (1998—EPA/600/R-98/128) states that Chloride ions *generally do not enter into oxidation-reduction reactions, form no important solute complexes with other ions unless the chloride concentration is extremely high, do not form salts of low solubility, are not significantly adsorbed on mineral surfaces, and play few vital biochemical roles (Hem 1985). Thus, physical processes* [read: dilution] *control the migration of chloride ions in the subsurface.* For this reason, chloride is commonly used as a conservative tracer to estimate biodegradation rates and contaminant plume extents.

The leachate indicators in MW-10 are within the same range as detected in the background wells, indicating no leachate influence. However, using the most conservative hypothetical approach, we could assume that the lowest measure of Chloride in the background (ND) represents the natural conditions at MW-10 and therefore all of the Chloride in MW-10 (6.1 mg/L) is caused by leachate. With an average leachate Chloride concentration of 714 mg/L, the ratio of leachate to water at MW-10 would need to be about 1:105. This ratio can be projected to predict the concentration of VOCs that might be attributed to leachate under the conservative assumption that the VOCs are as resistant to attenuation as Chloride. Using the maximum Benzene concentration in leachate of 34 ug/L, the maximum amount of Benzene that can be attributed to leachate is about 0.3 ug/L. Using the maximum Vinyl Chloride concentration in leachate of 17 ug/L, the maximum amount of Vinyl Chloride that can be attributed to leachate is about 0.16 ug/L.

Because both Benzene and Vinyl Chloride at MW-10 are significantly higher than can be attributed to leachate contamination based on conservative Chloride comparisons, it is reasonable to conclude that landfill leachate is not the cause of the VOCs at MW-10.

<u>1,4-Dichlorobenzene Detections</u>

Volatile organic compounds are susceptible to travel with landfill gas based on their inherent volatility. The vapor pressures of Vinyl Chloride, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, and 1,1-Dichloroethane make them particularly susceptible to entering a gas and traveling with landfill gas. Additionally, the polar molecules are more susceptible to a gas-to-groundwater separation from the landfill gas, while the non-polar molecules are more likely to stay with the migrating gas as a dissolved fraction.

The non-polarity of 1,4-Dichlorobenzene makes it more susceptible to dissolution in a non-polar gas (such as Carbon Dioxide and Methane gases) than in a highly polarized liquid (such as an ion-saturated leachate and water). Other non-polar VOCs, such as Benzene and Tetrachloroethene, have relatively high vapor pressure and a moderate solubility so these VOCs are likely to travel in both landfill gas and leachate-derived plumes. However, 1,4-Dichlorobenzene has very low vapor pressure and low solubility in water. The solubility in water of non-polar gases, in contrast to polar gases, typically increases with decreasing temperature. Therefore, 1,4-Dichlorobenzene is less soluble in water in the heated landfill

environment and it will preferentially dissolve into the landfill gas. (The detection of 1,4-Dichlorobenzene in leachate at low concentrations is reflective of a very high concentration in the landfill gas based on Henry's Law of partitioning, i.e. it is only in the leachate because the leachate is in contact with the landfill gas.) Once the gas escapes the landfill and temperatures decrease, the solubility in water of the non-polar gases will increase. The detection of 1,4-Dichlorobenzene in MW-10 is a major indication that the VOCs in MW-10 were transported there through landfill gas.

<u>Physical Evidence of Landfill Gas in the Vicinity of MW-10</u>

The primary evidence of landfill gas near MW-10 is in the groundwater geochemistry as discussed above. Secondary evidence of landfill gas in the vadose zone near MW-10 can be obtained from the perimeter gas-detection probes. Landfill gas is generally about 50% Carbon Dioxide and 50% methane, with traces of VOC and methylated metals, and this mixture is roughly the same density as air. However, this ratio is not constant. With age, Methane breaks down to Carbon Dioxide and water. Older landfill gas is heavier because the ratio of Carbon Dioxide to Methane increases. Heavier landfill gas means that it is more likely to sink to the bottom of the vadose zone and come into contact with the groundwater, and it also means that for the purposes of this SAR, Methane is a poorer measure of landfill gas than Carbon Dioxide.

Before 2005 the County only collected Methane and barometric pressure measurements from the probes. Since 2005, the County has added Carbon Dioxide and Oxygen to its methane detection parameter lists. For this SAR, the measurements of Carbon Dioxide are more diagnostic of the gases that are in contact with the groundwater because Carbon Dioxide is heavier than air and is more likely to sink to the water table while Methane is slightly lighter than air. Figures 1 and 2 present the Carbon Dioxide data from the property boundary probes along the north side of the landfill.

an order of magnitude increase in Carbon Dioxide between the shallow and the deep probes. Unsaturated conditions continue at least another 40 feet below the bottom of the deeper probes, so it is reasonable to assume that Carbon Dioxide, being heavier than air, will increase in concentration with depth. It should also be noted that, because methane is lighter than air, the probes are adequate for their designed purpose of detecting migrating explosive gases.

On March 2, 2006, Jones Edmunds personnel measured gas from the risers of four wells at the Citrus County Central Landfill including MW-10. Because this measurement did not purge the riser completely and the collection tube did not extend to the well screen, the results of this test are biased low. Table 4 presents these data.

Table 4	March 2, 2006 Gas Measurements		
(%gas)	CH_4	CO_2	O_2
MW-10	0	1.7	18.9
MW-14	0	0.2	19.7
MW-15	0	0.6	20
MW-17	0	6.2	13.4

The detection of Carbon Dioxide at the expense of Oxygen is a clear indicator that landfill gas is in contact with the screened interval of MW-10. It should be noted that MW-17 also has geochemical indications of landfill gas impact such as consistent detections of 1,4-Dichlorobenzene with no Chloride detections over background, though VOCs in this well are not detected over the Florida groundwater standards. MW-15 has also had periodic geochemical indicators of landfill gas impact.

<u>Additional Physical Evidence of Gas at MW-10</u>

On September 29, 2008, Jones Edmunds and County personnel met with the FDEP to discuss the source of contamination determination as outlined above. The FDEP requested additional evidence to support our conclusions. In response to FDEP's request, Jones Edmunds personnel collected gas samples from MW-10, MW-17, and a gas vent on the closed landfill (V-15). The samples were analyzed for VOCs using method TO-15 SIM (EPA TO-15). The results are included in Attachment 1.

The landfill gas samples were collected from MW-10 and MW-17 by inserting a packer into each well positioned just above the top of the well screen with a sampling tube going through the packer. As both well screens intersect the water table, the upper portion is exposed to vadose gasses. The packer is used to seal the upper part of the well riser off from the screened interval below. The sampling tube is connected to a LFG meter, a vacuum pump, and the summa collection canister. The well is purged with the vacuum pump while the LFG meter takes readings. Once the LFG meter shows that we have LFG in the sampling tube, the pump is shut off and the summa canister is opened to collect the sample. A schematic diagram showing the sampling set up is provided with the analytical results in Attachment 1. The LFG meter readings collected at the time of sampling are provided as Table 5. The LFG sample was

collected from V-15 by connecting the summa canister to the sampling port on the side of vent and opening the summa canister.

Table 5	**December 12, 2008 Gas Measurements**		
(%gas)	**CH_4**	**CO_2**	**O_2**
MW-10	**37**	**23.4**	**2.3**
MW-17	**0**	**17.2**	**1.9**
V-15	**52**	**10.8**	**8.5**

Vadose gas analytical results from MW-10 and the second semiannual 2008 groundwater analytical results from MW-10 show that the volatile organic compounds detected in the groundwater are also present in the vadose gas (See Table 6). VOC concentrations in the vadose gas are higher than the concentrations in the groundwater, and there are several VOCs found in the vadose gases that are not in the groundwater. This indicates that partitioning is occurring from the gas to the groundwater, and that landfill gas is the mechanism of transport of VOCs from the landfill to MW-10.

Table 6	**Comparison of Groundwater and Vadose Gas results from MW-10**			
MW-10	**1,1-Dichloroethane**	**1,4- Dichlorobenzene**	**Benzene**	**Chlorobenzene**
GW (ug/L)	**0.75**	**4.6**	**1.4**	**0.33**
Gas (ug/m³)	**138.9**	**186.4**	**165.6**	**47.9**

MW-10	**cis-1,2-Dichloroethene**	**m&p-Xylenes**	**Methylene Chloride**	**o-Xylenes**	**Vinyl Chloride**
GW (ug/L)	**5.4**	**3.4**	**3.9**	**0.34**	**0.92**
Gas (ug/m³)	**519.4**	**763**	**199.3**	**274.4**	**659.5**

Using Henry's Law to estimate the concentration of VOCs in the groundwater based on concentrations in the vadose gases must be done with the understanding that the Henry's Law Constant will change with every added constituent in both the gas and the groundwater. Because the Henry's Law Constant is central to the equation and vadose gases and groundwater are not homogenous, calculations using Henry's Law will result in a rough estimate. Table 7 provided in Attachment 1 presents the Henry's Law predictions of groundwater concentrations of the VOCs listed above.

The calculations in Table 7 use Henry's Law to determine a calculated estimate of partitioning into the groundwater from the vadose gas results. Henry's Law is:

$$C_w = \frac{C_a}{H}$$

Where:

C_a = concentration of the chemical in the air phase (atm)

C_w = concentration of the chemical in the water phase (mol/m^3)

H = Henry's law constant (atm-m^3/mol)

Please note that the variable units required several standard conversions to enter the equation and additional unit conversions were required before the gas results (mol/m^3) were comparable to the groundwater results (ug/L). These conversions were performed under the following system:

$$\frac{C_a\left(\frac{\mu g}{m^3}\right) * ConversionFactor(ppm) * MolarWeight}{H\left(\frac{atm-m^3}{mol}\right) * 1000} = C_w\left(\frac{\mu g}{L}\right)$$

Table 7 shows that most of the calculated results correlate well with the groundwater results. Note that the concentrations in the gas, when converted to ug/L (ppb), are much higher than the concentrations found in the groundwater. For example, 1,1-Dichloroethane was detected at 138.9 ug/m3 in the vadose gas. Multiplying 138.9 ug/m3 by the ppb conversion factor 0.405 results in a concentration of 56.25 ug/L, which is 75 times the concentration found in the groundwater. Therefore, the VOC partitioning is from gas to groundwater, not from groundwater to gas.

Table 7 also includes some of the VOCs that were detected in the gas but not in the groundwater. For the most part this appears to be because of the very high Henry's Law Constant associated with those constituents. Some of the constituents found in the gas are not included in the required analyte list for groundwater monitoring. Most of these are not expected to be in the groundwater in a significant concentration because of the very high Henry's Law Constant, as shown in calculated estimates in Table 7. 1,2,4-Trimethylbenzene is an exception. The calculated results indicate that 1,2,4-Trimethylbenzene should be detected in the groundwater at a concentration about half of the groundwater standard.

CONCLUSION

The detection of VOCs in MW-10 is almost certainly caused by the unlined landfill that the well is designed to monitor. VOCs escape the confines of a landfill entrained in leachate or

landfill gas, and any discussion of groundwater remediation needs to determine the specific mechanism of transport. Because the 60-acre closed landfill is an unlined facility, the specific pathway of either leachate or landfill gas escape is indeterminable. Because there is approximately 80 feet of unsaturated porous material between the ground surface and the groundwater and the gas is likely older and heavier landfill gas, the volume of escaped gas is also indeterminable. Because the landfill gas is partitioning from landfill leachate, the specific VOCs in the landfill gas are similar to those detected in the leachate, though the characteristics of each VOC will determine how much of the VOC will be entrained in the gas and how stable each compound is in a changing environment.

The three lines of evidence discussed above to determine the mechanism of transport for the contamination—leachate indicators, the nature of the detected VOCs, and the physical occurrence of landfill gas in the vicinity and in the riser of MW-10—indicate that landfill gas is the primary mechanism of transport for the contamination detected in MW-10.

REFERENCES

Kerfoot, Baker, and Burt (2004) Geochemical Changes in Ground Water Due to Landfill Gas Effects. *Ground Water Monitoring and Remediation* 24:60-65

Prosser and Janechek (1995) *Landfill gas and ground water contamination. Landfill Closures, Environmental Protection and Land Recovery*—Dunn and Singh (eds) Geotechnical Special Publication 53:258-271.

Romito and Allendorf (1997) Observed landfill gas effects on groundwater quality and its identification and monitoring. Proceedings from the Spring 1997 Seminar, Landfill Gas Management for the 21st Century, ASCE Toledo and Central Ohio Sections.

Comment 2: The monitoring data reported through the January/March 2008 sampling events do not show an overall decrease in contamination, as required by Rule 62-780.690(l)(e), F.A.C.

> **Response 2: A Natural Attenuation with Monitoring rehabilitation strategy through Rule 62-780.690 FAC requires the Site Assessment Report (SAR) to include data that show an overall decrease in the contamination. While the direct measurements of contaminants at MW-10 and other wells onsite that are impacted by landfill gas (such as MW-17 and MW-15) do not show an overall decrease in concentrations, other data, such as modeling to predict landfill gas generation, may provide the required evaluation to allow a natural attenuation strategy.**
>
> **Previous study has indicated that the primary mechanism of transport for the contamination detected in MW-10 is landfill gas. The constituents of concern detected in MW-10 are Benzene and Vinyl Chloride. However, the other VOCs detected in MW-10, such as 1,4-Dichlorobenzene and cis-1,2-Dichloroethene, are also diagnostic of landfill gas impacts at the well. Figure 3 is a graph of the trends of Vinyl Chloride and**

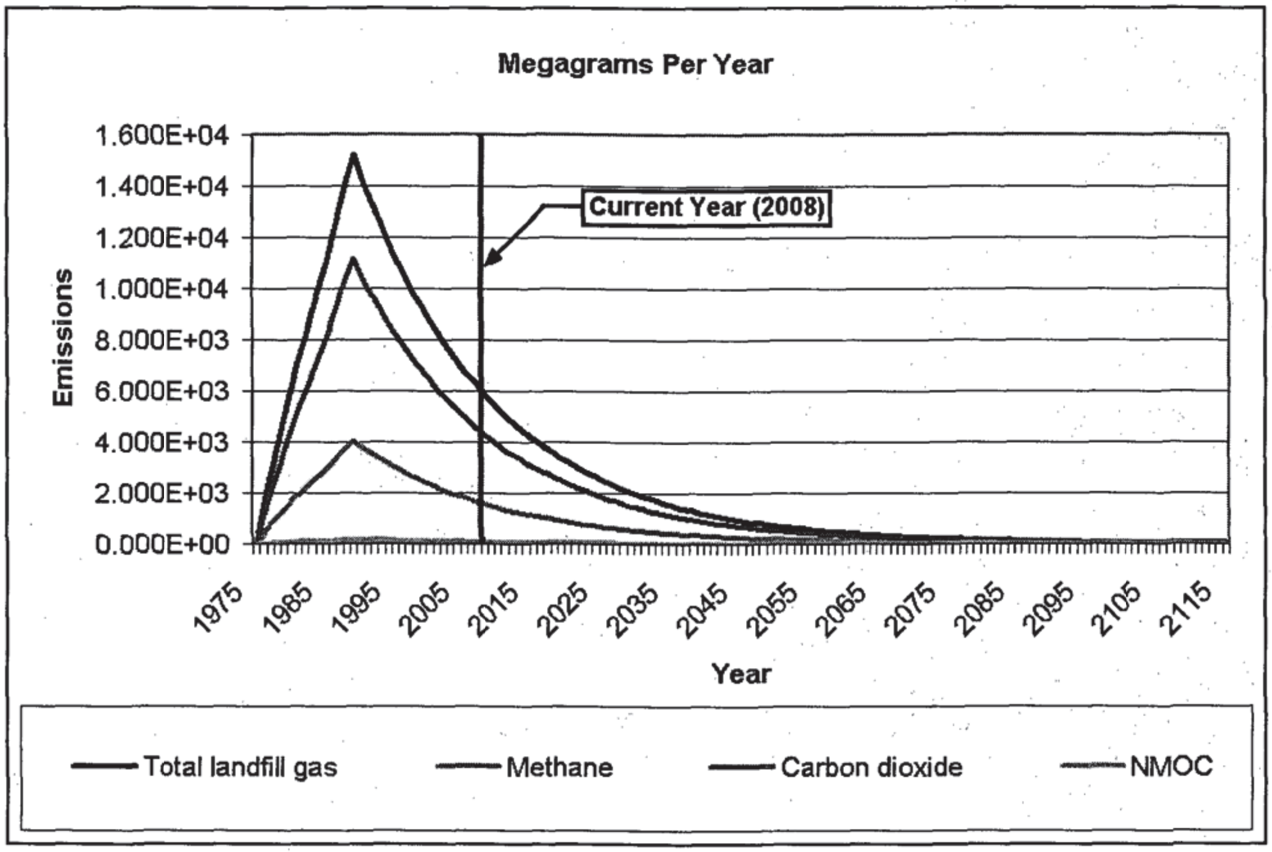


Figure 4: LandGEM output showing the estimated gas production at the Citrus Central Closed Landfill.

While the geochemical data for the short period available from MW-10 do not indicate a downward trend, the standard models for landfill gas production indicate that the source of the contamination has been decreasing since the closure of the site.

REFERENCE

EPA (2005). ***Landfill Gas Emissions Model (LandGEM)*** **Version 3.02 User's Guide. EPA-600/R-05/047**

Seaburn and Robertson, Inc., 1985. ***Citrus County Landfill Monitoring Plan.***

Post, Buckley, Schuh, and Jernigan, Inc., 1988. ***Preliminary Design Reports, Citrus County Central Landfill Expansion Leachate Treatment Facility.***

Comment 3: A technical evaluation of groundwater characteristics, chemistry, and biological activity that verifies that the contaminants have the capacity to degrade under the site- specific conditions was not provided, as required by Rule 62-780.690(1)(t)2.a., F.A.C.

Response 3: The following discussion provides the evidence used to determine that the conditions found at MW-10 have the capacity to degrade the VOC detections that are the subject of the SAR.

While BTEX and the chlorinated solvents are considered non-aqueous phase liquids, this is generally when the contamination source is a product spill. Because both of these families of compounds are, to a small extent, soluble in water, most landfill remediations deal with groundwater. As a rule of thumb, there may be a non-aqueous phase when concentrations are over 1000 ug/L. The Citrus County Central Landfill has only detected these VOCs at a small fraction of this, and an analysis of the detections show that the mechanism of transport is through landfill gas. There is no indication of separate-phase liquid VOC contamination at the Citrus County Central Landfill.

Destructive natural attenuation—as opposed to attenuation through dilution or volatilization—typically requires the compound to be metabolized by in-situ bacteria. Bacteria require both an electron donor (food) and an electron acceptor (respiration).

CONDITIONS REQUIRED FOR VINYL CHLORIDE DEGRADATION

The degradation of the chlorinated solvents follows a set of steps toward complete mineralization. The highly chlorinated solvents undergo dechlorination (losing a Chlorine atom in favor of a Hydrogen atom) at each step from Tetrachloroethene to Trichloroethene to Dichloroethene to Vinyl Chloride (VC). VC is the last step in dechlorination before losing the last Chlorine and dissolving into Ethene or mineralizing to Carbon Dioxide and water. At most remediation sites where chlorinated solvents—both chlorinated ethenes and ethanes—are the contaminants of concern, the production of VC is considered a sign that natural attenuation is occurring. In many cases, if the ratio of VC to the higher chlorinated ethenes is significant that is sufficient evidence of natural attenuation

Gossett and Zinder, in *Microbiological Aspects Relevant to Natural Attenuation of Chlorinated Ethenes* (1997) published in EPA (1997), state that: "*It is important to keep in mind the competitive nature of electron donor flow. In essence, dechlorination is in a "foot race" with competing donor uses. If too little donor is initially present, the pattern of its conversion to H2 is too unfavorable, or there is too much competition for it, dechlorination may not proceed adequately to completion. As other papers in this volume suggest, relying on reductive dechlorination to achieve complete conversion to ethene may not be necessary in all cases; for example, some aerobic and iron-reducing microbial processes can oxidize/mineralize VC. Therefore, conversion of PCE and TCE to VC by the time a plume reaches an aerobic or iron-reducing zone may be sufficient in many instances.*"

As this statement suggests, and as determined in numerous other studies, VC can be used as either electron acceptor under reducing conditions, or as an electron donor under oxidizing or iron-reducing conditions. This is reiterated in Wiedemeier, et al *Overview of the Technical Protocol for Natural Attenuation of Chlorinated Aliphatic Hydrocarbons in Ground Water Under Development for the U.S. Air Force Center for Environmental Excellence*, published in EPA (1998) which states, "*Under aerobic and some anaerobic conditions, the less oxidized chlorinated aliphatic hydrocarbons (e.g. vinyl chloride) can be used as the primary substrate in biologically*

***mediated redox reactions*.**" In his discussions, Wiedemeier uses the term "primary substrate" as a near equivalent of "electron donor."

The conditions required for VC degradation are not completely dependant on redox conditioning. However, many studies such as Hartmans and DeBont (1992) conclude that aerobic biodegradation of VC is rapid relative to reductive dechlorination. Based on these discussions, optimum conditions of the groundwater needed to degrade VC range from Iron-reducing to Oxygen-reducing, with preferences toward the more aerobic.

CONDITIONS REQUIRED FOR BENZENE DEGRADATION

The flat hexagonal Benzene ring is the base molecule for most aromatic hydrocarbons (BTEX). Therefore, the basis for degradation of BTEX is breaking of the relatively stable Benzene ring which is commonly done, including a catechol intermediate step, involving free oxygen as an electron acceptor. Reductive biodegradation of BTEX occurs, but it is very slow in comparison to aerobic degradation. Low-level BTEX are typically short-lived under aerobic conditions.

REDOX CONDITIONS AND DISSOLVED OXYGEN AT MW-10

With the typical landfill gas-derived plume, low dissolved oxygen levels and ORP values below 0 mV should be expected because methane is a significant oxygen sink—i.e. the degradation of methane removes a large amount of oxygen from the groundwater. For this reason, many landfill gas-derived plumes include the reduction of natural ferric Iron into dissolved ferrous Iron along with several other redox sensitive metals.

As a rule of thumb, dissolved Oxygen levels greater than 0.5 mg/L are sufficient to consider Oxygen as the primary electron acceptor, or primary substrate, indicating aerobic conditions.

Florida's shallow aquifers tend to have high background dissolved Oxygen levels—this natural condition commonly requires a facility to demonstrate that sampling SOPs are not being violated. The high ambient dissolved Oxygen is sometimes capable of degrading sufficient Methane that the ORP values remain higher than 0 mV and Iron reducing conditions are not significant. At MW-10, the dissolved Oxygen levels are significantly lower than background, ORP is generally above 0 mV, and Iron is only moderately above background.

These observations indicate that the ambient conditions are being affected by the influx of landfill gas, but they remain capable of retaining an ORP above 0 mV and general aerobic conditions. Benzene and VC are optimally degraded under aerobic conditions.

EVIDENCE OF BIODEGRADATION AT THE CITRUS COUNTY CENTRAL LANDFILL

Table 8 includes the (Henry's Law) calculated concentrations of VOCs in the groundwater based on concentrations measured in the vadose zone gas tests from the riser of MW-10 in December 2008. These calculated concentrations are compared to the actual concentrations found in the groundwater from the second semi-annual sampling event from 2008.

Table 8 Comparison of Actual and Calculated Groundwater Concentrations

	Calculated Groundwater (ug/L)	Actual Groundwater (ug/L)
1,1- Dichloroethane	0.99	0.75
1,4- Dichlorobenzene	6.8	4.6
Benzene	0.73	1.4
Chlorobenzene	0.67	0.33
cis-1,2-Dichloroethene	4.9	5.4
m&p-Xylenes	4.7	3.4
Methylene Chloride	2.7	3.9
o-Xylenes	2.4	0.34
Vinyl Chloride	0.39	0.92

This table shows that the products of biodegradation (Benzene, cis-1,2-Dichloroethene, and VC) are found higher than calculated, while the more complicated chlorinated benzenes, ethenes and ethanes tend to be lower than the calculated concentrations. This implies that dechlorination of 1,1-Dichloroethane, 1,4-Dichlorobenzene, and Chlorobenzene is occurring, producing slightly more Benzene and VC in the groundwater than Henry's Law estimates. Therefore, the current data show that the environmental conditions at MW-10 are adequate in the groundwater for VOC biodegradation.

REFERENCES

Hartmans and DeBont (1992) *Aerobic vinyl chloride metabolism in Mycobacterium aurum Li.* Applied Environmental Microbiology 58(4): 1220-1226

EPA (1997) *Proceedings of the Symposium on Natural Attenuation of Chlorinated Organics in Ground Water.* EPA/540/R-97/504

EPA (1998) *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water.* EPA/600/R-98/128

The attached Department memorandum provides additional comments on the sections of the SAR that do not address the applicable site assessment objectives outlined in subsection 62-780.600(3), F.A.C.

OTHER COMMENTS

The Conclusions section of the SAR indicates, "Natural Attenuation Monitoring was implemented at the Landfill, with the two assessments wells (MW- 18 and MW- 19) being incorporated into the compliance monitoring as required by the Permit Modification #23175-011 issued on April 11, 2007...." Please note that the Department disagrees that the above referenced permit modification in any way approved Natural Attenuation with Monitoring as the County's SAR conclusion/recommendation. Please note that Chapter 62-780, F.A.C. requires the Department to provide written approval of the SAR, which in turn requires the Respondent to prepare a Natural Attenuation with Monitoring Plan that also requires written approval prior to its implementation.

> **Response: Comment noted. Upon written approval from FDEP of the SAR a Natural Attenuation with Monitoring Plan will be submitted for approval.**

ATTACHMENT 1

LANDFILL GAS SAMPLING ANALYTICAL RESULTS

PEL a division of Spectrum Analytical, Inc.

featuring HANIBAL TECHNOLOGY

Florida Department of Health #E84207
June 30, 2009

CWA - Extractable Organics, General Chemistry,Metals,
Pesticides-herbicides-PCB's, Volatile Organics
RCRA/CERCLS - Extractable Organics, General Chemistry, Metals
Pesticides-Herbicides-PCB's, Volatile Organics

- CERTIFICATE OF ANALYSIS -

Report Date: 12/17/2008

To: Troy Hays
Jones Edmunds & Associates, In
730 NE Waldo Rd.
Gainesville, FL 32641

PROJECT ID:	Litrus Central
WORK ORDER:	2511215
DATE RECEIVED:	Monday, December 08, 2008

Project Notes:

@@@@@@ Subcontracted to lab certification # 87600/E87936

(†): Short Hold Time Analysis Date

Samples reported on dry weight basis
All test results in this report pertain only to the samples as submitted.

PEL Contact: Mark Gudnason / extension: 242

8405 Benjamin Road, Suite A• Tampa, Florida 33634
813-888-9507• FAX: 800-480-6435
Website: www.pelab.com

PEL a division of Spectrum Analytical, Inc.
featuring Hanibal Technology

DATA QUALIFIER CODES

State of Florida, Department of Environmental Protection and
Department of Health _Rehabilitative Services / NELAC

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J Estimated value; value not accurate. This code shall be used in the following instances:

1.Surrogate recovery limits have been exceeded.

2. No known quality control criteria exits for the component.

3.The reported value did not meet the established quality control criteria for either precision or accuracy but falls within the NELAC marginal exceedance range

3M.The reported value did not meet the established quality control criteria for either precision or accuracy and falls beyond the NELAC range for marginal exceedances.

3R.The RPD for the LCSD exceeds the laboratory established control limits.

4.The sample matrix interfered with the ability to make an accurate determination.

5.The data is questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample).

L Off-scale high. Actual value is known to be greater than the value given. To be used when the concentration of the analyte is above the acceptable limit for quantitation (exceeds the linear range of the highest calibration standard) and the calibration curve is known to exhibit a negative deflection.

Q Sample held beyond acceptable holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for the sample preparation or analysis.

U Indicates that the compound was analyzed for but not detected above the method detection limit (MDL).

V Indicates that the analyte was detected in both the sample and the associated method blank. Note: The value in the blank shall not be subtracted from associated samples.

Y The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

Note: There was not sufficient sample volume to perform a matrix spike/duplicate for the following method(s). :
A Blank and Laboratory Control sample was analyzed to ensure the method performed within acceptable guidelines.

RL - Reporing Limit. The PEL lowest Practical Quanititation Limit (PQL), defined by the lowest point in the calibration curve.

Client: Jones Edmunds & Associates, Inc.

CASE NARRATIVE
Outside Laboratory Tests

PEL Lab Reference No./SDG: 2511215

Methods: TO15,

I. HOLDING TIMES

A. Sample Preparation:
All holding times were met.

B. Sample Analysis:
All holding times were met.

II. ANALYSIS

A. Blanks:

All acceptance criteria were met.

B. Surrogates:

All acceptance criteria were met.

C. Spikes:

1. Laboratory Control Spikes (LCS)

All acceptance criteria were met.

2. Matrix Spike/Matrix Spike Duplicate Samples (MS/SD)

No spikes requested by client.

D. Samples:

Sample analysis proceeded normally.
TO15:
Sample MW-10 required a 1:10 dilution due to high concentration of target analyte(s).
Sample V-15 required a 1:10 dilution due to high concentration of target analyte(s).

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-01
Client ID : MW-10
Matrix : A

Collection Information:
Sample Date: 12/8/2008 10:20:00 AM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	TO15	@@@@@@	14.6 U	12/10/2008 13:56		UG/M3	14.6	34.4	10
1,1,1-TRICHLOROETHANE	TO15	@@@@@@	7.1 U	12/10/2008 13:56		UG/M3	7.1	27.3	10
1,1,2,2-TETRACHLOROETHAN	TO15	@@@@@@	17.4 U	12/10/2008 13:56		UG/M3	17.4	34.3	10
1,1,2-TRICHLORO-1,2,2-TRIFLU	TO15	@@@@@@	31.4 I	12/10/2008 13:56		UG/M3	13.3	38.3	10
1,1,2-TRICHLOROETHANE	TO15	@@@@@@	8.7 U	12/10/2008 13:56		UG/M3	8.7	27.3	10
1,1-DICHLOROETHANE	TO15	@@@@@@	**138.9**	12/10/2008 13:56		UG/M3	6.7	20.2	10
1,1-DICHLOROETHENE	TO15	@@@@@@	**42.1**	12/10/2008 13:56		UG/M3	4.9	19.8	10
1,2,4-TRICHLOROBENZENE	TO15	@@@@@@	16.6 U	12/10/2008 13:56		UG/M3	16.6	37.1	10
1,2,4-Trimethylbenzene	TO15	@@@@@@	**634.2**	12/10/2008 13:56		UG/M3	7.1	24.6	10
1,2-DIBROMOETHANE (ETHYL	TO15	@@@@@@	12.9 U	12/10/2008 13:56		UG/M3	12.9	38.4	10
1,2-DICHLOROBENZENE	TO15	@@@@@@	7.9 U	12/10/2008 13:56		UG/M3	7.9	30.1	10
1,2-DICHLOROETHANE	TO15	@@@@@@	10.1 U	12/10/2008 13:56		UG/M3	10.1	20.2	10
1,2-DICHLOROPROPANE	TO15	@@@@@@	6.6 U	12/10/2008 13:56		UG/M3	6.6	23.1	10
1,2-DICHLOROTETRAFLUORO	TO15	@@@@@@	**171.9**	12/10/2008 13:56		UG/M3	6.8	34.9	10
1,3,5-TRIMETHYLBENZENE (M	TO15	@@@@@@	20.2 I	12/10/2008 13:56		UG/M3	8.7	24.6	10
1,3-BUTADIENE	TO15	@@@@@@	4.1 U	12/10/2008 13:56		UG/M3	4.1	11	10
1,3-DICHLOROBENZENE	TO15	@@@@@@	9 U	12/10/2008 13:56		UG/M3	9	30.1	10
1,4-DICHLOROBENZENE	TO15	@@@@@@	**186.4**	12/10/2008 13:56		UG/M3	8.6	30.1	10
1,4-DIOXANE (P-DIOXANE)	TO15	@@@@@@	12.5 U	12/10/2008 13:56		UG/M3	12.5	18	10
2-HEXANONE	TO15	@@@@@@	11.8 U	12/10/2008 13:56		UG/M3	11.8	20.5	10
4-ETHYLTOLUENE	TO15	@@@@@@	**452.8**	12/10/2008 13:56		UG/M3	5.8	24.6	10
ACETONE	TO15	@@@@@@	5.3 U	12/10/2008 13:56		UG/M3	5.3	11.9	10
ACRYLONITRILE	TO15	@@@@@@	5.9 U	12/10/2008 13:56		UG/M3	5.9	10.8	10
BENZENE	TO15	@@@@@@	**165.6**	12/10/2008 13:56		UG/M3	4	16	10
BENZYL CHLORIDE	TO15	@@@@@@	9 U	12/10/2008 13:56		UG/M3	9	25.8	10
BROMODICHLOROMETHANE	TO15	@@@@@@	12.7 U	12/10/2008 13:56		UG/M3	12.7	33.5	10
BROMOFORM	TO15	@@@@@@	19.6 U	12/10/2008 13:56		UG/M3	19.6	51.7	10
BROMOMETHANE	TO15	@@@@@@	5.8 U	12/10/2008 13:56		UG/M3	5.8	19.4	10
CARBON DISULFIDE	TO15	@@@@@@	3 U	12/10/2008 13:56		UG/M3	3	15.6	10
CARBON TETRACHLORIDE	TO15	@@@@@@	13.9 U	12/10/2008 13:56		UG/M3	13.9	31.5	10
CHLOROBENZENE	TO15	@@@@@@	**47.9**	12/10/2008 13:56		UG/M3	6.9	23	10
CHLOROETHANE	TO15	@@@@@@	4.2 U	12/10/2008 13:56		UG/M3	4.2	13.2	10
CHLOROFORM	TO15	@@@@@@	10.8 U	12/10/2008 13:56		UG/M3	10.8	24.3	10
CHLOROMETHANE	TO15	@@@@@@	2.6 U	12/10/2008 13:56		UG/M3	2.6	10.3	10
cis-1,2-Dichloroethene	TO15	@@@@@@	**519.4**	12/10/2008 13:56		UG/M3	4.8	19.8	10
cis-1,3-DICHLOROPROPENE	TO15	@@@@@@	6.1 U	12/10/2008 13:56		UG/M3	6.1	22.7	10
CYCLOHEXANE	TO15	@@@@@@	**187.9**	12/10/2008 13:56		UG/M3	3.9	17.2	10
DIBROMOCHLOROMETHANE	TO15	@@@@@@	12.1 U	12/10/2008 13:56		UG/M3	12.1	42.6	10
DICHLORODIFLUOROMETHAN	TO15	@@@@@@	**1320.3**	12/10/2008 13:56		UG/M3	5.3	24.7	10
ETHANOL	TO15	@@@@@@	3.3 U	12/10/2008 13:56		UG/M3	3.3	9.4	10
ETHYL ACETATE	TO15	@@@@@@	5.5 U	12/10/2008 13:56		UG/M3	5.5	18	10
ETHYLBENZENE	TO15	@@@@@@	15.2 I	12/10/2008 13:56		UG/M3	6.1	21.7	10
HEXACHLOROBUTADIENE	TO15	@@@@@@	43.8 U	12/10/2008 13:56		UG/M3	43.8	53.3	10
ISOPROPANOL	TO15	@@@@@@	2.3 U	12/10/2008 13:56		UG/M3	2.3	12.3	10
ISOPROPYLBENZENE (CUMEN	TO15	@@@@@@	**395.8**	12/10/2008 13:56		UG/M3	7.4	24.6	10

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-01
Client ID : MW-10
Matrix : A

Collection Information:
Sample Date: 12/8/2008 10:20:00 AM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
METHYL ETHYL KETONE (2-BU	TO15	@@@@@@	3.1 U	12/10/2008 13:56		UG/M3	3.1	14.7	10
METHYL ISOBUTYL KETONE (4	TO15	@@@@@@	13.9 U	12/10/2008 13:56		UG/M3	13.9	20.5	10
Methyl tert-butyl ether	TO15	@@@@@@	3.9 U	12/10/2008 13:56		UG/M3	3.9	18	10
METHYLENE CHLORIDE	TO15	@@@@@@	**199.3**	12/10/2008 13:56		UG/M3	3.8	17.4	10
n-BUTYLBENZENE	TO15	@@@@@@	6.8 U	12/10/2008 13:56		UG/M3	6.8	27.4	10
n-HEPTANE	TO15	@@@@@@	18 I	12/10/2008 13:56		UG/M3	4.5	20.5	10
n-HEXANE	TO15	@@@@@@	**129.7**	12/10/2008 13:56		UG/M3	3.3	17.6	10
o-Xylene	TO15	@@@@@@	**274.4**	12/10/2008 13:56		UG/M3	5	21.7	10
p,m-xylene	TO15	@@@@@@	**763**	12/10/2008 13:56		UG/M3	10.7	43.4	10
P-CYMENE (p-ISOPROPYLTOL	TO15	@@@@@@	**43.5**	12/10/2008 13:56		UG/M3	6.5	26.8	10
PROPYLENE	TO15	@@@@@@	5.2 U	12/10/2008 13:56		UG/M3	5.2	8.6	10
SEC-BUTYLBENZENE	TO15	@@@@@@	8 U	12/10/2008 13:56		UG/M3	8	27.4	10
STYRENE	TO15	@@@@@@	6.8 U	12/10/2008 13:56		UG/M3	6.8	21.3	10
Tetrachloroethene	TO15	@@@@@@	**116**	12/10/2008 13:56		UG/M3	9.7	33.9	10
TETRAHYDROFURAN	TO15	@@@@@@	5.7 U	12/10/2008 13:56		UG/M3	5.7	14.7	10
TOLUENE	TO15	@@@@@@	4.6 U	12/10/2008 13:56		UG/M3	4.6	18.8	10
trans-1,2-DICHLOROETHENE	TO15	@@@@@@	2.8 U	12/10/2008 13:56		UG/M3	2.8	19.8	10
trans-1,3-DICHLOROPROPENE	TO15	@@@@@@	5.3 U	12/10/2008 13:56		UG/M3	5.3	22.7	10
Trichloroethene	TO15	@@@@@@	**70.4**	12/10/2008 13:56		UG/M3	8.2	26.9	10
TRICHLOROFLUOROMETHAN	TO15	@@@@@@	**133.2**	12/10/2008 13:56		UG/M3	11.1	28.1	10
VINYL CHLORIDE	TO15	@@@@@@	**659.5**	12/10/2008 13:56		UG/M3	3.5	12.8	10
1-BROMO-4-FLUOROBENZENE	TO15	@@@@@@	**81.6**	12/10/2008 13:56		UG/M3			10

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-02
Client ID : MW-17
Matrix : A

Collection Information:
Sample Date: 12/8/2008 11:47:00 AM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	TO15	@@@@@@	1.5 U	12/10/2008 15:32		UG/M3	1.5	3.4	1
1,1,1-TRICHLOROETHANE	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.7	1
1,1,2,2-TETRACHLOROETHAN	TO15	@@@@@@	1.7 U	12/10/2008 15:32		UG/M3	1.7	3.4	1
1,1,2-TRICHLORO-1,2,2-TRIFLU	TO15	@@@@@@	2.5 I	12/10/2008 15:32		UG/M3	1.3	3.8	1
1,1,2-TRICHLOROETHANE	TO15	@@@@@@	0.9 U	12/10/2008 15:32		UG/M3	0.9	2.7	1
1,1-DICHLOROETHANE	TO15	@@@@@@	1.1 I	12/10/2008 15:32		UG/M3	0.7	2	1
1,1-DICHLOROETHENE	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	2	1
1,2,4-TRICHLOROBENZENE	TO15	@@@@@@	1.7 U	12/10/2008 15:32		UG/M3	1.7	3.7	1
1,2,4-Trimethylbenzene	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.5	1
1,2-DIBROMOETHANE (ETHYL	TO15	@@@@@@	1.3 U	12/10/2008 15:32		UG/M3	1.3	3.8	1
1,2-DICHLOROBENZENE	TO15	@@@@@@	0.8 U	12/10/2008 15:32		UG/M3	0.8	3	1
1,2-DICHLOROETHANE	TO15	@@@@@@	1 U	12/10/2008 15:32		UG/M3	1	2	1
1,2-DICHLOROPROPANE	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.3	1
1,2-DICHLOROTETRAFLUORO	TO15	@@@@@@	**167.1**	12/10/2008 15:32		UG/M3	0.7	3.5	1
1,3,5-TRIMETHYLBENZENE (M	TO15	@@@@@@	0.9 U	12/10/2008 15:32		UG/M3	0.9	2.5	1
1,3-BUTADIENE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.1	1
1,3-DICHLOROBENZENE	TO15	@@@@@@	0.9 U	12/10/2008 15:32		UG/M3	0.9	3	1
1,4-DICHLOROBENZENE	TO15	@@@@@@	1.6 I	12/10/2008 15:32		UG/M3	0.9	3	1
1,4-DIOXANE (P-DIOXANE)	TO15	@@@@@@	1.2 U	12/10/2008 15:32		UG/M3	1.2	1.8	1
2-HEXANONE	TO15	@@@@@@	1.2 U	12/10/2008 15:32		UG/M3	1.2	2	1
4-ETHYLTOLUENE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	2.5	1
ACETONE	TO15	@@@@@@	**16.3**	12/10/2008 15:32		UG/M3	0.5	1.2	1
ACRYLONITRILE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	1.1	1
BENZENE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.6	1
BENZYL CHLORIDE	TO15	@@@@@@	0.9 U	12/10/2008 15:32		UG/M3	0.9	2.6	1
BROMODICHLOROMETHANE	TO15	@@@@@@	1.3 U	12/10/2008 15:32		UG/M3	1.3	3.3	1
BROMOFORM	TO15	@@@@@@	2 U	12/10/2008 15:32		UG/M3	2	5.2	1
BROMOMETHANE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	1.9	1
CARBON DISULFIDE	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	1.6	1
CARBON TETRACHLORIDE	TO15	@@@@@@	1.4 U	12/10/2008 15:32		UG/M3	1.4	3.1	1
CHLOROBENZENE	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.3	1
CHLOROETHANE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.3	1
CHLOROFORM	TO15	@@@@@@	**3.5**	12/10/2008 15:32		UG/M3	1.1	2.4	1
CHLOROMETHANE	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	1	1
cis-1,2-Dichloroethene	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	2	1
cis-1,3-DICHLOROPROPENE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	2.3	1
CYCLOHEXANE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.7	1
DIBROMOCHLOROMETHANE	TO15	@@@@@@	1.2 U	12/10/2008 15:32		UG/M3	1.2	4.3	1
DICHLORODIFLUOROMETHAN	TO15	@@@@@@	**219.5**	12/10/2008 15:32		UG/M3	0.5	2.5	1
ETHANOL	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	0.9	1
ETHYL ACETATE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	1.8	1
ETHYLBENZENE	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	2.2	1
HEXACHLOROBUTADIENE	TO15	@@@@@@	4.4 U	12/10/2008 15:32		UG/M3	4.4	5.3	1
ISOPROPANOL	TO15	@@@@@@	0.2 U	12/10/2008 15:32		UG/M3	0.2	1.2	1
ISOPROPYLBENZENE (CUMEN	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.5	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-02
Client ID : MW-17
Matrix : A

Collection Information:
Sample Date: 12/8/2008 11:47:00 AM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
METHYL ETHYL KETONE (2-BU	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	1.5	1
METHYL ISOBUTYL KETONE (4	TO15	@@@@@@	1.4 U	12/10/2008 15:32		UG/M3	1.4	2	1
Methyl tert-butyl ether	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.8	1
METHYLENE CHLORIDE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.7	1
n-BUTYLBENZENE	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.7	1
n-HEPTANE	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	2	1
n-HEXANE	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	1.8	1
o-Xylene	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	2.2	1
p,m-xylene	TO15	@@@@@@	1.1 U	12/10/2008 15:32		UG/M3	1.1	4.3	1
P-CYMENE (p-ISOPROPYLTOL	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	2.7	1
PROPYLENE	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	0.9	1
SEC-BUTYLBENZENE	TO15	@@@@@@	0.8 U	12/10/2008 15:32		UG/M3	0.8	2.7	1
STYRENE	TO15	@@@@@@	0.7 U	12/10/2008 15:32		UG/M3	0.7	2.1	1
Tetrachloroethene	TO15	@@@@@@	**31.3**	12/10/2008 15:32		UG/M3	1	3.4	1
TETRAHYDROFURAN	TO15	@@@@@@	0.6 U	12/10/2008 15:32		UG/M3	0.6	1.5	1
TOLUENE	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	1.9	1
trans-1,2-DICHLOROETHENE	TO15	@@@@@@	0.3 U	12/10/2008 15:32		UG/M3	0.3	2	1
trans-1,3-DICHLOROPROPENE	TO15	@@@@@@	0.5 U	12/10/2008 15:32		UG/M3	0.5	2.3	1
Trichloroethene	TO15	@@@@@@	0.8 U	12/10/2008 15:32		UG/M3	0.8	2.7	1
TRICHLOROFLUOROMETHAN	TO15	@@@@@@	**5.8**	12/10/2008 15:32		UG/M3	1.1	2.8	1
VINYL CHLORIDE	TO15	@@@@@@	0.4 U	12/10/2008 15:32		UG/M3	0.4	1.3	1
1-BROMO-4-FLUOROBENZENE	TO15	@@@@@@	**77.3**	12/10/2008 15:32		UG/M3			1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-03
Client ID : V-15
Matrix : A

Collection Information:
Sample Date: 12/8/2008 12:34:00 PM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	TO15	@@@@@@	14.6 U	12/10/2008 16:13		UG/M3	14.6	34.4	10
1,1,1-TRICHLOROETHANE	TO15	@@@@@@	7.1 U	12/10/2008 16:13		UG/M3	7.1	27.3	10
1,1,2,2-TETRACHLOROETHAN	TO15	@@@@@@	17.4 U	12/10/2008 16:13		UG/M3	17.4	34.3	10
1,1,2-TRICHLORO-1,2,2-TRIFLU	TO15	@@@@@@	13.3 U	12/10/2008 16:13		UG/M3	13.3	38.3	10
1,1,2-TRICHLOROETHANE	TO15	@@@@@@	8.7 U	12/10/2008 16:13		UG/M3	8.7	27.3	10
1,1-DICHLOROETHANE	TO15	@@@@@@	6.7 U	12/10/2008 16:13		UG/M3	6.7	20.2	10
1,1-DICHLOROETHENE	TO15	@@@@@@	4.9 U	12/10/2008 16:13		UG/M3	4.9	19.8	10
1,2,4-TRICHLOROBENZENE	TO15	@@@@@@	16.6 U	12/10/2008 16:13		UG/M3	16.6	37.1	10
1,2,4-Trimethylbenzene	TO15	@@@@@@	7.1 U	12/10/2008 16:13		UG/M3	7.1	24.6	10
1,2-DIBROMOETHANE (ETHYL	TO15	@@@@@@	12.9 U	12/10/2008 16:13		UG/M3	12.9	38.4	10
1,2-DICHLOROBENZENE	TO15	@@@@@@	7.9 U	12/10/2008 16:13		UG/M3	7.9	30.1	10
1,2-DICHLOROETHANE	TO15	@@@@@@	10.1 U	12/10/2008 16:13		UG/M3	10.1	20.2	10
1,2-DICHLOROPROPANE	TO15	@@@@@@	6.6 U	12/10/2008 16:13		UG/M3	6.6	23.1	10
1,2-DICHLOROTETRAFLUORO	TO15	@@@@@@	**65.7**	12/10/2008 16:13		UG/M3	6.8	34.9	10
1,3,5-TRIMETHYLBENZENE (M	TO15	@@@@@@	8.7 U	12/10/2008 16:13		UG/M3	8.7	24.6	10
1,3-BUTADIENE	TO15	@@@@@@	4.1 U	12/10/2008 16:13		UG/M3	4.1	11	10
1,3-DICHLOROBENZENE	TO15	@@@@@@	9 U	12/10/2008 16:13		UG/M3	9	30.1	10
1,4-DICHLOROBENZENE	TO15	@@@@@@	8.6 U	12/10/2008 16:13		UG/M3	8.6	30.1	10
1,4-DIOXANE (P-DIOXANE)	TO15	@@@@@@	12.5 U	12/10/2008 16:13		UG/M3	12.5	18	10
2-HEXANONE	TO15	@@@@@@	11.8 U	12/10/2008 16:13		UG/M3	11.8	20.5	10
4-ETHYLTOLUENE	TO15	@@@@@@	5.8 U	12/10/2008 16:13		UG/M3	5.8	24.6	10
ACETONE	TO15	@@@@@@	5.3 U	12/10/2008 16:13		UG/M3	5.3	11.9	10
ACRYLONITRILE	TO15	@@@@@@	5.9 U	12/10/2008 16:13		UG/M3	5.9	10.8	10
BENZENE	TO15	@@@@@@	4 U	12/10/2008 16:13		UG/M3	4	16	10
BENZYL CHLORIDE	TO15	@@@@@@	9 U	12/10/2008 16:13		UG/M3	9	25.8	10
BROMODICHLOROMETHANE	TO15	@@@@@@	12.7 U	12/10/2008 16:13		UG/M3	12.7	33.5	10
BROMOFORM	TO15	@@@@@@	19.6 U	12/10/2008 16:13		UG/M3	19.6	51.7	10
BROMOMETHANE	TO15	@@@@@@	5.8 U	12/10/2008 16:13		UG/M3	5.8	19.4	10
CARBON DISULFIDE	TO15	@@@@@@	3 U	12/10/2008 16:13		UG/M3	3	15.6	10
CARBON TETRACHLORIDE	TO15	@@@@@@	13.9 U	12/10/2008 16:13		UG/M3	13.9	31.5	10
CHLOROBENZENE	TO15	@@@@@@	6.9 U	12/10/2008 16:13		UG/M3	6.9	23	10
CHLOROETHANE	TO15	@@@@@@	4.2 U	12/10/2008 16:13		UG/M3	4.2	13.2	10
CHLOROFORM	TO15	@@@@@@	10.8 U	12/10/2008 16:13		UG/M3	10.8	24.3	10
CHLOROMETHANE	TO15	@@@@@@	2.6 U	12/10/2008 16:13		UG/M3	2.6	10.3	10
cis-1,2-Dichloroethene	TO15	@@@@@@	4.8 U	12/10/2008 16:13		UG/M3	4.8	19.8	10
cis-1,3-DICHLOROPROPENE	TO15	@@@@@@	6.1 U	12/10/2008 16:13		UG/M3	6.1	22.7	10
CYCLOHEXANE	TO15	@@@@@@	**341.8**	12/10/2008 16:13		UG/M3	3.9	17.2	10
DIBROMOCHLOROMETHANE	TO15	@@@@@@	12.1 U	12/10/2008 16:13		UG/M3	12.1	42.6	10
DICHLORODIFLUOROMETHAN	TO15	@@@@@@	**441.6**	12/10/2008 16:13		UG/M3	5.3	24.7	10
ETHANOL	TO15	@@@@@@	3.3 U	12/10/2008 16:13		UG/M3	3.3	9.4	10
ETHYL ACETATE	TO15	@@@@@@	5.5 U	12/10/2008 16:13		UG/M3	5.5	18	10
ETHYLBENZENE	TO15	@@@@@@	6.1 U	12/10/2008 16:13		UG/M3	6.1	21.7	10
HEXACHLOROBUTADIENE	TO15	@@@@@@	43.8 U	12/10/2008 16:13		UG/M3	43.8	53.3	10
ISOPROPANOL	TO15	@@@@@@	2.3 U	12/10/2008 16:13		UG/M3	2.3	12.3	10
ISOPROPYLBENZENE (CUMEN	TO15	@@@@@@	7.4 U	12/10/2008 16:13		UG/M3	7.4	24.6	10

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215

PROJECT ID: Litrus Central

PEL Lab# : SA88560-03

Client ID : V-15

Matrix : A

Collection Information:

Sample Date: 12/8/2008 12:34:00 PM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
METHYL ETHYL KETONE (2-BU	TO15	@@@@@@	3.1 U	12/10/2008 16:13		UG/M3	3.1	14.7	10
METHYL ISOBUTYL KETONE (4	TO15	@@@@@@	13.9 U	12/10/2008 16:13		UG/M3	13.9	20.5	10
Methyl tert-butyl ether	TO15	@@@@@@	3.9 U	12/10/2008 16:13		UG/M3	3.9	18	10
METHYLENE CHLORIDE	TO15	@@@@@@	3.8 U	12/10/2008 16:13		UG/M3	3.8	17.4	10
n-BUTYLBENZENE	TO15	@@@@@@	6.8 U	12/10/2008 16:13		UG/M3	6.8	27.4	10
n-HEPTANE	TO15	@@@@@@	**43**	12/10/2008 16:13		UG/M3	4.5	20.5	10
n-HEXANE	TO15	@@@@@@	**166.1**	12/10/2008 16:13		UG/M3	3.3	17.6	10
o-Xylene	TO15	@@@@@@	5 U	12/10/2008 16:13		UG/M3	5	21.7	10
p,m-xylene	TO15	@@@@@@	10.7 U	12/10/2008 16:13		UG/M3	10.7	43.4	10
P-CYMENE (p-ISOPROPYLTOL	TO15	@@@@@@	6.5 U	12/10/2008 16:13		UG/M3	6.5	26.8	10
PROPYLENE	TO15	@@@@@@	5.2 U	12/10/2008 16:13		UG/M3	5.2	8.6	10
SEC-BUTYLBENZENE	TO15	@@@@@@	8 U	12/10/2008 16:13		UG/M3	8	27.4	10
STYRENE	TO15	@@@@@@	6.8 U	12/10/2008 16:13		UG/M3	6.8	21.3	10
Tetrachloroethene	TO15	@@@@@@	9.7 U	12/10/2008 16:13		UG/M3	9.7	33.9	10
TETRAHYDROFURAN	TO15	@@@@@@	5.7 U	12/10/2008 16:13		UG/M3	5.7	14.7	10
TOLUENE	TO15	@@@@@@	4.6 U	12/10/2008 16:13		UG/M3	4.6	18.8	10
trans-1,2-DICHLOROETHENE	TO15	@@@@@@	2.8 U	12/10/2008 16:13		UG/M3	2.8	19.8	10
trans-1,3-DICHLOROPROPENE	TO15	@@@@@@	5.3 U	12/10/2008 16:13		UG/M3	5.3	22.7	10
Trichloroethene	TO15	@@@@@@	8.2 U	12/10/2008 16:13		UG/M3	8.2	26.9	10
TRICHLOROFLUOROMETHAN	TO15	@@@@@@	11.1 U	12/10/2008 16:13		UG/M3	11.1	28.1	10
VINYL CHLORIDE	TO15	@@@@@@	**388.5**	12/10/2008 16:13		UG/M3	3.5	12.8	10
1-BROMO-4-FLUOROBENZENE	TO15	@@@@@@	**92.3**	12/10/2008 16:13		UG/M3			10

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

PEL Lab# : SA88560-04
Client ID : GAS-BLAK
Matrix : A

Collection Information:
Sample Date: 12/8/2008 12:36:00 PM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	TO15	@@@@@@	1.5 U	12/09/2008 22:41		UG/M3	1.5	3.4	1
1,1,1-TRICHLOROETHANE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.7	1
1,1,2,2-TETRACHLOROETHAN	TO15	@@@@@@	1.7 U	12/09/2008 22:41		UG/M3	1.7	3.4	1
1,1,2-TRICHLORO-1,2,2-TRIFLU	TO15	@@@@@@	1.3 U	12/09/2008 22:41		UG/M3	1.3	3.8	1
1,1,2-TRICHLOROETHANE	TO15	@@@@@@	0.9 U	12/09/2008 22:41		UG/M3	0.9	2.7	1
1,1-DICHLOROETHANE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2	1
1,1-DICHLOROETHENE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2	1
1,2,4-TRICHLOROBENZENE	TO15	@@@@@@	1.7 U	12/09/2008 22:41		UG/M3	1.7	3.7	1
1,2,4-Trimethylbenzene	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.5	1
1,2-DIBROMOETHANE (ETHYL	TO15	@@@@@@	1.3 U	12/09/2008 22:41		UG/M3	1.3	3.8	1
1,2-DICHLOROBENZENE	TO15	@@@@@@	0.8 U	12/09/2008 22:41		UG/M3	0.8	3	1
1,2-DICHLOROETHANE	TO15	@@@@@@	1 U	12/09/2008 22:41		UG/M3	1	2	1
1,2-DICHLOROPROPANE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.3	1
1,2-DICHLOROTETRAFLUORO	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	3.5	1
1,3,5-TRIMETHYLBENZENE (M	TO15	@@@@@@	0.9 U	12/09/2008 22:41		UG/M3	0.9	2.5	1
1,3-BUTADIENE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.1	1
1,3-DICHLOROBENZENE	TO15	@@@@@@	0.9 U	12/09/2008 22:41		UG/M3	0.9	3	1
1,4-DICHLOROBENZENE	TO15	@@@@@@	0.9 U	12/09/2008 22:41		UG/M3	0.9	3	1
1,4-DIOXANE (P-DIOXANE)	TO15	@@@@@@	1.2 U	12/09/2008 22:41		UG/M3	1.2	1.8	1
2-HEXANONE	TO15	@@@@@@	1.2 U	12/09/2008 22:41		UG/M3	1.2	2	1
4-ETHYLTOLUENE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	2.5	1
ACETONE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	1.2	1
ACRYLONITRILE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	1.1	1
BENZENE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.6	1
BENZYL CHLORIDE	TO15	@@@@@@	0.9 U	12/09/2008 22:41		UG/M3	0.9	2.6	1
BROMODICHLOROMETHANE	TO15	@@@@@@	1.3 U	12/09/2008 22:41		UG/M3	1.3	3.3	1
BROMOFORM	TO15	@@@@@@	2 U	12/09/2008 22:41		UG/M3	2	5.2	1
BROMOMETHANE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	1.9	1
CARBON DISULFIDE	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	1.6	1
CARBON TETRACHLORIDE	TO15	@@@@@@	1.4 U	12/09/2008 22:41		UG/M3	1.4	3.1	1
CHLOROBENZENE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.3	1
CHLOROETHANE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.3	1
CHLOROFORM	TO15	@@@@@@	1.1 U	12/09/2008 22:41		UG/M3	1.1	2.4	1
CHLOROMETHANE	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	1	1
cis-1,2-Dichloroethene	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2	1
cis-1,3-DICHLOROPROPENE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	2.3	1
CYCLOHEXANE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.7	1
DIBROMOCHLOROMETHANE	TO15	@@@@@@	1.2 U	12/09/2008 22:41		UG/M3	1.2	4.3	1
DICHLORODIFLUOROMETHAN	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2.5	1
ETHANOL	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	0.9	1
ETHYL ACETATE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	1.8	1
ETHYLBENZENE	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	2.2	1
HEXACHLOROBUTADIENE	TO15	@@@@@@	4.4 U	12/09/2008 22:41		UG/M3	4.4	5.3	1
ISOPROPANOL	TO15	@@@@@@	0.2 U	12/09/2008 22:41		UG/M3	0.2	1.2	1
ISOPROPYLBENZENE (CUMEN	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.5	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215

PROJECT ID: Litrus Central

PEL Lab# : SA88560-04

Client ID : GAS-BLAK

Matrix : A

Collection Information:

Sample Date: 12/8/2008 12:36:00 PM

Parameter	Method		Results	Analysis Date	Prep Date	Units	MDL	RL	Dilution Factor
METHYL ETHYL KETONE (2-BU	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	1.5	1
METHYL ISOBUTYL KETONE (4	TO15	@@@@@@	1.4 U	12/09/2008 22:41		UG/M3	1.4	2	1
Methyl tert-butyl ether	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.8	1
METHYLENE CHLORIDE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.7	1
n-BUTYLBENZENE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.7	1
n-HEPTANE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2	1
n-HEXANE	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	1.8	1
o-Xylene	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2.2	1
p,m-xylene	TO15	@@@@@@	1.1 U	12/09/2008 22:41		UG/M3	1.1	4.3	1
P-CYMENE (p-ISOPROPYLTOL	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	2.7	1
PROPYLENE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	0.9	1
SEC-BUTYLBENZENE	TO15	@@@@@@	0.8 U	12/09/2008 22:41		UG/M3	0.8	2.7	1
STYRENE	TO15	@@@@@@	0.7 U	12/09/2008 22:41		UG/M3	0.7	2.1	1
Tetrachloroethene	TO15	@@@@@@	1 U	12/09/2008 22:41		UG/M3	1	3.4	1
TETRAHYDROFURAN	TO15	@@@@@@	0.6 U	12/09/2008 22:41		UG/M3	0.6	1.5	1
TOLUENE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	1.9	1
trans-1,2-DICHLOROETHENE	TO15	@@@@@@	0.3 U	12/09/2008 22:41		UG/M3	0.3	2	1
trans-1,3-DICHLOROPROPENE	TO15	@@@@@@	0.5 U	12/09/2008 22:41		UG/M3	0.5	2.3	1
Trichloroethene	TO15	@@@@@@	0.8 U	12/09/2008 22:41		UG/M3	0.8	2.7	1
TRICHLOROFLUOROMETHAN	TO15	@@@@@@	1.1 U	12/09/2008 22:41		UG/M3	1.1	2.8	1
VINYL CHLORIDE	TO15	@@@@@@	0.4 U	12/09/2008 22:41		UG/M3	0.4	1.3	1
1-BROMO-4-FLUOROBENZENE	TO15	@@@@@@	**75.9**	12/09/2008 22:41		UG/M3			1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

QC SUMMARY

METHOD: TO15

Method Blank

Matrix : AIR

Associated Lab Samples : SA88560-04

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	U	12/9/2008		UG/M3	1.5	1
1,1,1-TRICHLOROETHANE	U	12/9/2008		UG/M3	0.7	1
1,1,2,2-TETRACHLOROETHAN	U	12/9/2008		UG/M3	1.7	1
1,1,2-TRICHLORO-1,2,2-TRIFLU	U	12/9/2008		UG/M3	1.3	1
1,1,2-TRICHLOROETHANE	U	12/9/2008		UG/M3	0.9	1
1,1-DICHLOROETHANE	U	12/9/2008		UG/M3	0.7	1
1,1-DICHLOROETHENE	U	12/9/2008		UG/M3	0.5	1
1,2,4-TRICHLOROBENZENE	U	12/9/2008		UG/M3	1.7	1
1,2,4-Trimethylbenzene	U	12/9/2008		UG/M3	0.7	1
1,2-DIBROMOETHANE (ETHYL	U	12/9/2008		UG/M3	1.3	1
1,2-DICHLOROBENZENE	U	12/9/2008		UG/M3	0.8	1
1,2-DICHLOROETHANE	U	12/9/2008		UG/M3	1	1
1,2-DICHLOROPROPANE	U	12/9/2008		UG/M3	0.7	1
1,2-DICHLOROTETRAFLUORO	U	12/9/2008		UG/M3	0.7	1
1,3,5-TRIMETHYLBENZENE (M	U	12/9/2008		UG/M3	0.9	1
1,3-BUTADIENE	U	12/9/2008		UG/M3	0.4	1
1,3-DICHLOROBENZENE	U	12/9/2008		UG/M3	0.9	1
1,4-DICHLOROBENZENE	U	12/9/2008		UG/M3	0.9	1
1,4-DIOXANE (P-DIOXANE)	U	12/9/2008		UG/M3	1.2	1
2-HEXANONE	U	12/9/2008		UG/M3	1.2	1
4-ETHYLTOLUENE	U	12/9/2008		UG/M3	0.6	1
ACETONE	U	12/9/2008		UG/M3	0.5	1
ACRYLONITRILE	U	12/9/2008		UG/M3	0.6	1
BENZENE	U	12/9/2008		UG/M3	0.4	1
BENZYL CHLORIDE	U	12/9/2008		UG/M3	0.9	1
BROMODICHLOROMETHANE	U	12/9/2008		UG/M3	1.3	1
BROMOFORM	U	12/9/2008		UG/M3	2	1
BROMOMETHANE	U	12/9/2008		UG/M3	0.6	1
CARBON DISULFIDE	U	12/9/2008		UG/M3	0.3	1
CARBON TETRACHLORIDE	U	12/9/2008		UG/M3	1.4	1
CHLOROBENZENE	U	12/9/2008		UG/M3	0.7	1
CHLOROETHANE	U	12/9/2008		UG/M3	0.4	1
CHLOROFORM	U	12/9/2008		UG/M3	1.1	1
CHLOROMETHANE	U	12/9/2008		UG/M3	0.3	1
cis-1,2-Dichloroethene	U	12/9/2008		UG/M3	0.5	1
cis-1,3-DICHLOROPROPENE	U	12/9/2008		UG/M3	0.6	1
CYCLOHEXANE	U	12/9/2008		UG/M3	0.4	1
DIBROMOCHLOROMETHANE	U	12/9/2008		UG/M3	1.2	1
DICHLORODIFLUOROMETHAN	U	12/9/2008		UG/M3	0.5	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central
METHOD: TO15

Method Blank **Matrix :** AIR

Associated Lab Samples : SA88560-04

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
ETHANOL	U	12/9/2008		UG/M3	0.3	1
ETHYL ACETATE	U	12/9/2008		UG/M3	0.6	1
ETHYLBENZENE	U	12/9/2008		UG/M3	0.6	1
HEXACHLOROBUTADIENE	U	12/9/2008		UG/M3	4.4	1
ISOPROPANOL	U	12/9/2008		UG/M3	0.2	1
ISOPROPYLBENZENE (CUMEN	U	12/9/2008		UG/M3	0.7	1
METHYL ETHYL KETONE (2-BU	U	12/9/2008		UG/M3	0.3	1
METHYL ISOBUTYL KETONE (4	U	12/9/2008		UG/M3	1.4	1
Methyl tert-butyl ether	U	12/9/2008		UG/M3	0.4	1
METHYLENE CHLORIDE	U	12/9/2008		UG/M3	0.4	1
n-BUTYLBENZENE	U	12/9/2008		UG/M3	0.7	1
n-HEPTANE	U	12/9/2008		UG/M3	0.5	1
n-HEXANE	U	12/9/2008		UG/M3	0.3	1
o-Xylene	U	12/9/2008		UG/M3	0.5	1
p,m-xylene	U	12/9/2008		UG/M3	1.1	1
P-CYMENE (p-ISOPROPYLTOL	U	12/9/2008		UG/M3	0.6	1
PROPYLENE	U	12/9/2008		UG/M3	0.5	1
SEC-BUTYLBENZENE	U	12/9/2008		UG/M3	0.8	1
STYRENE	U	12/9/2008		UG/M3	0.7	1
Tetrachloroethene	U	12/9/2008		UG/M3	1	1
TETRAHYDROFURAN	U	12/9/2008		UG/M3	0.6	1
TOLUENE	U	12/9/2008		UG/M3	0.5	1
trans-1,2-DICHLOROETHENE	U	12/9/2008		UG/M3	0.3	1
trans-1,3-DICHLOROPROPENE	U	12/9/2008		UG/M3	0.5	1
Trichloroethene	U	12/9/2008		UG/M3	0.8	1
TRICHLOROFLUOROMETHAN	U	12/9/2008		UG/M3	1.1	1
VINYL CHLORIDE	U	12/9/2008		UG/M3	0.4	1
1-BROMO-4-FLUOROBENZENE	75.9	12/9/2008		UG/M3	0	1

Method Blank **Matrix :** AIR

Associated Lab Samples : SA88560-01 SA88560-02 SA88560-03

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1,1,2-TETRACHLOROETHAN	U	12/10/2008		UG/M3	1.5	1
1,1,1-TRICHLOROETHANE	U	12/10/2008		UG/M3	0.7	1
1,1,2,2-TETRACHLOROETHAN	U	12/10/2008		UG/M3	1.7	1
1,1,2-TRICHLORO-1,2,2-TRIFLU	U	12/10/2008		UG/M3	1.3	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central
METHOD: TO15

Method Blank

Matrix : AIR

Associated Lab Samples : SA88560-01 SA88560-02 SA88560-03

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1,2-TRICHLOROETHANE	U	12/10/2008		UG/M3	0.9	1
1,1-DICHLOROETHANE	U	12/10/2008		UG/M3	0.7	1
1,1-DICHLOROETHENE	U	12/10/2008		UG/M3	0.5	1
1,2,4-TRICHLOROBENZENE	U	12/10/2008		UG/M3	1.7	1
1,2,4-Trimethylbenzene	U	12/10/2008		UG/M3	0.7	1
1,2-DIBROMOETHANE (ETHYL	U	12/10/2008		UG/M3	1.3	1
1,2-DICHLOROBENZENE	U	12/10/2008		UG/M3	0.8	1
1,2-DICHLOROETHANE	U	12/10/2008		UG/M3	1	1
1,2-DICHLOROPROPANE	U	12/10/2008		UG/M3	0.7	1
1,2-DICHLOROTETRAFLUORO	U	12/10/2008		UG/M3	0.7	1
1,3,5-TRIMETHYLBENZENE (M	U	12/10/2008		UG/M3	0.9	1
1,3-BUTADIENE	U	12/10/2008		UG/M3	0.4	1
1,3-DICHLOROBENZENE	U	12/10/2008		UG/M3	0.9	1
1,4-DICHLOROBENZENE	U	12/10/2008		UG/M3	0.9	1
1,4-DIOXANE (P-DIOXANE)	U	12/10/2008		UG/M3	1.2	1
2-HEXANONE	U	12/10/2008		UG/M3	1.2	1
4-ETHYLTOLUENE	U	12/10/2008		UG/M3	0.6	1
ACETONE	U	12/10/2008		UG/M3	0.5	1
ACRYLONITRILE	U	12/10/2008		UG/M3	0.6	1
BENZENE	U	12/10/2008		UG/M3	0.4	1
BENZYL CHLORIDE	U	12/10/2008		UG/M3	0.9	1
BROMODICHLOROMETHANE	U	12/10/2008		UG/M3	1.3	1
BROMOFORM	U	12/10/2008		UG/M3	2	1
BROMOMETHANE	U	12/10/2008		UG/M3	0.6	1
CARBON DISULFIDE	U	12/10/2008		UG/M3	0.3	1
CARBON TETRACHLORIDE	U	12/10/2008		UG/M3	1.4	1
CHLOROBENZENE	U	12/10/2008		UG/M3	0.7	1
CHLOROETHANE	U	12/10/2008		UG/M3	0.4	1
CHLOROFORM	U	12/10/2008		UG/M3	1.1	1
CHLOROMETHANE	U	12/10/2008		UG/M3	0.3	1
cis-1,2-Dichloroethene	U	12/10/2008		UG/M3	0.5	1
cis-1,3-DICHLOROPROPENE	U	12/10/2008		UG/M3	0.6	1
CYCLOHEXANE	U	12/10/2008		UG/M3	0.4	1
DIBROMOCHLOROMETHANE	U	12/10/2008		UG/M3	1.2	1
DICHLORODIFLUOROMETHAN	U	12/10/2008		UG/M3	0.5	1
ETHANOL	U	12/10/2008		UG/M3	0.3	1
ETHYL ACETATE	U	12/10/2008		UG/M3	0.6	1
ETHYLBENZENE	U	12/10/2008		UG/M3	0.6	1
HEXACHLOROBUTADIENE	U	12/10/2008		UG/M3	4.4	1
ISOPROPANOL	U	12/10/2008		UG/M3	0.2	1
ISOPROPYLBENZENE (CUMEN	U	12/10/2008		UG/M3	0.7	1
METHYL ETHYL KETONE (2-BU	U	12/10/2008		UG/M3	0.3	1

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215

PROJECT ID: Litrus Central

METHOD: TO15

Method Blank **Matrix :** AIR

Associated Lab Samples : SA88560-01 SA88560-02 SA88560-03

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
METHYL ISOBUTYL KETONE (4	U	12/10/2008		UG/M3	1.4	1
Methyl tert-butyl ether	U	12/10/2008		UG/M3	0.4	1
METHYLENE CHLORIDE	U	12/10/2008		UG/M3	0.4	1
n-BUTYLBENZENE	U	12/10/2008		UG/M3	0.7	1
n-HEPTANE	U	12/10/2008		UG/M3	0.5	1
n-HEXANE	U	12/10/2008		UG/M3	0.3	1
o-Xylene	U	12/10/2008		UG/M3	0.5	1
p,m-xylene	U	12/10/2008		UG/M3	1.1	1
P-CYMENE (p-ISOPROPYLTOL	U	12/10/2008		UG/M3	0.6	1
PROPYLENE	U	12/10/2008		UG/M3	0.5	1
SEC-BUTYLBENZENE	U	12/10/2008		UG/M3	0.8	1
STYRENE	U	12/10/2008		UG/M3	0.7	1
Tetrachloroethene	U	12/10/2008		UG/M3	1	1
TETRAHYDROFURAN	U	12/10/2008		UG/M3	0.6	1
TOLUENE	U	12/10/2008		UG/M3	0.5	1
trans-1,2-DICHLOROETHENE	U	12/10/2008		UG/M3	0.3	1
trans-1,3-DICHLOROPROPENE	U	12/10/2008		UG/M3	0.5	1
Trichloroethene	U	12/10/2008		UG/M3	0.8	1
TRICHLOROFLUOROMETHAN	U	12/10/2008		UG/M3	1.1	1
VINYL CHLORIDE	U	12/10/2008		UG/M3	0.4	1
1-BROMO-4-FLUOROBENZENE	75.2	12/10/2008		UG/M3	0	1

LABORATORY CONTROL SAMPLE **Matrix :** AIR

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS	RPD	RPD LIMIT
1,1,1,2-TETRACHLOROETHAN	UG/M3	68.7	62.6	91	(60-160)		
1,1,1-TRICHLOROETHANE	UG/M3	54.6	45.5	83	(70-130)		
1,1,2,2-TETRACHLOROETHAN	UG/M3	68.7	65.4	95	(70-130)		
1,1,2-TRICHLORO-1,2,2-TRIFLU	UG/M3	76.6	73.4	96	(70-130)		
1,1,2-TRICHLOROETHANE	UG/M3	54.6	44.6	82	(70-130)		
1,1-DICHLOROETHANE	UG/M3	40.5	30.1	74	(70-130)		
1,1-DICHLOROETHENE	UG/M3	39.7	38.1	96	(70-130)		
1,2,4-TRICHLOROBENZENE	UG/M3	74.2	61.6	83	(70-130)		
1,2,4-Trimethylbenzene	UG/M3	49.2	53.1	108	(70-130)		
1,2-DIBROMOETHANE (ETHYL	UG/M3	76.9	63.8	83	(70-130)		
1,2-DICHLOROBENZENE	UG/M3	60.1	52.7	88	(70-130)		
1,2-DICHLOROETHANE	UG/M3	40.5	34.6	86	(70-130)		
1,2-DICHLOROPROPANE	UG/M3	46.2	40.5	88	(70-130)		
1,2-DICHLOROTETRAFLUORO	UG/M3	69.9	69.3	99	(70-130)		
1,3,5-TRIMETHYLBENZENE (M	UG/M3	49.2	47.6	97	(70-130)		

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

METHOD: TO15

LABORATORY CONTROL SAMPLE **Matrix :** AIR

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC		% REC LIMITS	RPD	RPD LIMIT
1,3-BUTADIENE	UG/M3	22.1	25	113		(70-130)		
1,3-DICHLOROBENZENE	UG/M3	60.1	56.5	94		(70-130)		
1,4-DICHLOROBENZENE	UG/M3	60.1	54.1	90		(70-130)		
1,4-DIOXANE (P-DIOXANE)	UG/M3	36	27.7	77		(60-160)		
2-HEXANONE	UG/M3	41	30.9	75		(70-130)		
4-ETHYLTOLUENE	UG/M3	49.2	49.7	101		(70-130)		
ACETONE	UG/M3	23.8	24	101		(70-130)		
ACRYLONITRILE	UG/M3	21.7	21.4	99		(60-160)		
BENZENE	UG/M3	31.9	28.8	90		(70-130)		
BENZYL CHLORIDE	UG/M3	51.5	98.4	191	*	(70-130)		
BROMODICHLOROMETHANE	UG/M3	67	57.4	86		(70-130)		
BROMOFORM	UG/M3	103.4	92.7	90		(70-130)		
BROMOMETHANE	UG/M3	38.8	45.8	118		(70-130)		
CARBON DISULFIDE	UG/M3	31.1	32.4	104		(70-130)		
CARBON TETRACHLORIDE	UG/M3	62.9	54	86		(70-130)		
CHLOROBENZENE	UG/M3	46.1	44	96		(70-130)		
CHLOROETHANE	UG/M3	26.4	30.9	117		(70-130)		
CHLOROFORM	UG/M3	48.7	41.9	86		(70-130)		
CHLOROMETHANE	UG/M3	20.7	20.5	99		(70-130)		
cis-1,2-Dichloroethene	UG/M3	39.7	34.3	86		(70-130)		
cis-1,3-DICHLOROPROPENE	UG/M3	45.4	39.5	87		(70-130)		
CYCLOHEXANE	UG/M3	34.4	32.6	95		(70-130)		
DIBROMOCHLOROMETHANE	UG/M3	85.2	70.8	83		(70-130)		
DICHLORODIFLUOROMETHAN	UG/M3	49.4	54.4	110		(70-130)		
ETHANOL	UG/M3	18.9	17.6	93		(36.7-130)		
ETHYL ACETATE	UG/M3	36	33.9	94		(70-130)		
ETHYLBENZENE	UG/M3	43.4	46	106		(70-130)		
HEXACHLOROBUTADIENE	UG/M3	106.6	77.9	73		(70-130)		
ISOPROPANOL	UG/M3	24.5	21.2	86		(70-130)		
ISOPROPYLBENZENE (CUMEN	UG/M3	49.2	61	124		(60-160)		
METHYL ETHYL KETONE (2-BU	UG/M3	29.5	22.6	77		(70-130)		
METHYL ISOBUTYL KETONE (4	UG/M3	41	33.4	82		(70-130)		
Methyl tert-butyl ether	UG/M3	36.1	38.2	106		(70-130)		
METHYLENE CHLORIDE	UG/M3	34.7	35.4	102		(70-130)		
n-BUTYLBENZENE	UG/M3	54.9	91.1	166	*	(60-160)		
n-HEPTANE	UG/M3	41	38.7	94		(70-130)		
n-HEXANE	UG/M3	35.3	33	94		(70-130)		
o-Xylene	UG/M3	43.4	48.1	111		(70-130)		
p,m-xylene	UG/M3	86.7	94.9	109		(70-130)		
P-CYMENE (p-ISOPROPYLTOL	UG/M3	53.7	101.4	189	*	(60-160)		
PROPYLENE	UG/M3	17.2	16.4	95		(70-130)		
SEC-BUTYLBENZENE	UG/M3	54.9	91.7	167	*	(60-160)		
STYRENE	UG/M3	42.5	48.5	114		(70-130)		
Tetrachloroethene	UG/M3	67.8	58.9	87		(70-130)		
TETRAHYDROFURAN	UG/M3	29.5	22.9	78		(70-130)		
TOLUENE	UG/M3	37.6	34.2	91		(70-130)		
trans-1,2-DICHLOROETHENE	UG/M3	39.7	36.9	93		(70-130)		

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

METHOD: TO15

LABORATORY CONTROL SAMPLE **Matrix :** AIR

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS	RPD	RPD LIMIT
trans-1,3-DICHLOROPROPENE	UG/M3	45.4	36.5	80	(70-130)		
Trichloroethene	UG/M3	53.7	46.5	87	(70-130)		
TRICHLOROFLUOROMETHAN	UG/M3	56.2	62.4	111	(70-130)		
VINYL CHLORIDE	UG/M3	25.6	28.4	111	(70-130)		
1-BROMO-4-FLUOROBENZENE	UG/M3	100	71.1	99	(70-130)		

LABORATORY CONTROL SAMPLE **Matrix :** AIR

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS	RPD	RPD LIMIT
1,1,1,2-TETRACHLOROETHAN	UG/M3	68.7	62.6	91	(60-160)		
1,1,1-TRICHLOROETHANE	UG/M3	54.6	45	82	(70-130)		
1,1,2,2-TETRACHLOROETHAN	UG/M3	68.7	64.9	94	(70-130)		
1,1,2-TRICHLORO-1,2,2-TRIFLU	UG/M3	76.6	75.6	99	(70-130)		
1,1,2-TRICHLOROETHANE	UG/M3	54.6	45	82	(70-130)		
1,1-DICHLOROETHANE	UG/M3	40.5	29.6	73	(70-130)		
1,1-DICHLOROETHENE	UG/M3	39.7	38.5	97	(70-130)		
1,2,4-TRICHLOROBENZENE	UG/M3	74.2	58.3	78	(70-130)		
1,2,4-Trimethylbenzene	UG/M3	49.2	51.1	104	(70-130)		
1,2-DIBROMOETHANE (ETHYL	UG/M3	76.9	64.2	84	(70-130)		
1,2-DICHLOROBENZENE	UG/M3	60.1	52.2	87	(70-130)		
1,2-DICHLOROETHANE	UG/M3	40.5	34.2	84	(70-130)		
1,2-DICHLOROPROPANE	UG/M3	46.2	40.3	87	(70-130)		
1,2-DICHLOROTETRAFLUORO	UG/M3	69.9	70.6	101	(70-130)		
1,3,5-TRIMETHYLBENZENE (M	UG/M3	49.2	46.2	94	(70-130)		
1,3-BUTADIENE	UG/M3	22.1	25	113	(70-130)		
1,3-DICHLOROBENZENE	UG/M3	60.1	55.9	93	(70-130)		
1,4-DICHLOROBENZENE	UG/M3	60.1	53	88	(70-130)		
1,4-DIOXANE (P-DIOXANE)	UG/M3	36	27.7	77	(60-160)		
2-HEXANONE	UG/M3	41	29.7	72	(70-130)		
4-ETHYLTOLUENE	UG/M3	49.2	57	116	(70-130)		
ACETONE	UG/M3	23.8	24.5	103	(70-130)		
ACRYLONITRILE	UG/M3	21.7	21.4	98	(60-160)		
BENZENE	UG/M3	31.9	28	88	(70-130)		
BENZYL CHLORIDE	UG/M3	51.5	96.9	188 *	(70-130)		
BROMODICHLOROMETHANE	UG/M3	67	56.9	85	(70-130)		
BROMOFORM	UG/M3	103.4	93	90	(70-130)		
BROMOMETHANE	UG/M3	38.8	47	121	(70-130)		
CARBON DISULFIDE	UG/M3	31.1	33	106	(70-130)		
CARBON TETRACHLORIDE	UG/M3	62.9	54.5	87	(70-130)		
CHLOROBENZENE	UG/M3	46.1	44	96	(70-130)		
CHLOROETHANE	UG/M3	26.4	31.4	119	(70-130)		
CHLOROFORM	UG/M3	48.7	42	86	(70-130)		
CHLOROMETHANE	UG/M3	20.7	20.2	98	(70-130)		
cis-1,2-Dichloroethene	UG/M3	39.7	33	83	(70-130)		
cis-1,3-DICHLOROPROPENE	UG/M3	45.4	38.5	85	(70-130)		
CYCLOHEXANE	UG/M3	34.4	31.4	91	(70-130)		
DIBROMOCHLOROMETHANE	UG/M3	85.2	72	84	(70-130)		

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

METHOD: TO15

LABORATORY CONTROL SAMPLE **Matrix :** AIR

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC		% REC LIMITS	RPD	RPD LIMIT
DICHLORODIFLUOROMETHAN	UG/M3	49.4	53.4	108		(70-130)		
ETHANOL	UG/M3	18.9	17.2	91		(36.7-130)		
ETHYL ACETATE	UG/M3	36	34.1	95		(70-130)		
ETHYLBENZENE	UG/M3	43.4	44.7	103		(70-130)		
HEXACHLOROBUTADIENE	UG/M3	106.6	75	70		(70-130)		
ISOPROPANOL	UG/M3	24.5	21	85		(70-130)		
ISOPROPYLBENZENE (CUMEN	UG/M3	49.2	59.5	121		(60-160)		
METHYL ETHYL KETONE (2-BU	UG/M3	29.5	22.6	77		(70-130)		
METHYL ISOBUTYL KETONE (4	UG/M3	41	33	81		(70-130)		
Methyl tert-butyl ether	UG/M3	36.1	36	100		(70-130)		
METHYLENE CHLORIDE	UG/M3	34.7	36.1	104		(70-130)		
n-BUTYLBENZENE	UG/M3	54.9	87.3	159		(60-160)		
n-HEPTANE	UG/M3	41	38.1	93		(70-130)		
n-HEXANE	UG/M3	35.3	33	94		(70-130)		
o-Xylene	UG/M3	43.4	47.3	109		(70-130)		
p,m-xylene	UG/M3	86.7	93.2	108		(70-130)		
P-CYMENE (p-ISOPROPYLTOL	UG/M3	53.7	97.7	182	*	(60-160)		
PROPYLENE	UG/M3	17.2	15.2	88		(70-130)		
SEC-BUTYLBENZENE	UG/M3	54.9	88.4	161	*	(60-160)		
STYRENE	UG/M3	42.5	47.6	112		(70-130)		
Tetrachloroethene	UG/M3	67.8	58.2	86		(70-130)		
TETRAHYDROFURAN	UG/M3	29.5	21.9	74		(70-130)		
TOLUENE	UG/M3	37.6	33.6	89		(70-130)		
trans-1,2-DICHLOROETHENE	UG/M3	39.7	37.5	95		(70-130)		
trans-1,3-DICHLOROPROPENE	UG/M3	45.4	35.5	78		(70-130)		
Trichloroethene	UG/M3	53.7	47.3	88		(70-130)		
TRICHLOROFLUOROMETHAN	UG/M3	56.2	64.6	115		(70-130)		
VINYL CHLORIDE	UG/M3	25.6	28.6	112		(70-130)		
1-BROMO-4-FLUOROBENZENE	UG/M3	100	75.9	106		(70-130)		

- CERTIFICATE OF ANALYSIS -

FLDOH #E84207

To: Troy Hays
Jones Edmunds & Associates, In

WORK ORDER: 2511215
PROJECT ID: Litrus Central

Mark Gudnason

Validity unknown

Digitally signed by Mark Gudnason
DN: cn=Mark Gudnason, c=US
Date: 2008.12.17 19:12:12 -05'00'

Brian C. Spann   Laboratory Manager

or

Mark Gudnason   Quality Assurance Officer

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page_____ of _____

Z5U215 TR

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: ______
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Troy Hays @ Jones Edmunds
730 NE Waldo Rd.
Gainesville, FL
32641

Project Mgr.: Troy Hays

Invoice To: Same

P.O. No.: _____ RQN: _____

Project No.: _____

Site Name: Citrus Central

Location: Lecanto FL State: FL

Sampler(s) Troy Hays

1=Na_2S2O_3 2=HC1 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8=$NaHSO_4$ 9=_____ 10=_____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1=_____ X2=_____ X3=_____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	.3 L Summa	TO-15 SIM							QA Reporting Notes
1085	MW-10	12/8	1020	G	A						1								-01
0125	MW-17	12/8	1147	G	A						1								-02
0130	V-15	12/8	1234	G	A						1								-03
0103	GAS-BLAK	12/8	1236	G	A						1								-04

QA Reporting Notes: (check if needed)

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DEP RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

☐ Fax results when available to (_____) _____
☐ E-mail to thays@jonesedmunds.com
EDD Format _____
Condition upon receipt: ☐ Iced ☒ Ambient ☐ °C 20.0C

Relinquished by:	Received by:	Date:	Time:
	[signature]	12-1-08	1320
	[signature]	12-8-08	15:00

Agawam = TO-15 SIM

11 Almgren Drive • Agawam, Massachusetts 01001 • 413-789-9018 • Fax 413-789-4076 • www.spectrum-analytical.com

SAMPLE RECEIPT CONFIRMATION SHEET

Client Information

SDG:	2511215	**Req:**	87210
Client:	JONESEDMUNDS	**Project:**	Generic GNV
Level:	1	**Date Rec'd:**	12/8/2008 3:00:00 PM
Rec'd via:	Client	**Due Date:**	12/15/08

Sample Verification

Samples/Cooler Secure?	Yes	**All Samples on COC accounted For?**	Yes
Temperature of Samples(Celsius)	4C	**All Samples Rec'd Intact?**	Yes
pH Verified?	No	**Sample Vol. Stuff. For Analysis?**	Yes
pH WNL?	No	**Samples Rec'd W/I Hold Time?**	Yes
Soil Origin (Domestic/Foreign):		**Are All Samples to be Analyzed?**	Yes
Site Location/Project on COC?	Yes	**Correct Sample Containers?**	Yes
Client Project # on COC?	Yes	**COC Comments written on COC?**	Yes
Project Mgr. Indicated on COC?	Yes	**Samplers Initials on COC?**	Yes
COC relinquished/Dated by Client?	Yes	**Sample Date/Time Indicated?**	Yes
COC Received/Dated by PEL?	Yes	**TAT Requested:**	STD
Specific Subcontract Indicated?	Yes	**Client Requests Verbal Results?**	No
Samples Received By	Client	**Client Requests Faxed Results?**	No
PEL to Conduct ALL Analyses?	No	**Specific tests noted on COC**	

PEER REVIEW [signature]

PEL, a Division of Spectrum Analytical, Inc.

8405 Benjamin Rd.,
Suite A
Tampa, FL 33634

CHAIN-OF-CUSTODY RECORD

Monday, December 08, 2008 3:38:30 PM

WorkOrder: 2511215

Send to: MG

Spectrum Analytical, Inc.
11 Almgren Dr.
Agawam, MA 01001
Phone: 800-789-9115 FAX: 413-789-4076

Project: Generic GNV
Project Name Litrus Central

Report To: DW
Report Level: 1
Report RLU or MDLU: MDL U
J Code results between MDL and RL

Sample ID	LabID	Collection Date	Date Needed	Mtx	Cont	Requested Tests: TO15										Comments
MW-10	251121501	12/8/2008 10:20:00 AM	12/12/2008	A	1	X										Summa Air Canisters
MW-17	251121502	12/8/2008 11:47:00 AM	12/12/2008	A	1	X										Summa Air Canisters
V-15	251121503	12/8/2008 12:34:00 PM	12/12/2008	A	1	X										Summa Air Canisters
GAS-BLAK	251121504	12/8/2008 12:36:00 PM	12/12/2008	A	1	X										Summa Air Canisters

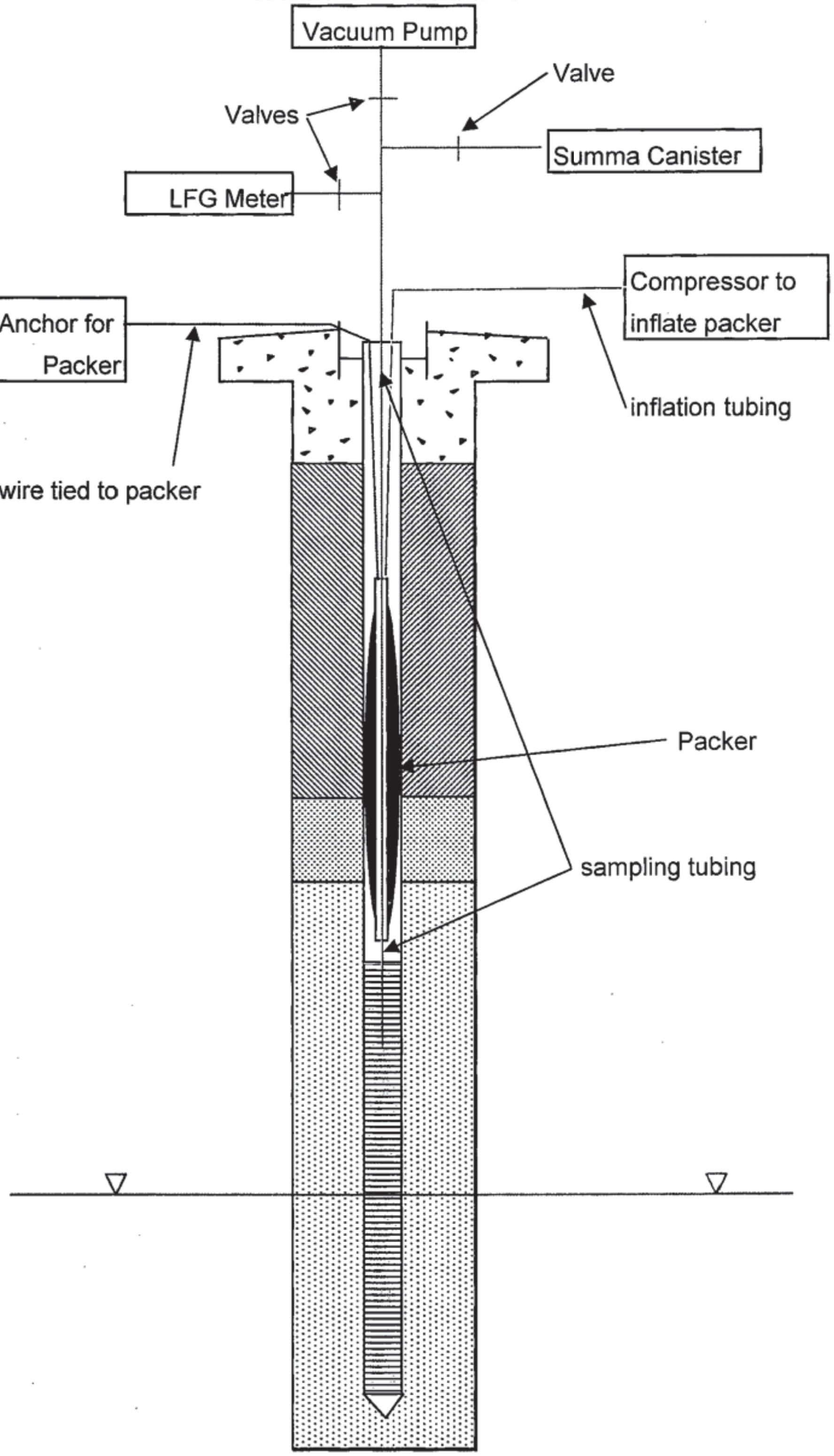
Comments:

		Date/Time			Date/Time
Relinquished by:	TJ2S	12/8/08 1546	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		

LFG SAMPLING SCHEMATIC

Client: Citrus County

Location: Central Landfill



Notes: Not to scale

Summa canister comes from the lab under vacuum.

Close the valves on the LFG meter and vaccum pump and open valve on the canister when ready to collect sample.

JONES EDMUNDS
ENGINEERS | ARCHITECTS | SCIENTISTS

Table 7: Comparison of Actual and Calculated Groundwater Concentrations

	Vadose gas concentration (ug/m3)	Converted gas concentration (ppm)*	Molecular Weight	Henry's Law Constant (atm-m3/mol)	Calculated Groundwater (ug/L)	Actual Groundwater (ug/L)	Standard (ug/L)
1,1- Dichloroethane	138.9	ug/m3 * 0.000405 = 0.05625	99	0.00562	0.99	0.75	70***
1,4- Dichlorobenzene	186.4	ug/m3 *0.000601 = 0.112	147	0.00243	6.8	4.6	75***
Benzene	165.6	ug/m3 * 0.000313 = 0.0518	78.1	0.00555	0.73	1.4	1***
Chlorobenzene	47.9	ug/m3 *0.000461 = 0.0221	112.6	0.0037	0.67	0.33	100***
cis-1,2-Dichloroethene	519.4	ug/m3 * 0.000397= 0.2062	97	0.00408	4.9	5.4	70***
m&p-Xylenes	763	ug/m3 *0.000434 = 0.3311	106.2	0.0075	4.7	3.4	20****
Methylene Chloride	199.3	ug/m3 *0.000347 = 0.0692	84.9	0.00219	2.7	3.9	5***
o-Xylenes	274.4	ug/m3 *0.000434 = 0.01191	106.2	0.00519	2.4	0.34	20****
Vinyl Chloride	659.5	ug/m3 * 0.000256 = 0.1688	62.5	0.027	0.39	0.92	1***
Dichlorodifluoromethane	1320.3	ug/m3 * 0.000495 = 0.6535	120.91	0.343	0.23	non-detect	1400*****
Cyclohexane	187.9	ug/m3 * 0.000344 = 0.0646	84.2	0.196	0.03	**	******
1,2,4-Trimethylbenzene	634.2	ug/m3 *0.000492 = 0.312	120.2	0.0058	6.4	**	10*****
Isopropylbenzene	395.8	ug/m3 * 0.000492 = 0.1947	120.2	1.16	0.02	**	0.8*****

* Conversion factors from NIOSH Handbook

**Not included in groundwater sampling requirements

***Florida Primary Drinking Water Standard

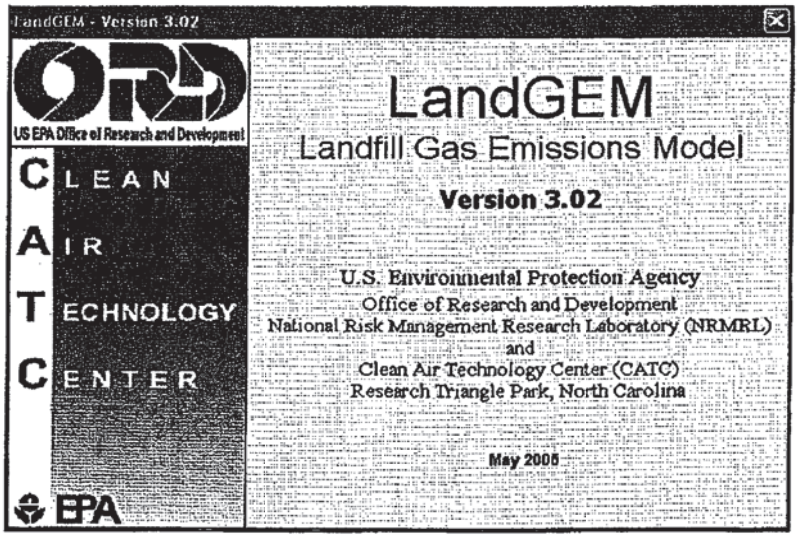
****Florida Secondary Drinking Water Standard

*****62-777Cleanup Target Level

******No Pre-Listed Standard

ATTACHMENT 2

LANDGEM MODEL OUTPUT



Summary Report

Landfill Name or Identifier: Citrus County Central 60-Acres Closed Landfill

Date: Thursday, September 25, 2008

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation *(m^3/year)*
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate *($year^{-1}$)*
L_o = potential methane generation capacity *(m^3/Mg)*
M_i = mass of waste accepted in the i^{th} year *(Mg)*
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year *(decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1975**	
Landfill Closure Year (with 80-year limit)	**1988**	
Actual Closure Year (without limit)	***1988***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity		*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year*$^{-1}$
Potential Methane Generation Capacity, L_o	**170**	*m*^{3}*/Mg*
NMOC Concentration	**4,000**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Total landfill gas**
Gas / Pollutant #2:	**Methane**
Gas / Pollutant #3:	**Carbon dioxide**
Gas / Pollutant #4:	**NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1975	64,545	71,000	0	0
1976	64,545	71,000	64,545	71,000
1977	64,545	71,000	129,091	142,000
1978	64,545	71,000	193,636	213,000
1979	64,545	71,000	258,182	284,000
1980	64,545	71,000	322,727	355,000
1981	64,545	71,000	387,273	426,000
1982	64,545	71,000	451,818	497,000
1983	64,545	71,000	516,364	568,000
1984	72,727	80,000	580,909	639,000
1985	79,091	87,000	653,636	719,000
1986	79,091	87,000	732,727	806,000
1987	79,091	87,000	811,818	893,000
1988	85,455	94,000	890,909	980,000
1989	0	0	976,364	1,074,000
1990	0	0	976,364	1,074,000
1991	0	0	976,364	1,074,000
1992	0	0	976,364	1,074,000
1993	0	0	976,364	1,074,000
1994	0	0	976,364	1,074,000
1995	0	0	976,364	1,074,000
1996	0	0	976,364	1,074,000
1997	0	0	976,364	1,074,000
1998	0	0	976,364	1,074,000
1999	0	0	976,364	1,074,000
2000	0	0	976,364	1,074,000
2001	0	0	976,364	1,074,000
2002	0	0	976,364	1,074,000
2003	0	0	976,364	1,074,000
2004	0	0	976,364	1,074,000
2005	0	0	976,364	1,074,000
2006	0	0	976,364	1,074,000
2007	0	0	976,364	1,074,000
2008	0	0	976,364	1,074,000
2009	0	0	976,364	1,074,000
2010	0	0	976,364	1,074,000
2011	0	0	976,364	1,074,000
2012	0	0	976,364	1,074,000
2013	0	0	976,364	1,074,000
2014	0	0	976,364	1,074,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2015	0	0	976,364	1,074,000
2016	0	0	976,364	1,074,000
2017	0	0	976,364	1,074,000
2018	0	0	976,364	1,074,000
2019	0	0	976,364	1,074,000
2020	0	0	976,364	1,074,000
2021	0	0	976,364	1,074,000
2022	0	0	976,364	1,074,000
2023	0	0	976,364	1,074,000
2024	0	0	976,364	1,074,000
2025	0	0	976,364	1,074,000
2026	0	0	976,364	1,074,000
2027	0	0	976,364	1,074,000
2028	0	0	976,364	1,074,000
2029	0	0	976,364	1,074,000
2030	0	0	976,364	1,074,000
2031	0	0	976,364	1,074,000
2032	0	0	976,364	1,074,000
2033	0	0	976,364	1,074,000
2034	0	0	976,364	1,074,000
2035	0	0	976,364	1,074,000
2036	0	0	976,364	1,074,000
2037	0	0	976,364	1,074,000
2038	0	0	976,364	1,074,000
2039	0	0	976,364	1,074,000
2040	0	0	976,364	1,074,000
2041	0	0	976,364	1,074,000
2042	0	0	976,364	1,074,000
2043	0	0	976,364	1,074,000
2044	0	0	976,364	1,074,000
2045	0	0	976,364	1,074,000
2046	0	0	976,364	1,074,000
2047	0	0	976,364	1,074,000
2048	0	0	976,364	1,074,000
2049	0	0	976,364	1,074,000
2050	0	0	976,364	1,074,000
2051	0	0	976,364	1,074,000
2052	0	0	976,364	1,074,000
2053	0	0	976,364	1,074,000
2054	0	0	976,364	1,074,000

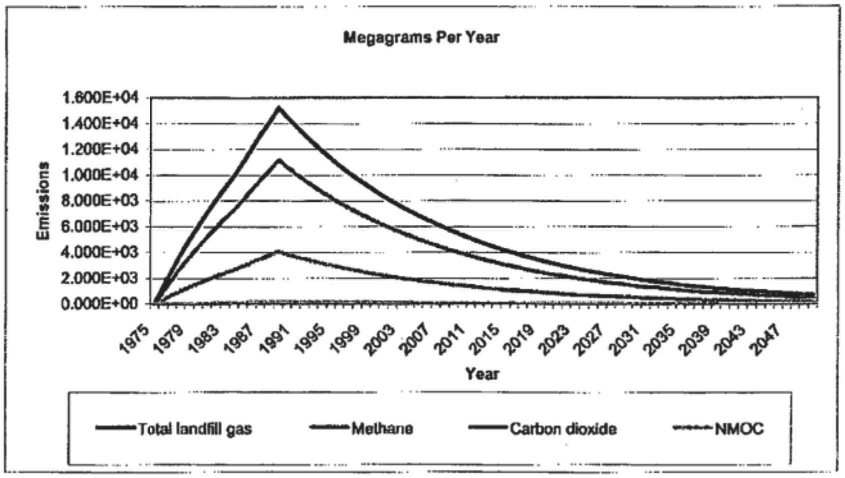
Pollutant Parameters

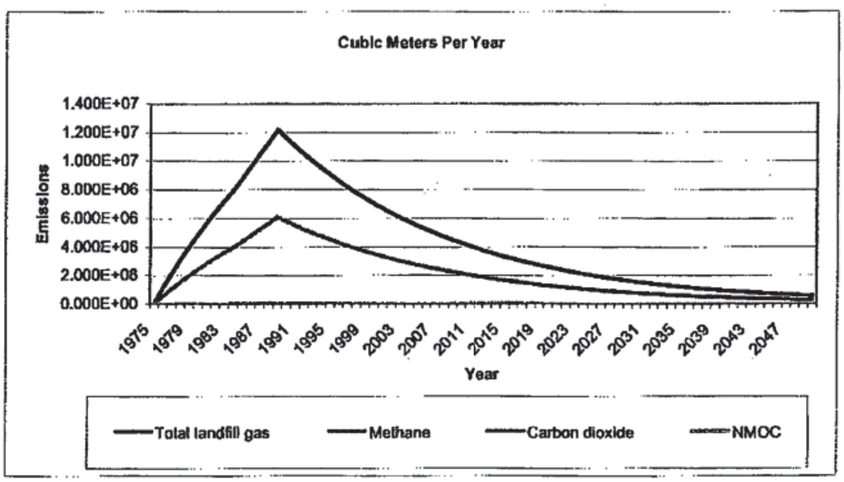
	Compound	Gas / Pollutant Default Parameters: Concentration (*ppmv*)	Molecular Weight	User-specified Pollutant Parameters: Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

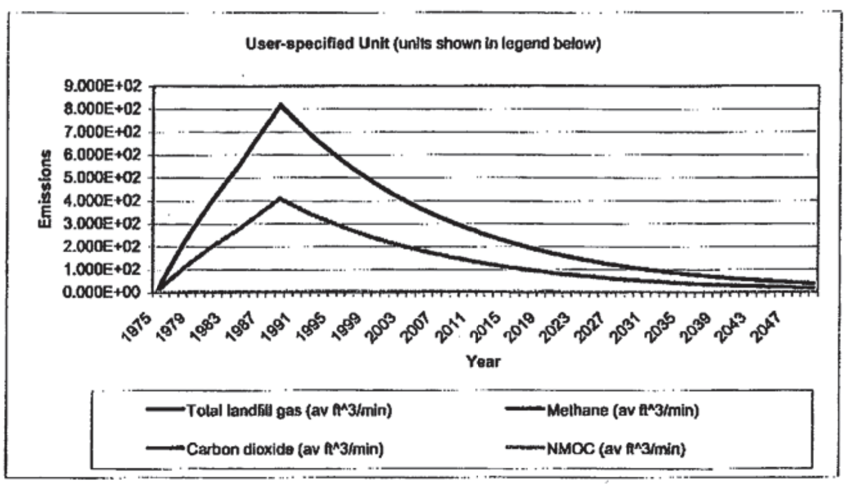
Pollutant Parameters (Continued)

	Gas / Pollutant Default Parameters:			User-specified Pollutant Parameters:	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs


Megagrams Per Year
1.600E+04
1.400E+04
1.200E+04
1.000E+04
8.000E+03
6.000E+03
4.000E+03
2.000E+03
0.000E+00
Emissions
1975 1979 1983 1987 1991 1995 1999 2003 2007 2011 2015 2019 2023 2027 2031 2035 2039 2043 2047
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
1.400E+07
1.200E+07
1.000E+07
8.000E+06
6.000E+06
4.000E+06
2.000E+06
0.000E+00
Emissions
1975 1979 1983 1987 1991 1995 1999 2003 2007 2011 2015 2019 2023 2027 2031 2035 2039 2043 2047
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
9.000E+02
8.000E+02
7.000E+02
6.000E+02
5.000E+02
4.000E+02
3.000E+02
2.000E+02
1.000E+02
0.000E+00
Emissions
1975 1979 1983 1987 1991 1995 1999 2003 2007 2011 2015 2019 2023 2027 2031 2035 2039 2043 2047
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1975	0	0	0	0	0	0
1976	1.340E+03	1.073E+06	7.209E+01	3.579E+02	5.365E+05	3.605E+01
1977	2.615E+03	2.094E+06	1.407E+02	6.984E+02	1.047E+06	7.033E+01
1978	3.827E+03	3.064E+06	2.059E+02	1.022E+03	1.532E+06	1.030E+02
1979	4.980E+03	3.988E+06	2.680E+02	1.330E+03	1.994E+06	1.340E+02
1980	6.077E+03	4.866E+06	3.270E+02	1.623E+03	2.433E+06	1.635E+02
1981	7.121E+03	5.702E+06	3.831E+02	1.902E+03	2.851E+06	1.916E+02
1982	8.114E+03	6.497E+06	4.365E+02	2.167E+03	3.248E+06	2.183E+02
1983	9.058E+03	7.253E+06	4.873E+02	2.419E+03	3.627E+06	2.437E+02
1984	9.956E+03	7.972E+06	5.357E+02	2.659E+03	3.986E+06	2.678E+02
1985	1.098E+04	8.792E+06	5.908E+02	2.933E+03	4.396E+06	2.954E+02
1986	1.209E+04	9.678E+06	6.503E+02	3.228E+03	4.839E+06	3.251E+02
1987	1.314E+04	1.052E+07	7.069E+02	3.510E+03	5.261E+06	3.535E+02
1988	1.414E+04	1.132E+07	7.608E+02	3.777E+03	5.661E+06	3.804E+02
1989	1.522E+04	1.219E+07	8.191E+02	4.067E+03	6.096E+06	4.096E+02
1990	1.448E+04	1.160E+07	7.792E+02	3.868E+03	5.798E+06	3.896E+02
1991	1.378E+04	1.103E+07	7.412E+02	3.680E+03	5.516E+06	3.706E+02
1992	1.310E+04	1.049E+07	7.050E+02	3.500E+03	5.247E+06	3.525E+02
1993	1.246E+04	9.981E+06	6.706E+02	3.329E+03	4.991E+06	3.353E+02
1994	1.186E+04	9.494E+06	6.379E+02	3.167E+03	4.747E+06	3.190E+02
1995	1.128E+04	9.031E+06	6.068E+02	3.013E+03	4.516E+06	3.034E+02
1996	1.073E+04	8.591E+06	5.772E+02	2.866E+03	4.295E+06	2.886E+02
1997	1.021E+04	8.172E+06	5.491E+02	2.726E+03	4.086E+06	2.745E+02
1998	9.708E+03	7.773E+06	5.223E+02	2.593E+03	3.887E+06	2.611E+02
1999	9.234E+03	7.394E+06	4.968E+02	2.467E+03	3.697E+06	2.484E+02
2000	8.784E+03	7.034E+06	4.726E+02	2.346E+03	3.517E+06	2.363E+02
2001	8.355E+03	6.691E+06	4.495E+02	2.232E+03	3.345E+06	2.248E+02
2002	7.948E+03	6.364E+06	4.276E+02	2.123E+03	3.182E+06	2.138E+02
2003	7.560E+03	6.054E+06	4.068E+02	2.019E+03	3.027E+06	2.034E+02
2004	7.192E+03	5.759E+06	3.869E+02	1.921E+03	2.879E+06	1.935E+02
2005	6.841E+03	5.478E+06	3.681E+02	1.827E+03	2.739E+06	1.840E+02
2006	6.507E+03	5.211E+06	3.501E+02	1.738E+03	2.605E+06	1.751E+02
2007	6.190E+03	4.957E+06	3.330E+02	1.653E+03	2.478E+06	1.665E+02
2008	5.888E+03	4.715E+06	3.168E+02	1.573E+03	2.357E+06	1.584E+02
2009	5.601E+03	4.485E+06	3.013E+02	1.496E+03	2.242E+06	1.507E+02
2010	5.328E+03	4.266E+06	2.866E+02	1.423E+03	2.133E+06	1.433E+02
2011	5.068E+03	4.058E+06	2.727E+02	1.354E+03	2.029E+06	1.363E+02
2012	4.821E+03	3.860E+06	2.594E+02	1.288E+03	1.930E+06	1.297E+02
2013	4.586E+03	3.672E+06	2.467E+02	1.225E+03	1.836E+06	1.234E+02
2014	4.362E+03	3.493E+06	2.347E+02	1.165E+03	1.746E+06	1.173E+02
2015	4.149E+03	3.322E+06	2.232E+02	1.108E+03	1.661E+06	1.116E+02
2016	3.947E+03	3.160E+06	2.123E+02	1.054E+03	1.580E+06	1.062E+02
2017	3.754E+03	3.006E+06	2.020E+02	1.003E+03	1.503E+06	1.010E+02
2018	3.571E+03	2.860E+06	1.921E+02	9.539E+02	1.430E+06	9.607E+01
2019	3.397E+03	2.720E+06	1.828E+02	9.074E+02	1.360E+06	9.139E+01
2020	3.231E+03	2.588E+06	1.739E+02	8.631E+02	1.294E+06	8.693E+01
2021	3.074E+03	2.461E+06	1.654E+02	8.210E+02	1.231E+06	8.269E+01
2022	2.924E+03	2.341E+06	1.573E+02	7.810E+02	1.171E+06	7.866E+01
2023	2.781E+03	2.227E+06	1.496E+02	7.429E+02	1.114E+06	7.482E+01
2024	2.646E+03	2.119E+06	1.423E+02	7.067E+02	1.059E+06	7.117E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2025	2.517E+03	2.015E+06	1.354E+02	6.722E+02	1.008E+06	6.770E+01
2026	2.394E+03	1.917E+06	1.288E+02	6.394E+02	9.585E+05	6.440E+01
2027	2.277E+03	1.823E+06	1.225E+02	6.082E+02	9.117E+05	6.126E+01
2028	2.166E+03	1.734E+06	1.165E+02	5.786E+02	8.672E+05	5.827E+01
2029	2.060E+03	1.650E+06	1.109E+02	5.504E+02	8.249E+05	5.543E+01
2030	1.960E+03	1.569E+06	1.054E+02	5.235E+02	7.847E+05	5.272E+01
2031	1.864E+03	1.493E+06	1.003E+02	4.980E+02	7.464E+05	5.015E+01
2032	1.773E+03	1.420E+06	9.541E+01	4.737E+02	7.100E+05	4.771E+01
2033	1.687E+03	1.351E+06	9.076E+01	4.506E+02	6.754E+05	4.538E+01
2034	1.605E+03	1.285E+06	8.633E+01	4.286E+02	6.425E+05	4.317E+01
2035	1.526E+03	1.222E+06	8.212E+01	4.077E+02	6.111E+05	4.106E+01
2036	1.452E+03	1.163E+06	7.812E+01	3.878E+02	5.813E+05	3.906E+01
2037	1.381E+03	1.106E+06	7.431E+01	3.689E+02	5.530E+05	3.715E+01
2038	1.314E+03	1.052E+06	7.068E+01	3.509E+02	5.260E+05	3.534E+01
2039	1.250E+03	1.001E+06	6.724E+01	3.338E+02	5.004E+05	3.362E+01
2040	1.189E+03	9.519E+05	6.396E+01	3.175E+02	4.760E+05	3.198E+01
2041	1.131E+03	9.055E+05	6.084E+01	3.020E+02	4.527E+05	3.042E+01
2042	1.076E+03	8.613E+05	5.787E+01	2.873E+02	4.307E+05	2.894E+01
2043	1.023E+03	8.193E+05	5.505E+01	2.733E+02	4.097E+05	2.752E+01
2044	9.733E+02	7.794E+05	5.236E+01	2.600E+02	3.897E+05	2.618E+01
2045	9.258E+02	7.413E+05	4.981E+01	2.473E+02	3.707E+05	2.491E+01
2046	8.807E+02	7.052E+05	4.738E+01	2.352E+02	3.526E+05	2.369E+01
2047	8.377E+02	6.708E+05	4.507E+01	2.238E+02	3.354E+05	2.254E+01
2048	7.969E+02	6.381E+05	4.287E+01	2.128E+02	3.190E+05	2.144E+01
2049	7.580E+02	6.070E+05	4.078E+01	2.025E+02	3.035E+05	2.039E+01
2050	7.210E+02	5.774E+05	3.879E+01	1.926E+02	2.887E+05	1.940E+01
2051	6.859E+02	5.492E+05	3.690E+01	1.832E+02	2.746E+05	1.845E+01
2052	6.524E+02	5.224E+05	3.510E+01	1.743E+02	2.612E+05	1.755E+01
2053	6.206E+02	4.969E+05	3.339E+01	1.658E+02	2.485E+05	1.669E+01
2054	5.903E+02	4.727E+05	3.176E+01	1.577E+02	2.364E+05	1.588E+01
2055	5.615E+02	4.496E+05	3.021E+01	1.500E+02	2.248E+05	1.511E+01
2056	5.341E+02	4.277E+05	2.874E+01	1.427E+02	2.139E+05	1.437E+01
2057	5.081E+02	4.069E+05	2.734E+01	1.357E+02	2.034E+05	1.367E+01
2058	4.833E+02	3.870E+05	2.600E+01	1.291E+02	1.935E+05	1.300E+01
2059	4.597E+02	3.681E+05	2.474E+01	1.228E+02	1.841E+05	1.237E+01
2060	4.373E+02	3.502E+05	2.353E+01	1.168E+02	1.751E+05	1.176E+01
2061	4.160E+02	3.331E+05	2.238E+01	1.111E+02	1.666E+05	1.119E+01
2062	3.957E+02	3.169E+05	2.129E+01	1.057E+02	1.584E+05	1.064E+01
2063	3.764E+02	3.014E+05	2.025E+01	1.005E+02	1.507E+05	1.013E+01
2064	3.580E+02	2.867E+05	1.926E+01	9.564E+01	1.434E+05	9.632E+00
2065	3.406E+02	2.727E+05	1.832E+01	9.097E+01	1.364E+05	9.162E+00
2066	3.240E+02	2.594E+05	1.743E+01	8.654E+01	1.297E+05	8.715E+00
2067	3.082E+02	2.468E+05	1.658E+01	8.232E+01	1.234E+05	8.290E+00
2068	2.931E+02	2.347E+05	1.577E+01	7.830E+01	1.174E+05	7.886E+00
2069	2.788E+02	2.233E+05	1.500E+01	7.448E+01	1.116E+05	7.501E+00
2070	2.652E+02	2.124E+05	1.427E+01	7.085E+01	1.062E+05	7.136E+00
2071	2.523E+02	2.020E+05	1.358E+01	6.740E+01	1.010E+05	6.788E+00
2072	2.400E+02	1.922E+05	1.291E+01	6.411E+01	9.609E+04	6.456E+00
2073	2.283E+02	1.828E+05	1.228E+01	6.098E+01	9.141E+04	6.142E+00
2074	2.172E+02	1.739E+05	1.168E+01	5.801E+01	8.695E+04	5.842E+00
2075	2.066E+02	1.654E+05	1.111E+01	5.518E+01	8.271E+04	5.557E+00

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2076	1.965E+02	1.573E+05	1.057E+01	5.249E+01	7.867E+04	5.286E+00
2077	1.869E+02	1.497E+05	1.006E+01	4.993E+01	7.484E+04	5.028E+00
2078	1.778E+02	1.424E+05	9.566E+00	4.749E+01	7.119E+04	4.783E+00
2079	1.691E+02	1.354E+05	9.100E+00	4.518E+01	6.772E+04	4.550E+00
2080	1.609E+02	1.288E+05	8.656E+00	4.297E+01	6.441E+04	4.328E+00
2081	1.530E+02	1.225E+05	8.234E+00	4.088E+01	6.127E+04	4.117E+00
2082	1.456E+02	1.166E+05	7.832E+00	3.888E+01	5.828E+04	3.916E+00
2083	1.385E+02	1.109E+05	7.450E+00	3.699E+01	5.544E+04	3.725E+00
2084	1.317E+02	1.055E+05	7.087E+00	3.518E+01	5.274E+04	3.543E+00
2085	1.253E+02	1.003E+05	6.741E+00	3.347E+01	5.017E+04	3.371E+00
2086	1.192E+02	9.544E+04	6.412E+00	3.184E+01	4.772E+04	3.206E+00
2087	1.134E+02	9.078E+04	6.100E+00	3.028E+01	4.539E+04	3.050E+00
2088	1.078E+02	8.635E+04	5.802E+00	2.881E+01	4.318E+04	2.901E+00
2089	1.026E+02	8.214E+04	5.519E+00	2.740E+01	4.107E+04	2.760E+00
2090	9.758E+01	7.814E+04	5.250E+00	2.606E+01	3.907E+04	2.625E+00
2091	9.282E+01	7.433E+04	4.994E+00	2.479E+01	3.716E+04	2.497E+00
2092	8.829E+01	7.070E+04	4.750E+00	2.358E+01	3.535E+04	2.375E+00
2093	8.399E+01	6.725E+04	4.519E+00	2.243E+01	3.363E+04	2.259E+00
2094	7.989E+01	6.397E+04	4.298E+00	2.134E+01	3.199E+04	2.149E+00
2095	7.599E+01	6.085E+04	4.089E+00	2.030E+01	3.043E+04	2.044E+00
2096	7.229E+01	5.789E+04	3.889E+00	1.931E+01	2.894E+04	1.945E+00
2097	6.876E+01	5.506E+04	3.700E+00	1.837E+01	2.753E+04	1.850E+00
2098	6.541E+01	5.238E+04	3.519E+00	1.747E+01	2.619E+04	1.760E+00
2099	6.222E+01	4.982E+04	3.348E+00	1.662E+01	2.491E+04	1.674E+00
2100	5.918E+01	4.739E+04	3.184E+00	1.581E+01	2.370E+04	1.592E+00
2101	5.630E+01	4.508E+04	3.029E+00	1.504E+01	2.254E+04	1.515E+00
2102	5.355E+01	4.288E+04	2.881E+00	1.430E+01	2.144E+04	1.441E+00
2103	5.094E+01	4.079E+04	2.741E+00	1.361E+01	2.040E+04	1.370E+00
2104	4.846E+01	3.880E+04	2.607E+00	1.294E+01	1.940E+04	1.304E+00
2105	4.609E+01	3.691E+04	2.480E+00	1.231E+01	1.845E+04	1.240E+00
2106	4.385E+01	3.511E+04	2.359E+00	1.171E+01	1.755E+04	1.179E+00
2107	4.171E+01	3.340E+04	2.244E+00	1.114E+01	1.670E+04	1.122E+00
2108	3.967E+01	3.177E+04	2.135E+00	1.060E+01	1.588E+04	1.067E+00
2109	3.774E+01	3.022E+04	2.030E+00	1.008E+01	1.511E+04	1.015E+00
2110	3.590E+01	2.875E+04	1.931E+00	9.589E+00	1.437E+04	9.657E-01
2111	3.415E+01	2.734E+04	1.837E+00	9.121E+00	1.367E+04	9.186E-01
2112	3.248E+01	2.601E+04	1.748E+00	8.676E+00	1.300E+04	8.738E-01
2113	3.090E+01	2.474E+04	1.662E+00	8.253E+00	1.237E+04	8.312E-01
2114	2.939E+01	2.353E+04	1.581E+00	7.850E+00	1.177E+04	7.906E-01
2115	2.796E+01	2.239E+04	1.504E+00	7.468E+00	1.119E+04	7.521E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1975	0	0	0	0	0	0
1976	9.820E+02	5.365E+05	3.605E+01	1.538E+01	4.292E+03	2.884E-01
1977	1.916E+03	1.047E+06	7.033E+01	3.002E+01	8.374E+03	5.627E-01
1978	2.805E+03	1.532E+06	1.030E+02	4.394E+01	1.226E+04	8.236E-01
1979	3.650E+03	1.994E+06	1.340E+02	5.718E+01	1.595E+04	1.072E+00
1980	4.454E+03	2.433E+06	1.635E+02	6.977E+01	1.947E+04	1.308E+00
1981	5.219E+03	2.851E+06	1.916E+02	8.176E+01	2.281E+04	1.532E+00
1982	5.946E+03	3.248E+06	2.183E+02	9.315E+01	2.599E+04	1.746E+00
1983	6.638E+03	3.627E+06	2.437E+02	1.040E+02	2.901E+04	1.949E+00
1984	7.297E+03	3.986E+06	2.678E+02	1.143E+02	3.189E+04	2.143E+00
1985	8.047E+03	4.396E+06	2.954E+02	1.261E+02	3.517E+04	2.363E+00
1986	8.858E+03	4.839E+06	3.251E+02	1.388E+02	3.871E+04	2.601E+00
1987	9.629E+03	5.261E+06	3.535E+02	1.509E+02	4.208E+04	2.828E+00
1988	1.036E+04	5.661E+06	3.804E+02	1.623E+02	4.529E+04	3.043E+00
1989	1.116E+04	6.096E+06	4.096E+02	1.748E+02	4.876E+04	3.276E+00
1990	1.061E+04	5.798E+06	3.896E+02	1.663E+02	4.639E+04	3.117E+00
1991	1.010E+04	5.516E+06	3.706E+02	1.582E+02	4.412E+04	2.965E+00
1992	9.604E+03	5.247E+06	3.525E+02	1.504E+02	4.197E+04	2.820E+00
1993	9.135E+03	4.991E+06	3.353E+02	1.431E+02	3.993E+04	2.683E+00
1994	8.690E+03	4.747E+06	3.190E+02	1.361E+02	3.798E+04	2.552E+00
1995	8.266E+03	4.516E+06	3.034E+02	1.295E+02	3.613E+04	2.427E+00
1996	7.863E+03	4.295E+06	2.886E+02	1.232E+02	3.436E+04	2.309E+00
1997	7.479E+03	4.086E+06	2.745E+02	1.172E+02	3.269E+04	2.196E+00
1998	7.115E+03	3.887E+06	2.611E+02	1.115E+02	3.109E+04	2.089E+00
1999	6.768E+03	3.697E+06	2.484E+02	1.060E+02	2.958E+04	1.987E+00
2000	6.438E+03	3.517E+06	2.363E+02	1.008E+02	2.813E+04	1.890E+00
2001	6.124E+03	3.345E+06	2.248E+02	9.593E+01	2.676E+04	1.798E+00
2002	5.825E+03	3.182E+06	2.138E+02	9.125E+01	2.546E+04	1.710E+00
2003	5.541E+03	3.027E+06	2.034E+02	8.680E+01	2.422E+04	1.627E+00
2004	5.271E+03	2.879E+06	1.935E+02	8.257E+01	2.303E+04	1.548E+00
2005	5.014E+03	2.739E+06	1.840E+02	7.854E+01	2.191E+04	1.472E+00
2006	4.769E+03	2.605E+06	1.751E+02	7.471E+01	2.084E+04	1.400E+00
2007	4.536E+03	2.478E+06	1.665E+02	7.107E+01	1.983E+04	1.332E+00
2008	4.315E+03	2.357E+06	1.584E+02	6.760E+01	1.886E+04	1.267E+00
2009	4.105E+03	2.242E+06	1.507E+02	6.430E+01	1.794E+04	1.205E+00
2010	3.905E+03	2.133E+06	1.433E+02	6.117E+01	1.706E+04	1.147E+00
2011	3.714E+03	2.029E+06	1.363E+02	5.818E+01	1.623E+04	1.091E+00
2012	3.533E+03	1.930E+06	1.297E+02	5.535E+01	1.544E+04	1.037E+00
2013	3.361E+03	1.836E+06	1.234E+02	5.265E+01	1.469E+04	9.869E-01
2014	3.197E+03	1.746E+06	1.173E+02	5.008E+01	1.397E+04	9.387E-01
2015	3.041E+03	1.661E+06	1.116E+02	4.764E+01	1.329E+04	8.929E-01
2016	2.893E+03	1.580E+06	1.062E+02	4.531E+01	1.264E+04	8.494E-01
2017	2.752E+03	1.503E+06	1.010E+02	4.310E+01	1.203E+04	8.080E-01
2018	2.617E+03	1.430E+06	9.607E+01	4.100E+01	1.144E+04	7.686E-01
2019	2.490E+03	1.360E+06	9.139E+01	3.900E+01	1.088E+04	7.311E-01
2020	2.368E+03	1.294E+06	8.693E+01	3.710E+01	1.035E+04	6.954E-01
2021	2.253E+03	1.231E+06	8.269E+01	3.529E+01	9.845E+03	6.615E-01
2022	2.143E+03	1.171E+06	7.866E+01	3.357E+01	9.365E+03	6.292E-01
2023	2.038E+03	1.114E+06	7.482E+01	3.193E+01	8.908E+03	5.986E-01
2024	1.939E+03	1.059E+06	7.117E+01	3.037E+01	8.474E+03	5.694E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2025	1.844E+03	1.008E+06	6.770E+01	2.889E+01	8.061E+03	5.416E-01
2026	1.754E+03	9.585E+05	6.440E+01	2.748E+01	7.668E+03	5.152E-01
2027	1.669E+03	9.117E+05	6.126E+01	2.614E+01	7.294E+03	4.901E-01
2028	1.587E+03	8.672E+05	5.827E+01	2.487E+01	6.938E+03	4.662E-01
2029	1.510E+03	8.249E+05	5.543E+01	2.366E+01	6.600E+03	4.434E-01
2030	1.436E+03	7.847E+05	5.272E+01	2.250E+01	6.278E+03	4.218E-01
2031	1.366E+03	7.464E+05	5.015E+01	2.140E+01	5.972E+03	4.012E-01
2032	1.300E+03	7.100E+05	4.771E+01	2.036E+01	5.680E+03	3.817E-01
2033	1.236E+03	6.754E+05	4.538E+01	1.937E+01	5.403E+03	3.630E-01
2034	1.176E+03	6.425E+05	4.317E+01	1.842E+01	5.140E+03	3.453E-01
2035	1.119E+03	6.111E+05	4.106E+01	1.752E+01	4.889E+03	3.285E-01
2036	1.064E+03	5.813E+05	3.906E+01	1.667E+01	4.651E+03	3.125E-01
2037	1.012E+03	5.530E+05	3.715E+01	1.586E+01	4.424E+03	2.972E-01
2038	9.629E+02	5.260E+05	3.534E+01	1.508E+01	4.208E+03	2.827E-01
2039	9.159E+02	5.004E+05	3.362E+01	1.435E+01	4.003E+03	2.690E-01
2040	8.712E+02	4.760E+05	3.198E+01	1.365E+01	3.808E+03	2.558E-01
2041	8.287E+02	4.527E+05	3.042E+01	1.298E+01	3.622E+03	2.434E-01
2042	7.883E+02	4.307E+05	2.894E+01	1.235E+01	3.445E+03	2.315E-01
2043	7.499E+02	4.097E+05	2.752E+01	1.175E+01	3.277E+03	2.202E-01
2044	7.133E+02	3.897E+05	2.618E+01	1.117E+01	3.117E+03	2.095E-01
2045	6.785E+02	3.707E+05	2.491E+01	1.063E+01	2.965E+03	1.992E-01
2046	6.454E+02	3.526E+05	2.369E+01	1.011E+01	2.821E+03	1.895E-01
2047	6.139E+02	3.354E+05	2.254E+01	9.618E+00	2.683E+03	1.803E-01
2048	5.840E+02	3.190E+05	2.144E+01	9.149E+00	2.552E+03	1.715E-01
2049	5.555E+02	3.035E+05	2.039E+01	8.703E+00	2.428E+03	1.631E-01
2050	5.284E+02	2.887E+05	1.940E+01	8.278E+00	2.309E+03	1.552E-01
2051	5.027E+02	2.746E+05	1.845E+01	7.874E+00	2.197E+03	1.476E-01
2052	4.781E+02	2.612E+05	1.755E+01	7.490E+00	2.090E+03	1.404E-01
2053	4.548E+02	2.485E+05	1.669E+01	7.125E+00	1.988E+03	1.336E-01
2054	4.326E+02	2.364E+05	1.588E+01	6.778E+00	1.891E+03	1.270E-01
2055	4.115E+02	2.248E+05	1.511E+01	6.447E+00	1.799E+03	1.208E-01
2056	3.915E+02	2.139E+05	1.437E+01	6.133E+00	1.711E+03	1.150E-01
2057	3.724E+02	2.034E+05	1.367E+01	5.833E+00	1.627E+03	1.093E-01
2058	3.542E+02	1.935E+05	1.300E+01	5.549E+00	1.548E+03	1.040E-01
2059	3.369E+02	1.841E+05	1.237E+01	5.278E+00	1.473E+03	9.894E-02
2060	3.205E+02	1.751E+05	1.176E+01	5.021E+00	1.401E+03	9.412E-02
2061	3.049E+02	1.666E+05	1.119E+01	4.776E+00	1.332E+03	8.953E-02
2062	2.900E+02	1.584E+05	1.064E+01	4.543E+00	1.267E+03	8.516E-02
2063	2.759E+02	1.507E+05	1.013E+01	4.322E+00	1.206E+03	8.101E-02
2064	2.624E+02	1.434E+05	9.632E+00	4.111E+00	1.147E+03	7.706E-02
2065	2.496E+02	1.364E+05	9.162E+00	3.910E+00	1.091E+03	7.330E-02
2066	2.374E+02	1.297E+05	8.715E+00	3.720E+00	1.038E+03	6.972E-02
2067	2.259E+02	1.234E+05	8.290E+00	3.538E+00	9.871E+02	6.632E-02
2068	2.148E+02	1.174E+05	7.886E+00	3.366E+00	9.389E+02	6.309E-02
2069	2.044E+02	1.116E+05	7.501E+00	3.201E+00	8.932E+02	6.001E-02
2070	1.944E+02	1.062E+05	7.136E+00	3.045E+00	8.496E+02	5.708E-02
2071	1.849E+02	1.010E+05	6.788E+00	2.897E+00	8.082E+02	5.430E-02
2072	1.759E+02	9.609E+04	6.456E+00	2.756E+00	7.687E+02	5.165E-02
2073	1.673E+02	9.141E+04	6.142E+00	2.621E+00	7.313E+02	4.913E-02
2074	1.592E+02	8.695E+04	5.842E+00	2.493E+00	6.956E+02	4.674E-02
2075	1.514E+02	8.271E+04	5.557E+00	2.372E+00	6.617E+02	4.446E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2076	1.440E+02	7.867E+04	5.286E+00	2.256E+00	6.294E+02	4.229E-02
2077	1.370E+02	7.484E+04	5.028E+00	2.146E+00	5.987E+02	4.023E-02
2078	1.303E+02	7.119E+04	4.783E+00	2.041E+00	5.695E+02	3.826E-02
2079	1.240E+02	6.772E+04	4.550E+00	1.942E+00	5.417E+02	3.640E-02
2080	1.179E+02	6.441E+04	4.328E+00	1.847E+00	5.153E+02	3.462E-02
2081	1.122E+02	6.127E+04	4.117E+00	1.757E+00	4.902E+02	3.293E-02
2082	1.067E+02	5.828E+04	3.916E+00	1.671E+00	4.663E+02	3.133E-02
2083	1.015E+02	5.544E+04	3.725E+00	1.590E+00	4.435E+02	2.980E-02
2084	9.654E+01	5.274E+04	3.543E+00	1.512E+00	4.219E+02	2.835E-02
2085	9.183E+01	5.017E+04	3.371E+00	1.439E+00	4.013E+02	2.696E-02
2086	8.735E+01	4.772E+04	3.206E+00	1.368E+00	3.817E+02	2.565E-02
2087	8.309E+01	4.539E+04	3.050E+00	1.302E+00	3.631E+02	2.440E-02
2088	7.904E+01	4.318E+04	2.901E+00	1.238E+00	3.454E+02	2.321E-02
2089	7.518E+01	4.107E+04	2.760E+00	1.178E+00	3.286E+02	2.208E-02
2090	7.151E+01	3.907E+04	2.625E+00	1.120E+00	3.125E+02	2.100E-02
2091	6.803E+01	3.716E+04	2.497E+00	1.066E+00	2.973E+02	1.998E-02
2092	6.471E+01	3.535E+04	2.375E+00	1.014E+00	2.828E+02	1.900E-02
2093	6.155E+01	3.363E+04	2.259E+00	9.643E-01	2.690E+02	1.807E-02
2094	5.855E+01	3.199E+04	2.149E+00	9.172E-01	2.559E+02	1.719E-02
2095	5.570E+01	3.043E+04	2.044E+00	8.725E-01	2.434E+02	1.635E-02
2096	5.298E+01	2.894E+04	1.945E+00	8.300E-01	2.315E+02	1.556E-02
2097	5.040E+01	2.753E+04	1.850E+00	7.895E-01	2.202E+02	1.480E-02
2098	4.794E+01	2.619E+04	1.760E+00	7.510E-01	2.095E+02	1.408E-02
2099	4.560E+01	2.491E+04	1.674E+00	7.143E-01	1.993E+02	1.339E-02
2100	4.338E+01	2.370E+04	1.592E+00	6.795E-01	1.896E+02	1.274E-02
2101	4.126E+01	2.254E+04	1.515E+00	6.464E-01	1.803E+02	1.212E-02
2102	3.925E+01	2.144E+04	1.441E+00	6.148E-01	1.715E+02	1.153E-02
2103	3.733E+01	2.040E+04	1.370E+00	5.849E-01	1.632E+02	1.096E-02
2104	3.551E+01	1.940E+04	1.304E+00	5.563E-01	1.552E+02	1.043E-02
2105	3.378E+01	1.845E+04	1.240E+00	5.292E-01	1.476E+02	9.920E-03
2106	3.213E+01	1.755E+04	1.179E+00	5.034E-01	1.404E+02	9.436E-03
2107	3.057E+01	1.670E+04	1.122E+00	4.788E-01	1.336E+02	8.976E-03
2108	2.908E+01	1.588E+04	1.067E+00	4.555E-01	1.271E+02	8.538E-03
2109	2.766E+01	1.511E+04	1.015E+00	4.333E-01	1.209E+02	8.122E-03
2110	2.631E+01	1.437E+04	9.657E-01	4.121E-01	1.150E+02	7.726E-03
2111	2.503E+01	1.367E+04	9.186E-01	3.920E-01	1.094E+02	7.349E-03
2112	2.381E+01	1.300E+04	8.738E-01	3.729E-01	1.040E+02	6.990E-03
2113	2.264E+01	1.237E+04	8.312E-01	3.547E-01	9.896E+01	6.649E-03
2114	2.154E+01	1.177E+04	7.906E-01	3.374E-01	9.414E+01	6.325E-03
2115	2.049E+01	1.119E+04	7.521E-01	3.210E-01	8.955E+01	6.017E-03

PART II

RESPONSES TO COMMENTS FROM JOHN MORRIS, P.G. AND STEPHANIE WATSON

Section 2.1.1 - Present Real Property and Facility Owners [Rule 62-780.600(8)(a)1.a., F.A.C.]

Comment 1: The ownership of the 60-acre landfill does not appear to be described.

Response 1: The eastern half of the Citrus Central Landfill, which includes the active landfill, is owned by the Citrus County BOCC. The western half, which includes the closed 60-acre landfill is leased from the Department of Forestry but maintained by the Citrus County BOCC. On August 30, 2006, an amendment to the sublease was granted from the Department of Forestry that expanded the east, west, and south property boundaries 300 feet. The owned and leased property boundaries are shown in Figure 4.1 of the original SAR document.

Section 2.4 - Site Man That Shows Pertinent Features [Rule 62-780.600(8)(a)4., F.A.C.]

Comment 2: The occurrence (or absence) of surface or subsurface features including utilities, sewers, floor drains, rain lines, and storage areas in the immediate vicinity of the contamination near well MW10 does not appear to be described.

Response 2: There are no subsurface features in the immediate—at least 200 feet—vicinity of MW-10. The only surface feature in the immediate vicinity is the drainage retention area west of MW-10. The location of the drainage retention area is shown in Figure 3.1 of the original SAR document.

Section 2.5 - Contaminant Discharge Location Map [Rule 62-780.600(8)(a)5., F.A.C.]

Comment 3: Figure 5-1 was indicated to present the contaminant concentrations for ground water samples collected in January and February 2007, however Figure 5-1 does not present the following:

a. Results for the samples collected from well MW-10 during both January 2007 and February 2007;

Response 3.a: Figure 5.1 has been changed to include the results of both sampling events. The new Figure 5.1 is included in Attachment 3. Also included in Attachment 3 are Figures 5.1.b and 5.1.c. Figure 5.1.b shows the maximum reported concentrations of Benzene, Methylene Chloride, and Vinyl Chloride measured in each well between the first semiannual 2007 and second semiannual 2008 sampling events. Figure 5.1.c shows the reported concentration of Benzene, Methylene Chloride, and Vinyl Chloride measured during the most recent sampling event, the second semiannual 2008.

b. Results for the samples collected from well MW-13 during January 2007;

Response 3.b: Figure 5.1 has been changed to include the results of the January sampling event collected from MW-13. The new Figure 5.1 is included in Attachment 3.

c. *Results for the samples collected from well MW-15 during January 2007 reported benzene at a concentration of 0.49 µg/L and vinyl chloride at a concentration of 0.91 µg/L; and,*

Response 3.c: Figure 5.1 has been changed to show the correct results for MW-15 during the January 2007 sampling event. The new Figure 5.1 is included in Attachment 3.

d. *Results for the samples collected from well MW-B during January2007 reported benzene at a concentration of 0.69 µg/L.*

Response 3.d: Figure 5.1 has been changed to show the correct results for MW-B during the January 2007 sampling event. The new Figure 5.1 is included in Attachment 3.

Comment 4: The date of the resampling event conducted at well MW-13 (referenced in Figure 5-1) was not indicated and the laboratory report of results for this resampling event were not provided.

Response 4: The resampling event for MW-13 was conducted on February 26, 2007. The laboratory report of the results of this resampling event were included with the First Semiannual 2007 compliance monitoring report dated May 30, 2007.

<u>Section 2.6 - Details of Preliminary Site Assessment Activities</u> *[Rule 62-780.600(8)(a)6., F.A.C]*

Comment 5: Results for the samples collected from well MW-15 during January 2007 reported vinyl chloride at a concentration of 0.91 µg/L (see Recommendation bullet item #1).

Response 5: The concentration of Vinyl Chloride referenced in the text has been corrected.

Comment 6: The reference to Section 1.d., in the first sentence of ¶3 appears to be incorrect and should be replaced by a reference to Section 2.1.4 of the SAR.

Response 6: The reference to Section 1.d has been changed to correctly reference Section 2.1.4.

Section 2.7 - Well Survey Data [Rule 62-780.600(8)(a)7., F.A.C.]

Comment 7: *The first sentence of this section referred to the survey for wells MW- 18, MW-19, PZ-1 and PZ-2 provided in Attachment B of the SAR. The second sentence of this section indicated that a site survey for the landfill was presented in the "RAI" document (submittal entitled "Citrus County Central Landfill, Ground Water Investigation Report, Response to FDEP Request for Additional Information," prepared by JEA, dated September 2006), however a survey was not provided in the "RAI" document for wells MW-10 through MW-17.*

Response 7: Some discrepancies have been identified in previous surveys. The County conducted a survey of all monitoring locations on December 10, 2008 and sent it to FDEP on December 15, 2008. The figures and tables from the original SAR document that needed to be updated with the new top of casing information are listed below and are included in Attachment 7. The updated figures have a ".b" designation after their figure/table number to identify them from the previously submitted documents.

Figures:	**8-1.b**	**Tables:**	**8-1.b**
	8-2.b		**8-2.b**
	8-3.b		**12-1.b**
	9-1.b		**13-1.b**
	9-2.b		**14-1.b**
	9-3.b		
	9-4.b		
	9-5.b		
	9-6.b		

The location of MW-11 was incorrect on all maps provided in the original SAR document except Figures 3.1 and 4.1—the well was positioned approximately 150 ft north of its surveyed location. MW-11 is in the location shown on the December 10th, 2008 survey on the updated maps in this RAI.

Section 2.8 - Well Construction Details with Water-Level Elevations [Rule 62-780.600(8)(a)8., F.A.C.]

Comment 8: *The indication in the first sentence of ¶6 that well MW-16 reported lower ground water elevations as it is screened in limestone is inconsistent with the Boring Log Field Report and Monitor Well Completion Report provided in Appendix D and Appendix B of the "RAI' document, respectively, which indicate this well is screened in silty clay and clayey sand sediments.*

Response 8: MW-16 is installed through a limestone interval identified in the boring log between 78 ft bls to 100 ft bls. The well is screened in very soft silty clayey sands beneath the limestone interval. The screened interval is below the limestone contact with the overlying surfical sands and clayey sands. The text was changed to reflect this.

Section 2.12 - Slug Test Results [Rule 62-780.600(8)(a)12., F,A.C.]

Comment 9: *¶1 of this section referred to the slug tests conducted at MW-18, MW-19, PZ-1 andPZ-2 as summarized in Table 12-1, with slug test data and graphs of residual head vs. time plots provided in Attachment D of the SAR. ¶2 of this section referred to the slug tests conducted at wells MW-10 through MW-17 as summarized in Table 4, with slug test data and graphs of residual head vs. time plots provided in Appendix B of the "RAI" document. While both Section 2.12 of the SAR and Section 2.5 of the "RAI" document indicated that the slug test data were evaluated using the Hvorslev method (as referenced in Fetter, 1994), the "RAI" document indicated that "slug in" data were not used as the well screens were partially submerged. Based on the construction details provided for MW-18, PZ-1 and PZ-2 in Attachment C of the SAR, and the ground water elevations reported in Table 8-2 of the SAR, the well screens were partially submerged at these three locations, however the "slug in" data for these locations were provided in Table 8-2 and the data were used to calculate the average hydraulic conductivity value in the assessment area of the facility.*

Response 9: The slug in data for MW-18, PZ-1, and PZ-2 should not have been used. Table 8-2 has been updated and is provided in Attachment 7 as Table 8-2.b.

Comment 10: *The value of L_e presented in Table 12-1 of the SAR (22 ft) appears to be inconsistent with the construction details provided for MW-18, MW-19, PZ-1 and PZ-2 in Table 8-1 (10-foot screen length at MW-19; 20-foot screen lengths at MW-18, PZ-1 and PZ-2). The screen intervals at MW-18, PZ-1 and PZ-2 were partially submerged at the time the slug tests were conducted, as follow: MW-18 had 9.08 feet of submerged screen; PZ-1 had 13.15 feet of submerged screen; PZ-2 had 5.41 feet of submerged screen, The entire 10-foot screen length at MW-19 was submerged at the time the slug tests were conducted.*

Response 10: Table 12-1 has been updated and is provided as Table 12-1.b in Attachment 7. The L_e value represents the length of submerged screen calculated using elevations from the new survey.

Comment 11: *Table 12-1 included a note that the "PZ-2 slug out data did not yield a good correlation," however Section 2.12 of the SAR did not describe the deficiency of this slug test or provide the results of a follow-up "slug out" test at PZ-2.*

Response 11: The slug-out test did not show a recovery; this is thought to be from the pressure transducer malfunctioning. As the screen for PZ-2 is partially submerged and the slug-out test did not work, the data collected from this piezometer have been removed from the hydraulic conductivity estimates and velocity calculations.

Comment 12: *Table 12-1 included a note that "MW-18s time at 37% was calculated using trendlines as the data was good although the tests were not allowed to run to completion; however the trendlines for the "slug-in" and "slug-out" tests conducted at MW-18 were not provided in Appendix C of the SAR.*

Response 12: The graphs for the slug in and slug out of MW-18 have been expanded to show the trendlines. The first page of the data for the slug-in and slug-out tests for MW-18 that shows the graphs is included as Attachment 12.

Section 2.13 - Horizontal Ground Water Flow Velocity Calculation [Rule 62-780.600(8)(a)13., F.A.C.]

Comment 13: ¶1 of this section referred to the horizontal average linear ground water velocity calculations provided in Table 13-1 of the SAR. The distances between wells presented in Table 13-1 are inconsistent with the distances between wells shown on the survey presented in Attachment B.

Response 13: Table 13-1 has been revised and is included as Table 13-1.b in Attachment 7. The distances used to calculate the horizontal hydraulic gradients displayed in Table 13-1.b are from the new survey dated December 10, 2008. The text has been updated to reflect the new groundwater velocity calculations.

Comment 14: The hydraulic conductivity values presented in Table 13-1 for MW-18, PZ-1 and PZ-2 may need to be revised to be consistent with the responses provided to comment #9 through #12, above.

Response 14: Table 13-1 has been revised and is included as Table 13-1.b in Attachment 7. The text has been updated to reflect the new hydraulic conductivities and groundwater velocity calculations.

Section 2.14 - Vertical Ground Water flow Velocity Calculation [Rule 62-780.600(8)(a)14., F.A.C.]

Comment 15: The hydraulic conductivity value presented in Table 14-1 for MW-19 may need to be revised to be consistent with the responses provided to comment #9 through #12, above.

Response 15: Table 14-1 has been revised and is included as Table 14-1.b in Attachment 7. The text has been updated to reflect the new hydraulic conductivities and groundwater velocity calculations.

Section 2.16 - Site-Specific Stratigraphy [Rule 62-780.600(8)(a)16., F.A.C]

Comment 16: ¶3 of this section provided a reference to the "RAI" document regarding the elevation range reported for the sediments that represented the top of the Suwannee Formation, however it does not appear that this information was presented in the "RAI" document. It appears the information that described site-specific geology was presented in Section 2.0 of the document entitled "Ground Water Monitoring Plan Evaluation," prepared by JEA, revised June 2005 (submitted as Attachment M-1 of the Engineering Report in support of permit application #21375-008-SO).

Response 16: The reference should have been to the Citrus County Central landfill Biennial Report 2004-2007, Jones Edmunds, 2007. The text has been updated.

Comment 17: ¶3 of this section does not specify that the provided description of site-specific stratigraphy (including composition, thickness, and continuity of various lithologic units) was based on monitoring well installation and on standard penetration test borings.

Response 17: The text has been updated to specify that the site-specific stratigraphy is based on monitoring well installation and standard penetration test borings.

Section 2.17 - Geologic Cross-Sections [Rule 62-780.600(8)(a) 17., F.A.C.]

Comment 18: This section referenced Figures 17-1 and 17-2 do not illustrate the approximate concentrations of applicable contaminants. However, the discussion presented in Section 4.1 of the SAR appears to adequately explain why contaminant isoconcentration contours were not provided. Accordingly, for ground water contamination in a single aquifer, the information presented in Figure 5-1 is considered to be sufficient to address the requirements of the cited rule.

Response 18: Comment noted.

Comment 19: Figures 17-1 and 17-2 appear to depict the contact between the sand/clayey sand sediments and the limestone sediments based on the first occurrence of limestone. These figures do not depict the stratigraphy encountered at MW-11, MW-12, MW-13 and PZ-2 where clayey sand, sandy clay, silty clay, or clay were reported below the uppermost limestone.

Response 19: The figures were created to show the highly irregular limestone contact observed across the site. Attachment 19 includes two cross-sections, one from the western boundary and one from the assessment area around MW-10 looking north. These cross-sections display a finer detail than those submitted in the original SAR document.

Section 2.22 - Treatment or Disposal Methods of investigation-Derived Waste [Rule 62-780.600(8)(a)22., F.A.C.]

Comment 20: The first sentence of this section indicated that drill cuttings from MW-18, MW-19, PZ-1 and PZ-2 were placed in drums until the laboratory reports for the samples were received, however the analyses were not provided to confirm that spreading the drill cuttings on the ground in the vicinity of the wells/piezometers represented proper disposal.

Response 20: As no soil contamination was identified in the borings, the analysis used to determine the correct disposal option was the groundwater samples collected from MW-18 and MW-19. The disposal was based upon the initial sampling event—conducted on 2/28/2007—that showed nondetects for the COCs. This disposal option

for PZ-1 and PZ-2 was deemed acceptable as these wells are not in the immediate vicinity of the identified contamination.

Comment 21: The third sentence of this section indicated that no fluids were generated during the drilling of PZ-l and PZ-2, but does not indicate how fluids generated during the drilling of MW-18 and MW-19 were handled, characterized or disposed.

Response 21: The fluids generated while drilling MW-18 and MW-19 were handled in the same way as the drill cuttings. They were put in 55-gallon drums and poured on the ground in the vicinity of the wells after the groundwater analytical data were received.

Comment 22: The fourth sentence of this section indicated that purge water from developing MW-18 and MW-19 was placed in drums and later poured on the ground near the respective monitoring wells, however the basis for determining that this represented proper disposal was not provided.

Response 22: The basis for determining this disposal option was from the initial groundwater analytical results as described in Response 20.

Comment 23: The fourth sentence of this section did not address the handling, characterization or disposal of purge water from developing PZ-1 and PZ-2 although the Monitor Well Completion Reports presented in Attachment C of the SAR indicated both locations were initially air sparged and additionally developed before installing the pressure transducers.

Response 23: The development water was placed in 55-gallon drums and later poured on the ground in the vicinity of the piezometers. The basis for determining this disposal option was from the initial groundwater analytical results as described in Response 20.

<u>Section 2.23 - Undated Well Construction Details Summary Table</u> [Rule 62-780.600(8)(a)23., F.A.C.]

Comment 24: This section referenced the construction details provided in Table 8-1, however this table did not fully reference the datum used for the monitor well and piezometer top-of-casing elevation and ground surface elevation (i.e., NGVD "of 1929").

Response 24: The datum used for the elevations reported on this table is NGVD 1929. Table 8-1.b has been updated to include this information.

Section 3.0 - Quality Assurance Requirements [Rule 62-780.600(8)(a), 26., F.A.C.]

Comment 25: *The references to the laboratory reports, chain-of-custody forms, and sampling logs in Attachment D in sub-sections 3.1, 3.2 and 3.3 appear to be incorrect and should be replaced by references to Attachment E of the SAR.*

Response 25: The reference has been corrected.

Section 4.0 - Ground Water Analytical Results [Rule 62-780.600(8)(a)27., F.A.C.]

Comment 26: *This section does not provide a reference to a summary table of ground water "contaminants detected, their corresponding CTLs and the basis or reason for any alternative CTLs, detection limits achieved for non-detected analytes, and analyses performed, and that summarize all available analytical results."*

Response 26: Attachment 26 is a table that displays the concentrations of Benzene, Vinyl Chloride, and Methylene Chloride that have been collected since the first semiannual 2007 sampling event. The table shows the parameters CTL and the detection limit for all non-detect analytes. No alternate CTLs were used.

Comment 27: *The reference to the laboratory results in Attachment D appears to be incorrect and should be replaced by a reference to Attachment E of the SAR.*

Response 27: The reference has been corrected.

Comment 28: *The fourth sentence of ¶1 of this section indicated that for the January 2007 and February 2007 sampling events "MW-6, MW-8R, MW-AA and MW-10 reported concentrations above the standards for Vinyl Chloride and Benzene," however the samples collected from MW-6 and MW-AA were not reported to exceed the ground water standard for benzene.*

Response 28: The text has been changed to specify that MW-6 and MW-AA reported concentrations above the standard only for Vinyl Chloride.

Comment 29: *The fifth sentence of ¶1 of this section indicated that for the January 2007 and February 2007 sampling events vinyl chloride was reported in MW-10 at 1.2 µg/L, however samples from MW-10 were collected for both events with the highest concentration reported at 2.5 µg/L for the sample collected during January 2007.*

Response 29: The text has been changed to discuss the January and February sampling results.

Comment 30: *The sixth sentence of ¶1 of this section indicated that for the January 2007 and February 2007 sampling events benzene was reported in MW-10 at 1.1 µg/L, however samples from*

MW-10 were collected for both events with the highest concentration reported at 1.4 µg/L for the sample collected during January 2007.

Response 30: The text has been changed to discuss the January and February sampling results.

Section 4.1 - Well Location Man With Isoconcentration Contours [Rule 62-780.600(8)(a)28., F.A.C.]

Comment 31: The first sentence of this section indicated that for the January 2007 and February 2007 sampling events benzene was reported in MW-10 at 1.1 µg/L, however samples from MW-10 were collected for both events with the highest concentration reported at 1.4µg/L for the sample collected during January 2007.

Response 31: These sentences were reporting the range in concentration above the PDWS and only considered the assessment sampling, not the compliance sampling event conducted in MW-10. The range in Benzene concentrations considering both sampling events is from 1.1 µg/L to 1.4 µg/L with both measurements coming from MW-10. The text has been changed accordingly.

Comment 32: The second sentence of this section indicated that for the January 2007 and February 2007 sampling events vinyl chloride was reported in MW-10 at 1.2 µg/L, however samples from MW10 were collected for both events with the highest concentration reported at 2.5 µg/L for the sample collected during January 2007.

Response 32: These sentences were reporting the range in concentration above the drinking water standards and only considered the assessment sampling event, not the compliance sampling event conducted in MW-10. The range in Vinyl Chloride concentrations considering both sampling events is from 1.2 µg/L to 2.5 µg/L with both measurements coming from MW-10. The text has been changed accordingly.

Section 5.0 - 62-780.600(8)(B) Conclusions [Rule 62-780.600(8)(b), F.A.C.]

Comment 33: Comments regarding the summary of conclusions for the site assessment objectives and recommendations for additional actions are provided by the Department under separate cover.

Response 33: Comment Noted.

ATTACHMENT 1

UPDATED SAR TEXT

1.0 INTRODUCTION

On September 20, 2005, Citrus County Board of County Commissioners (BOCC) executed a Consent Agreement with the Florida Department of Environmental Protection (FDEP) to address issues of reported groundwater exceedances in down gradient groundwater monitoring wells since 2002 and exceedances of the lower explosive limit for combustible gases (calibrated to methane) at the landfill gas (LFG) monitoring probes since November 2003. The BOCC implemented the approved Groundwater Investigation Plan and the Landfill Gas Compliance Action Plan, incorporated into the Consent Agreement. SCS Engineers implemented the Landfill Gas Compliance Action Plan. Jones Edmunds prepared a *Groundwater Investigation Report (GWIR)* (Jones Edmunds) dated January 3, 2006 which addressed paragraphs 6, 8, 11a, 11b, and Exhibit A of the Consent Agreement. A Response to FDEP Request for Additional Information entitled *Groundwater Investigation Report Response to FDEP Request for Additional Information (RAI)*, (Jones Edmunds, September 2006) was prepared and submitted in September 2006. This Site Assessment Report (SAR) addresses the groundwater assessment issues that resulted from the Second Semiannual compliance monitoring event completed in July 2006. The SAR also summarizes the previous work completed under the Consent Agreement.

As part of the Consent Agreement the BOCC was required to obtain a lease expansion agreement from the Division of Forestry/State Lands and provide a copy to the FDEP. On October 5, 2005, the Department of Agriculture and Consumer Services Division of Forestry issued a Special Arrangement of Accommodations to grant Citrus County Solid Waste Management Division permission to access the Withlacoochee State Forest for the purpose of installing and monitoring 18 gas probes (GP-1 through GP-18) and groundwater monitoring wells (MW-10 through MW-17) adjacent to the Citrus County Central Landfill (Landfill). A copy of the Citrus County Central Landfill Special Use permit was submitted to the FDEP as Attachment B of the GWIR dated January 3, 2006 (Jones Edmunds, September 2006).

The monitoring wells (MW-10 through MW-15 and MW-17) were installed in October and November 2005. One water-level monitoring well (MW-16) was installed between the lined and unlined cells to provide additional groundwater flow information. The well logs and completion reports were submitted to the FDEP in the September 2006 RAI. Groundwater samples were collected from MW-10 through MW-15 and MW-17 during July 2006. The samples were analyzed for the parameters listed in 40 CFR Part 258, Appendix II. Analytical results for the July 2006 sampling event were provided in Appendix H of the GWIR.

A permit modification was submitted to and approved by the FDEP (Modification 21375-011 to existing Permit #21375-008-SO/01) requesting changes to (1) the Landfill property boundary, (2) the zone of discharge, (3) the groundwater monitoring network, and (4) the LFG monitoring network. The new Landfill property boundary, zone of discharge (ZOD), and groundwater monitoring network are shown in Figure 3-1. The new Landfill property boundary extends approximately 300 feet from the previous west, south, and east property boundaries. The new zone of discharge extends approximately 100 feet from the edge of waste along the western, northern, and southern closed Landfill boundaries. The new monitoring well network consists of four background wells (MW-1R, MW-3, MW-2, MW-7), one intermediate well (MW-6), three water-level-only wells (MW-4R, MW-5, and MW-16), and nine compliance monitoring wells (MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, MW-18, and MW-19). The former detection wells (MW-AA, MW-B, MW-C, MW-D, MW-E, MW-8R, and MW-9) were removed from the monitoring network. MW-AA, MW-B, MW-E, MW-8R, and MW-9 were retained as water level only wells and MW-C and MW-D were abandoned in May 2007 (*Well and Gas Probe Abandonment Report, July12, 2007*). Piezometers (PZ-1 and PZ-2) installed as part of the SAR were also added to the monitoring network as part of this permit modification. The frequency of compliance monitoring is semiannual.

On July 18, 2006, Jones Edmunds & Associates, Inc. (Jones Edmunds) conducted groundwater sampling for the second semiannual 2006 permit required compliance monitoring at the Landfill. Groundwater results from MW-10 reported concentrations of Benzene, Methylene Chloride, and Vinyl Chloride above the regulatory drinking water standards. Jones Edmunds re-sampled MW-10 on August 31, 2006. Concentrations of Benzene and Methylene Chloride were at the Primary Drinking Water Standard (PDWS) and Vinyl Chloride exceeded the PDWS.

The confirmed exceedance of Vinyl Chloride in MW-10 initiated this SAR as recommended in the GWIR and required by the Consent Agreement 05-1078. The site assessment was conducted in accordance with Rule 62-780 FAC, to delineate the horizontal and vertical extent of contamination as well as any potential environmental or public health threats. This report outlines the findings of the site assessment activities in the vicinity of MW-10.

Site assessment activities included installing two assessment wells for vertical and horizontal delineation of contaminant migration. The vertical assessment well, MW-19, was installed clustered with MW-10 and screened at a deeper interval. The horizontal assessment well, MW-18, was installed approximately 150 feet north northwest of MW-10 and screened at to intersect the water table (Figure 4-1).

The FDEP requested that the apparent groundwater mounding in the vicinity of MW-10 be investigated as part of this site assessment. Two piezometers, PZ-1 and PZ-2, were installed west and east of MW-10 to collect water level measurements. Both piezometers were screened to intersect the water table. Pressure transducers were installed in MW-10, MW-18, PZ-1, and PZ-2 to record high-frequency water level data. Aquifer characteristic testing (slug tests) was conducted on the wells to obtain hydrologic information in the vicinity of MW-10. In addition, during April and May 2007, four biweekly continuous-round groundwater level measurements were collected from on-site wells to augment the pressure transducer data.

2.0 62-780.600(8)(A)—SUMMARY OF SITE-ASSESSMENT ACTIVITIES

2.1 SITE HISTORY AND OPERATIONS

2.1.1 Present Real Property and Facility Owners

The eastern half of the Citrus Central Landfill, which includes the active landfill, is owned by the Citrus County BOCC. The western half, which includes the closed 60-acre landfill, is leased from the Department of Forestry but maintained by the Citrus County BOCC. On August 30, 2006, an amendment to the sublease was granted from the Department of Forestry that expanded the east, west, and south property boundaries 300 feet. The owned and leased property boundaries are shown on Figure 4.1.~~The present real property and facility owner is the Citrus County Board of County Commissioners located at 110 N Apopka Avenue, Inverness, Florida.~~

2.1.2 Past and Present Operations

The site was undeveloped before it became a landfill in 1975 and was part of the Withlacoochee State Forest. The western portion of the site is a closed 60-acre Landfill; the eastern portion of the site is an active 80-acre Class I Landfill of which 26 acres are developed.

The closed Landfill was leased from the state. The primary landfilling method from 1975 through the late 1980s was unlined trench and fill. In 1988, the northeastern part of the 60-acre property was developed as a single-lined disposal unit with a leachate collection system. The closed Landfill is capped with a membrane and soil cover, with the exception of an area in the east-central portion of the property which is steeply sloped where the membrane was not included in the closure profile. A groundwater monitoring network has been in place since 1985.

The active Landfill property was purchased from the State and developed for filling beginning in 1990. The active Landfill is lined and was developed in three units. Phase 1 is single-lined. Phase 1A began receiving waste in 1997 and is double-lined, with a clay subbase. Phase 2 began receiving waste in 2005 and is also double-lined with a clay subbase. A leachate collection, storage, and treatment system serves the "7-acre" cell on the closed site and all units on the active site.

2.1.3 Products, By-Products, and Wastes Generated

The facility has been operated as a Landfill since 1975. The Landfill is a municipal solid waste facility and the byproducts generated by the decomposition of the waste are LFG and leachate. A leachate treatment plant is operated at the Landfill in accordance with the Permit and Operations Plan (April 2005). The following products are used in the treatment process and are stored at the leachate plant, with the maximum amounts indicated:

- 360 - 50 lb. bags Activated Carbon
- 7,000-gallon tank of Methanol

- 2-55 gallon drums 40% Phosphoric acid (Phosphoric Acid and Chlorinated Hydrocarbon)
- 8-55 gallon drums Muriatic Acid
- 3-55 gallon drums Chlorine – liquid (Sodium Hypochlorite)
- 5-5 gallon containers Polymer (Percol 788-N)

Various chemicals in kit form are stored and used in the laboratory located in the Landfill office. These chemicals are used for testing raw and treated leachate for process control.

The Landfill also manages a household hazardous waste storage area. Section L-1 of the Operations Plan included as part of the Permit discusses in detail how the materials are managed, monitored, and stored in accordance with FAC 62-701.500. The products collected daily and stored in the Citizen Service Area include the following:

- paint
- waste oil
- antifreeze
- fluorescent bulbs
- other mercury containing devices (MCDs)
- batteries
- electronics

Various contractors manage recycling of these wastes for the County.

The Landfill holds an "open house" for the public every 2 months for collection of household hazardous waste, which is further managed by a contractor for packing, transport, storage, and disposal.

In addition, the Landfill maintains a propane storage area (one 20 cubic yard roll-off) for empty gas grill compression tanks. Freon is also stored in two 100-pound compression canisters.

The Landfill maintains two compartmentalized aboveground storage tanks (ASTs) containing diesel fuel. Each compartment can hold 490 gallons, with the two tanks housed in secondary containment, for a total of just under 2,000 gallons of storage. Hydraulic fluid and lubricants used at the Landfill are stored in 55-gallon drums and the lubricant/fuel truck which services the Landfill heavy equipment.

Small quantities of pesticides (ant killer) are used on-site. The Road Maintenance Division for Citrus County conducts herbicide spraying approximately twice a year. No mixing is done at the Landfill.

2.1.4 Current and Past Environmental Permits and Enforcement Actions

The Landfill received its first operational permit (Permit #SO 09-0027) from the Florida Department of Environmental Regulation (DER, now the FDEP), on November 12, 1975. The Landfill currently operates under Permit #21375-008-SO/08, which was issued on September 30, 2005. A minor permit modification was submitted to the FDEP on April 11, 2007. A new permit was issued for the Landfill (Modification #21375-011 to existing permit #21375-008-SO/01) on April 24, 2007. The permit incorporated the changes required by the Consent Agreement to the gas and groundwater monitoring networks which include adding assessment wells, MW-18 and MW-19, into the semiannual compliance monitoring well network. The two piezometers, PZ-1 and PZ-2, which will be used to collect water levels to determine groundwater elevations and flow at the Landfill, were also included in that permit modification.

On September 20, 2005, the BOCC executed a Consent Agreement with FDEP. In January 2006 the GWIR was submitted to the FDEP and discussed the analytical groundwater quality results for MW-10 through MW-15 and MW-17. A RAI to the GWIR was submitted to the FDEP in September 2006.

A contamination assessment was conducted by CH2M Hill in 1996 to address elevated levels of volatile organic compounds (VOCs) in MW-AA. As required by the permit, assessment monitoring was initiated and a downgradient monitoring well (MW-E) was installed. The zone of discharge was expanded in that localized area at that time. The contamination assessment report (CAR) recommended continued semiannual monitoring (CH2M Hill, 1996). A copy of the CH2M Hill CAR is provided as Attachment A.

2.1.5 Known Spills or Releases of Materials

Several minor spills or releases of materials or products used on-site that may be potential contamination sources have occurred at the Landfill. All of these releases have been reported to FDEP in compliance with the permit, including contaminated stormwater from heavy rainfall events or firefighting and raw or partially treated leachate spills. All releases have been cleaned up promptly to the extent possible.

The leachate effluent percolation ponds, where treated leachate is placed, are located between the closed and active Landfills. Leachate does not appear to be the source of the groundwater contamination in MW-10 because the typical chloride plume associated with leachate is not present. The source of the groundwater VOC contamination is believed to be LFG.

Three mechanisms exist for vapor phase VOC migration from a landfill to groundwater:

- Direct contact of LFG containing VOCs with the groundwater.
- Vapor phase VOC migration through the unsaturated zone around the Landfill.
- LFG condensate water formation in the unsaturated zone and subsequent migration to groundwater.

2.2 USGS TOPOGRAPHIC MAP

Figure 2-1 shows the site in relation to the surrounding area from the USGS Lecanto 7.5-minute Quadrangle at a scale of 1:24,000, with a contour interval of 10 feet. (Imagery dated 1988).

The Landfill is located in central Citrus County approximately 3 miles east of Lecanto, Florida, on State Road 44. The Landfill is located at latitude 28° 51' 07" North and longitude 82°26'12" West in Section 1, Township 19 South, Range 18 East.

2.3 VICINITY MAP THAT SHOWS PERTINENT FEATURES

Figure 3-1 is a vicinity map that shows the drainage features around MW-10, the assessment area. Figure 3-2 shows the land use in the vicinity of the Landfill (SWFWMD, 2004). Water supply wells are discussed in Section 11. No potential off-site sources of contamination were identified.

2.4 SITE MAP THAT SHOWS PERTINENT FEATURES

There are no subsurface features in the immediate—at least 200 feet—vicinity of MW-10. The only surface feature in the immediate vicinity is the drainage retention area west of MW-10. The location of the drainage retention area is shown on Figure 3.1 of the original SAR document. ~~Figure 4-1 is a site map that shows pertinent surface features, including all on-site monitoring wells, buildings, and property boundaries. The lined areas and the uncapped areas on the closed Landfill are also indicated. No subsurface features are in the immediate vicinity of the reported contamination near MW-10.~~

2.5 CONTAMINANT DISCHARGE LOCATION MAP

The closed, mostly unlined 60-acre Landfill was capped with a membrane, except in one area in the east-central part of the property, and is not believed to be contributing to groundwater contamination outside of the zone of discharge. Monitoring well MW-10 contained low levels of VOCs, which initiated this Site Assessment. Figure 5-1 illustrates the contaminant concentrations plotted by each well for samples collected in January and February 2007. As depicted in Figure 5-1, no contaminants of concern have been detected beyond the zone of discharge.

2.6 DETAILS OF PRELIMINARY SITE ASSESSMENT ACTIVITIES

A GWIR and RAI were submitted to FDEP as discussed above. The following conclusions were provided in the GWIR based upon the results of the investigation:

- The Landfill is underlain by a single aquifer system—the Floridan aquifer. The Floridan aquifer exists under water table conditions and generally flows from east to west.

- The collection of site stormwater and disposal of treated leachate effluent in the center of the site is creating a localized groundwater mounding effect, with a radius of influence of less than 500 feet.

- The groundwater travel time in six months is approximately 38 feet. Although the maximum distance that groundwater could travel in six months was calculated to be 38 feet, it is more probable that the maximum distance will be no greater than 15 feet (Jones Edmunds, September 2006).

- The groundwater investigation wells are constructed appropriately to intersect the water table of the uppermost water bearing unit. The wells are also located appropriately horizontally according to FAC to serve as compliance monitoring wells for the Landfill and have been incorporated into the semi annual compliance monitoring (Permit Modification#21375-011).

- Concentrations of groundwater constituents exceeded applicable drinking water standards for samples collected from three of the seven groundwater investigation monitoring wells. Specifically, Vinyl Chloride (PDWS), Iron (SDWS), and pH (SDWS) were reported at concentrations in excess of applicable standards. Values of pH are comparable to site background concentrations and are considered to be representative of natural conditions.

- The Landfill meets the requirements to be classified as an "existing installation" as defined by Rule 62-522.200, FAC. Additionally, the Landfill is bound in the down gradient direction, to the west, by the Withlacoochee State Forest. No potable drinking water wells are currently located immediately west or southwest of the Landfill, and there is no indication that future land use will change. Therefore, the County should be considered exempt from compliance with SDWS at the zone of discharge. Accordingly, the Iron concentrations reported for MW-12, MW-15, and MW-17 do not require assessment activities.

The following recommendations of the GWIR have been completed and are summarized below:

- MW-15 was re-sampled to provide confirmation of the Vinyl Chloride concentration reported during the initial sampling event. Sampling was completed on January 5, 2006 (Jones Edmunds, September 2006). Analytical results did not confirm the presence of vinyl chloride in MW-15. During the July 2006 semiannual sampling event, Vinyl Chloride was detected at 1 μg/l, which is the PDWS. During the first semiannual event in 2007 Vinyl Chloride~~was below the detection level of 0.52~~ was reported at a concentration of 0.91 I. Since the resample value was below the PDWS and remained below the PDWS in 2007, no assessment monitoring is required for this parameter in the vicinity of MW-15.

- Permit modification #21375-011 was issued to the permit #21375-008-SO/01; the details are discussed in the Introduction of this report.

As mentioned in Section ~~1.d~~2.1.4., CH2M Hill completed a CAR in 1996 (Attachment A), for the closed portion of the Landfill because low levels of VOCs were detected in downgradient well MW-A. It was determined that the casing for MW-A was leaking; therefore MW-A was abandoned and replaced with MW-AA. In 1994 low levels of VOCs were detected in MW-AA and re-sampling MW-AA confirmed the presence of VOCs. MW-E was installed downgradient of MW-AA to conduct semiannual assessment monitoring and the zone of discharge was expanded in that area. As required by the permit, the former detection wells (MW-AA, MW-B, MW-C, MW-D, MW-E, MW-8R, and MW-9) were removed from the water quality monitoring network with MW-C and MW-D being abandoned in May 2007 (*Well and Gas Probe Abandonment Report, July12, 2007*).

2.7 WELL SURVEY DATA

A copy of the survey conducted by Terrence J. Brannan Land Surveyors Inc. incorporating the new wells into the existing survey is provided as Attachment B. The survey includes the top of casing and ground surface elevations for MW-18, MW-19, PZ-1, and PZ-2. A site survey for the Landfill was provided in the RAI (Jones Edmunds, September 2006).

2.8 WELL CONSTRUCTION DETAILS WITH WATER-LEVEL ELEVATIONS

Two assessment wells, MW-18 and MW-19, were installed to delineate potential contaminant migration. Assessment well MW-18 was installed 150 feet north-northwest of MW-10 and set at 120 feet below land surface (bls) with a 20-foot screen interval. Assessment well MW-19 was installed clustered with MW-10 and set at 140 feet bls with a 10-foot screen interval for vertical delineation. Upon completion of the drilling, MW-18 and MW-19 were developed using an air injection method. Additional development was conducted with a Grundfos submersible pump before sampling.

Two piezometers, PZ-1 and PZ-2, were installed west and east of MW-10 to collect high-frequency water level data to determine the cause of groundwater mounding in the vicinity of MW-10. Both piezometers were developed by air injection upon completion.

Well construction details for the background, compliance, piezometers, and assessment wells are provided in Table 8-1. The assessment wells and piezometers were all constructed with 2-inch-diameter Schedule 40 PVC casing with 2-inch-diameter 0.01-inch-slotted Schedule 40 PVC screens. They were completed with flush-mount manhole covers with a locking seal. Attachment C contains the boring logs and well completion reports that were submitted to the

Department on April 11, 2007. The well logs and completion reports for MW-10 through MW-17 were provided to FDEP in the RAI, September 2006.

The depth to water at the site is approximately 110 feet bls, which is an elevation of approximately 8 to 10 feet NGVD. The seasonal water table fluctuation between wet and dry season is approximately 2 feet.

A hydrograph of groundwater elevations from all the wells at the Landfill is included as Figure 8-1. Groundwater elevations were determined from four biweekly continuous-round groundwater level measurements collected during April and May 2007. The groundwater elevation data, water level measurements, and top-of-casing elevations are summarized in Table 8-2.

Analysis of the hydrographs of the wells that continually provide higher water level elevations (MW-1R, MW-2, MW-3, MW-4R, MW-5, MW-6, MW-7, MW-8R, MW-10, MW-AA, MW-15, MW-17, MW-18, and MW-19) against those that provide the lower elevations (MW-9, MW-E, MW-11, MW-12, MW-13, MW-14, MW-16, PZ-1, and PZ-2) shows that the wells with the higher water level elevations are screened in sand and clay, whereas the wells with the lower water level elevations are screened ~~in limestone~~below the limestone contact. Figure 8-2 is a hydrograph of the wells screened in sand and clay sediments; Figure 8-3 is a hydrograph of wells screened in limestone. Three of the wells in Figure 8-2 (MW-8R, MW-AA, and MW-1R) display trends and elevations that are similar to those observed in the limestone wells shown in Figure 8-3. These three wells are screened in predominantly sand and clay but have limestone fragments reported in the boring logs.

As shown in Figure 8-3, MW-13 and PZ-1 have higher water level elevations than expected for the last measurement. These wells are flush-mount manholes with the ground surface. The potential for surface water flowing into the wells during a rain event may explain PZ-1 displaying the increased trend due the pressure transducer placed in the well. PZ-2, which also had a pressure transducer deployed in it, displayed a slight increase. Despite having pressure transducers in them, MW-10 and MW-18 did not display the increasing trend due to their locations on higher ground. The possibility exists that the water tight cap may have not been tightened, allowing potential influence from the rain. MW-13 should be re-developed prior to the next compliance monitoring event.

2.9 WATER-LEVEL ELEVATION CONTOUR MAPS

Groundwater elevation contour maps of the Floridan aquifer were created from four biweekly monitoring events between May 8 and June 20, 2007 and are included as Figures 9-1 through 9-4. The groundwater contour maps display similar trends with a predominantly western groundwater flow direction across the Landfill. Groundwater mounding was observed in the center of the site due to the recharge from the leachate percolation ponds. All four maps also show groundwater mounding in the assessment area around MW-10 and display irregular flow patterns on the western boundary of the site. The groundwater elevations recorded in MW-18 were consistently higher than the elevations recorded in MW-10. MW-18 is approximately 150 north-west of MW-10, indicating that groundwater would be flowing on-site in the vicinity of the assessment area.

Pressure transducers were installed in MW-10, MW-18, PZ-1, and PZ-2 to collect high-frequency water level data to observe any possible relationship between precipitation and the groundwater mounding observed in the assessment area near MW-10. Figure 9-5 shows the water level data collected between March 3, and July 15, 2007 from the pressure transducers along with daily precipitation measured at the Landfill. Although the data do not show a good correlation to precipitation, they do show a difference in water level elevation between the two piezometers, which are screened in limestone, and the two wells, which are screened in sand and clay units.

The four groundwater contour maps show the groundwater flow conforms to the limestone contact. Figure 9-6 is a contour map of the elevation of the top of limestone at the Landfill. The limestone contact is irregular across the site, shallower in the west and dipping deeper generally to the east. The groundwater contour maps display irregular trends along the western boundary of the site where the groundwater intersects the limestone contact. The groundwater contour maps also show groundwater lows in the vicinity of MW-B, which is near a shallow limestone contact. In the assessment area, MW-10, MW-18, and MW-19 are all in an area where the limestone contact is deeper. PZ-1 and PZ-2 are both in areas where the limestone contact is shallower. With exception of the groundwater mounding caused by the leachate percolation ponds, the irregular groundwater elevations observed at the Landfill follow the limestone contact with higher groundwater elevations observed in wells screened in sand and clay sediments than those screened in limestone. The wells at the Landfill are monitoring the uppermost laterally continuous aquifer, which is the top of the Floridan aquifer.

2.10 PUBLIC AND PRIVATE WATER SUPPLY WELL SURVEY

Table 10-1 is an inventory of the water supply wells located within a ½-mile radius of the Landfill. The table was constructed using data from a door-to-door survey of private residences and businesses cross-referenced with the SWFWMD well construction permit database and the Citrus County Property Appraiser Website. No public supply wells are located within a ½-mile radius of the Landfill.

2.11 WATER SUPPLY WELL LOCATION MAP

Figure 11-1 is the location map of all residential water supply wells that were identified in Table 10-1. The number on the map correlates to the well number in Table 10-1. There were 11 residential potable wells located north of the Landfill within ¼ mile of the property boundary and 37 residential potable wells within ½ mile of the Landfill. No potable wells were identified east, south, or west of the Landfill. The Landfill is connected to City water. Before being connected to the City water, the Landfill obtained water from a well just north of the leachate treatment plant drying beds and east of the fence that separates the closed Landfill property from the active site. The old well is still in use and is connected to the leachate plant for makeup water and to a couple of hose connections used to fill the water truck and for equipment washing. Public water supply is available for all of the businesses on SR 44 (#50, 61, 62, 63, 64, 65) and the residences on Sharp Lane (#1-10); they are required to hook up for potable use. However, they are allowed to use their wells for irrigation.

2.12 SLUG TEST RESULTS

Hydraulic conductivity testing (slug testing) was performed in MW-18, MW-19, PZ-1, and PZ-2 during April 2007. The tests were conducted by lowering a slug (a solid plastic cylinder) into the well, causing water levels to rise (referred to as *slug-in*). An electronic data logger recorded water levels as they rose in the well and as they recovered (fell) to static conditions. The slug was then quickly removed from the well (referred to as *slug-out*). Water levels were recorded by the data logger as they fell upon slug removal and recovered (rose) to static levels. The data were evaluated using the Hvorslev method (Fetter, 1994) to determine the hydraulic conductivity (K) value of the aquifer; results are included on Table 12-1. The average hydraulic conductivity for the slug out test on PZ-1 and MW-18 and both the slug in and slug out tests for MW-19 was calculated to be 4.86 ft/day. The slug out test conducted on PZ-2 did not show a recovery. The slug in data was not used for PZ-1, PZ-2, and MW-18 due to the well screens being partially submerged. Both sets of data were used for MW-19 as the well screen was submerged. ~~The average hydraulic conductivity for PZ-1, PZ-2, MW-18, and MW-19 was calculated to be 2.42 feet/day.~~ Hydraulic conductivity data and graphs from each slug test are provided as Attachment D.

Slug tests were performed on wells MW-10 through MW-17 in conjunction with the GWIR and RAI submitted to the Department in January and September 2006. The K values ranged from a low of 5.53 feet/day in monitoring well MW-13 to a high of 40.04 feet/day in monitoring well MW-17. A summary of slug test data and K value calculations using the Hvorslev method were provided in subset A of Table 4 of the GWIR. The slug test field data was provided in Appendix E of the GWIR. Additional discussion of the slug test data was provided in the RAI, Section 3.3.2.

2.13 HORIZONTAL GROUNDWATER FLOW VELOCITY CALCULATION

Horizontal average linear groundwater velocity calculations are included as Table 13-1.b for MW-10, MW-18, ~~MW-19,~~ PZ-1, and PZ-2. The average linear groundwater velocity was calculated as described in Fetter, 1994. The maximum calculated average linear groundwater velocity was ~~0.0811~~0.1929 ft/day, which translates to a travel distance of ~~14.60~~34.72 feet in 6 months for the assessment area near MW-10. This data was consistent with the data collected for the GWIR, which is summarized below. Table 13-1.b also includes the hydraulic gradients calculated for the water levels collected during the May and June 2007. Hydraulic gradients ranged from 0.0001 to 0.~~0026-~~0045 feet /foot. ~~Groundwater velocity ranged from 0.000013 to 0.0811 (ft/day)[3].~~

The hydraulic gradient of the site was calculated using groundwater elevation data collected on December 21, 2005 and July 17, 2006 (Jones Edmunds, January and September 2006). Hydraulic gradient values ranged from 0.00021 to 0.00132 foot/foot on December 21, 2005 and from 0.00024 to 0.00068 feet/foot on July 17, 2006. A conservative estimate for the effective porosity (25%) was selected based on published values (Fetter, 1994).

The rate of groundwater flow beneath the Landfill was determined using the following equation:

Velocity (V) = Hydraulic Conductivity (K) x Hydraulic Gradient (i) / Porosity (n)

Using the equation above and the most conservative values (i.e., the highest) for hydraulic conductivity (40.04 feet/day), hydraulic gradient (.00132 foot/foot), and porosity (.25), the maximum groundwater flow velocity was determined to be 0.211 foot/day. The resulting groundwater travel time in six months is approximately 38 feet. Although the max distance that groundwater could travel in six months was calculated to be 38 feet it is more probable that the max distance will be no greater than 15 feet (Jones Edmunds, September 2006). The calculations presented in this SAR are consistent with what was shown in the GWIR.

2.14 VERTICAL GROUNDWATER FLOW VELOCITY CALCULATION

Vertical average linear groundwater velocity calculations are included as Table 14-1.b. The vertical gradient was calculated between wells MW-10 and MW-19, which were installed in cluster. The screened interval for MW-10 is between 14.~~9~~24 and ~~-5.1~~5.76 feet NGVD and the screened interval for MW-19 is between ~~-16.0~~ -15.44 and ~~-26.0~~ -25.44 feet NGVD. The head difference between the two wells created ~~an upward~~ downward gradient for each groundwater elevation determination event ~~except the June 6, 2007 event~~. The maximum vertical average linear groundwater velocity was 0.~~0714~~ 0.2567 ft/day, which translates to a travel distance of ~~12.84~~46.21 feet in 6 months.

2.15 GEOPHYSICAL METHODS DESCRIPTION

Geophysical methods were not used for the assessment.

2.16 SITE-SPECIFIC STRATIGRAPHY

The Landfill lies within the Hernando Hammock physiographic subdivision of the Ocala Uplift District as described by Brooks (1981). This region is characterized by remnant erosional hills and ridges, which are in-filled with thick, weathered deposits of sand and clayey sand. The Landfill is also within the northern portion the Brooksville Ridge. The Brooksville Ridge is characterized as an extensive, internally drained, karst terrain with high local relief.

Regional geology at the Landfill is typically characterized by undifferentiated sands and clays of the Alachua formation overlying the Hawthorn Group clays, which are found in erosional valleys of the underlying limestone units in Citrus County (Vernon, 1951). The thickness and continuity of the sediments vary greatly in the area. The sand and clays act as partial/poorly confining units for the Floridan aquifer in some parts of the region. Beneath the undifferentiated sands and clays lies a thick sequence of Eocene age carbonate deposits, which generally consist of the Suwannee limestone, Ocala Group, and Avon Park formations (Vernon, 1951).

Site-specific geology was characterized based on monitoring well installation and standard penetration test borings and ~~is characterized by~~contains approximately 130 feet of surficial sediments ranging from fine to medium sands to clayey, silty fine sands. Several 1 foot to 2-foot clay layers are present between 50 and 80 feet bls. Beneath these sediments lies the Suwannee Formation. The Suwannee has a highly irregular surface beneath the site, with elevations ranging from 80 feet NGVD to –54 feet NGVD and generally slopes from west to east (Jones Edmunds, ~~January~~ 2006~~7~~7). The only laterally continuous aquifer at the Landfill is the unconfined Floridan aquifer.

2.17 GEOLOGIC CROSS-SECTIONS

Two geologic cross-sections relative to NGVD of 1929 that illustrate the variable top of limestone are shown in Figures 17-1 and 17-2. A geologic cross-section location map is shown in Figure 17-3. The geologic cross-sections show the irregular limestone contact found beneath the Landfill. MW-10 is in an area where the limestone contact is deeper than 140 feet bls (the total depth of MW-19) along with MW-18, which did not intersect the limestone contact. PZ-1 and PZ-2, located east and west of MW-10, do intersect the top of limestone at approximate depths of 96 and 80 feet bls, respectively.

2.18 DETAILS OF ANY OTHER ASSESSMENT METHODOLOGY

No other assessment methodologies (field screening techniques or measures of biological activity) were used at the site.

2.19 SOIL SCREENING SUMMARY

Field soil screening is unnecessary based on the site-specific conditions (soil contamination is absent) and was not performed at the site.

2.20 SOIL SAMPLING LOCATION MAP

Field soil screening is unnecessary based on the site-specific conditions (soil contamination is absent) and was not performed at the site.

2.21 MONITORING WELL CONSTRUCTION DETAILS AND DIAGRAMS

Monitoring well construction details are provided in Table 8-1. Monitoring well construction diagrams and lithologic logs for MW-18, MW-19, PZ-1 and PZ-2 are included in Attachment C. Field sampling data sheets are included in Attachment E.

Well completion report and well logs for MW-10 through MW-17 were included in the GWIR, January 2006.

2.22 TREATMENT OR DISPOSAL METHODS OF INVESTIGATION-DERIVED WASTE

Drill cuttings generated during the drilling of MW-18, MW-19, PZ-1, and PZ-2 were placed in 55-gallon drums until the laboratory reports for the groundwater samples were received. The analytical results for the initial sampling of MW-18 and MW-19 revealed that no parameters exceeded the cleanup target levels; ~~and~~ therefore, the drill cuttings were spread on the ground in the vicinity of the wells and piezometers. As the piezometers are not in the immediate vicinity of MW-10 and the groundwater analytical results for the assessment wells had no exceedances, the same disposal method of the drill cuttings was deemed acceptable for the piezometers. No Fluids were generated during the drilling of PZ-1 and PZ-2 due to a loss of circulation during the well installation process. Drilling fluids from the installation of MW-18 and MW-19 and ~~P~~purge water from developing MW-18, ~~and~~ MW-19, PZ-1, and PZ-2 ~~was~~ were placed in 55-gallon drums and later poured on the ground near the respective monitoring wells.

2.23 UPDATABLE WELL CONSTRUCTION DETAILS SUMMARY TABLE

A monitoring well construction detail summary table is provided as Table 8-1.

2.24 FREE PRODUCT SUMMARY TABLE

No free product has been detected in the groundwater at this site. Based on the low concentrations of contaminants detected so far, no free product has entered the groundwater system.

2.25 FREE PRODUCT EXTENT MAP

No free product has been detected in the groundwater at this site.

3.0 QUALITY ASSURANCE REQUIREMENTS

This assessment was completed in accordance with the requirements of subsection 62-780.300(2), FAC.

3.1 LABORATORY REPORTS

The laboratory reports from Environmental Conservation Laboratories, Inc. (ENCO) are included in Attachment ~~D~~E.

Jones Edmunds personnel sampled compliance well MW-10, assessment wells MW-18 and MW-19, and background well MW-1R in accordance with the FDEP Standard operating procedures (FDEP-SOP-001-01) on February 28, 2007. All sampling complied with the applicable requirements of Chapter 62-160, FAC, Quality Assurance. Samples were delivered to ENCO for analysis under chain-of-custody protocols. ENCO is certified under the National Environmental Laboratory Accreditation Program (NELAP).

3.2 COMPLETED CHAIN-OF-CUSTODY FORMS

The completed chain-of-custody (COC) record form is included in Attachment ~~D~~ E for the February 2007 sampling event. The completed COCs for the groundwater analytical results from 2002 through 2006 were included in the Groundwater Monitoring Plan Evaluation 2002-2004 and Biennial Report dated 2004-2007.

3.3 COMPLETED WATER SAMPLING LOG FORMS

Completed water sampling log forms are included in Attachment ~~D~~E. Completed water sampling log forms are for the groundwater analytical results from 2002 through 2006 were included in the Groundwater Monitoring Plan Evaluation 2002-2004 and Biennial Report dated 2004-2007.

3.4 RESULTS FROM SCREENING TESTS OR ONSITE ANALYSES

No screening tests or onsite analyses performed in accordance with this chapter were involved in this site assessment.

4.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater analytical results are presented in Attachment ~~D~~ E for the groundwater sampling completed on February 28, 2007. The compliance well MW-10, background well MW-1R, and assessment wells MW-18 and MW-19 were sampled in February and the background and compliance wells were sampled in January 2007 for the First Semiannual compliance monitoring event. The wells were sampled for Benzene, Vinyl Chloride, and Methylene Chloride along with field parameters for temperature, pH, conductivity, dissolved oxygen, turbidity and oxidation-reduction potential (ORP). Monitoring wells ~~MW-6,~~ MW-8R~~, MW-AA~~ and MW-10 reported concentrations above the standards for Vinyl Chloride and Benzene; MW-AA and MW-6 reported concentrations above the standard for Vinyl Chloride. Vinyl Chloride was reported above the PDWS of 1 µg/L in MW-6 at 2.3 µg/ L, in MW-8R at 1.4 µg/L, in MW-AA at 1.4 µg/ L, and in MW-10 at 2.5 µg/L in January and at 1.2 µg/L in February. Benzene was reported above the PDWS of 1 µg/L in MW-8R at 1.3 µg/ L and in MW-10 at -1.4 µg/L in January and at 1.1 µg/ L in February.

MW-10, MW-1R, MW-18 and MW-19 reported pH levels below the secondary drinking water standard of 6.5 S.U., with levels ranging from 4.00 to 6.07 S.U.

Figure 5-1 illustrates the analytical results plotted by each well for the wells sampled during the first semiannual sampling event 2007 and the site assessment sampling completed February 2007. The results reveal that no contaminants of concern were detected beyond the zone of discharge. Groundwater analytical results are discussed in detail in the *Groundwater Monitoring Plan Evaluation* and *Biennial* for the data collected between 2002 and 2007. Summary tables of the parameters compared to the groundwater standards from January 2002 through February 2007 are included in Attachment D.

4.1 WELL LOCATION MAP WITH ISOCONCENTRATION CONTOURS

Benzene concentrations ranged from 1.1 µg/L ~~in MW-10~~ to 1.~~3~~ 4 µg/L ~~in MW-8R~~. Vinyl Chloride concentrations ranged from 1.2 µg/L ~~in MW-10~~ to 2.~~3~~5 µg/L ~~in MW-6~~. Methylene Chloride was below detection levels. Therefore, no contamination isoconcentration contour maps were constructed. Figure 5-1 illustrates the concentrations of Benzene, Vinyl Chloride, and Methylene Chloride plotted by each well and the approximate extent of Benzene and Methylene Chloride.

5.0 62-780.600(8)(B) CONCLUSIONS

LFG appears to be the source of VOCs at the Landfill. Since implementation of the Landfill Gas Compliance Action Plan, LFG has not been detected beyond the ZOD. The low concentration of Benzene and Vinyl Chloride observed in MW-6, MW-8R, MW-10 and MW-AA have been delineated. Groundwater analytical results from MW-10 through MW-15, MW-17, MW-18 and MW-19, reported concentrations of Benzene, Vinyl Chloride, and Methylene Chloride all below the laboratory detection limit.

Natural Attenuation Monitoring was implemented at the Landfill, with the two assessment wells (MW-18 and MW-19) being incorporated into the compliance monitoring as required by the Permit Modification #21375-011 issued on April 11, 2007 to existing permit #21375-008-SO/01. MW-18 and MW-19 will be sampled for Benzene, Methylene Chloride, and Vinyl Chloride semi-annually as outlined in Specific Condition #E.4.d. PZ-1 and PZ-2 have also been incorporated into the permit modification as water-level-only wells.

The observed groundwater mounding in the assessment area around MW-10 does not appear to be the result of precipitation, but is an effect of the lithology beneath the Landfill. Wells at the Landfill that are screened in limestone tend to have lower water level elevations than those screened in sand and clay sediments. The groundwater contour maps display trends similar to the top of limestone contact and display irregular trends in areas where the limestone is shallower. In addition, the higher hydraulic conductivities generally observed in the wells screened in limestone compared to the hydraulic conductivities from wells screened in the sand

and clay units support the observed mounding in MW10. Despite the observed head differences in the wells at the Landfill, the wells are monitoring the same portion of the Floridan aquifer.

Based on the findings of the site assessment, the groundwater monitoring well network is appropriately located to detect any potential contaminants migrating from the Landfill. No contaminants have migrated beyond the zone of discharge. Semi-annual compliance monitoring will continue in accordance with the permit modification which incorporates Natural Attenuation Monitoring as the approved remedial action.

6.0 REFERENCES

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CH2M Hill, 1996. Contamination Assessment Report prepared for Citrus County Central Landfill, Citrus County, Florida.

Fetter, C.W., 1994. *Applied Hydrology – Third Edition.* Prentice Hall Inc.

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Jones Edmunds & Associates, Inc., Biennial Reports 2007 and 2004

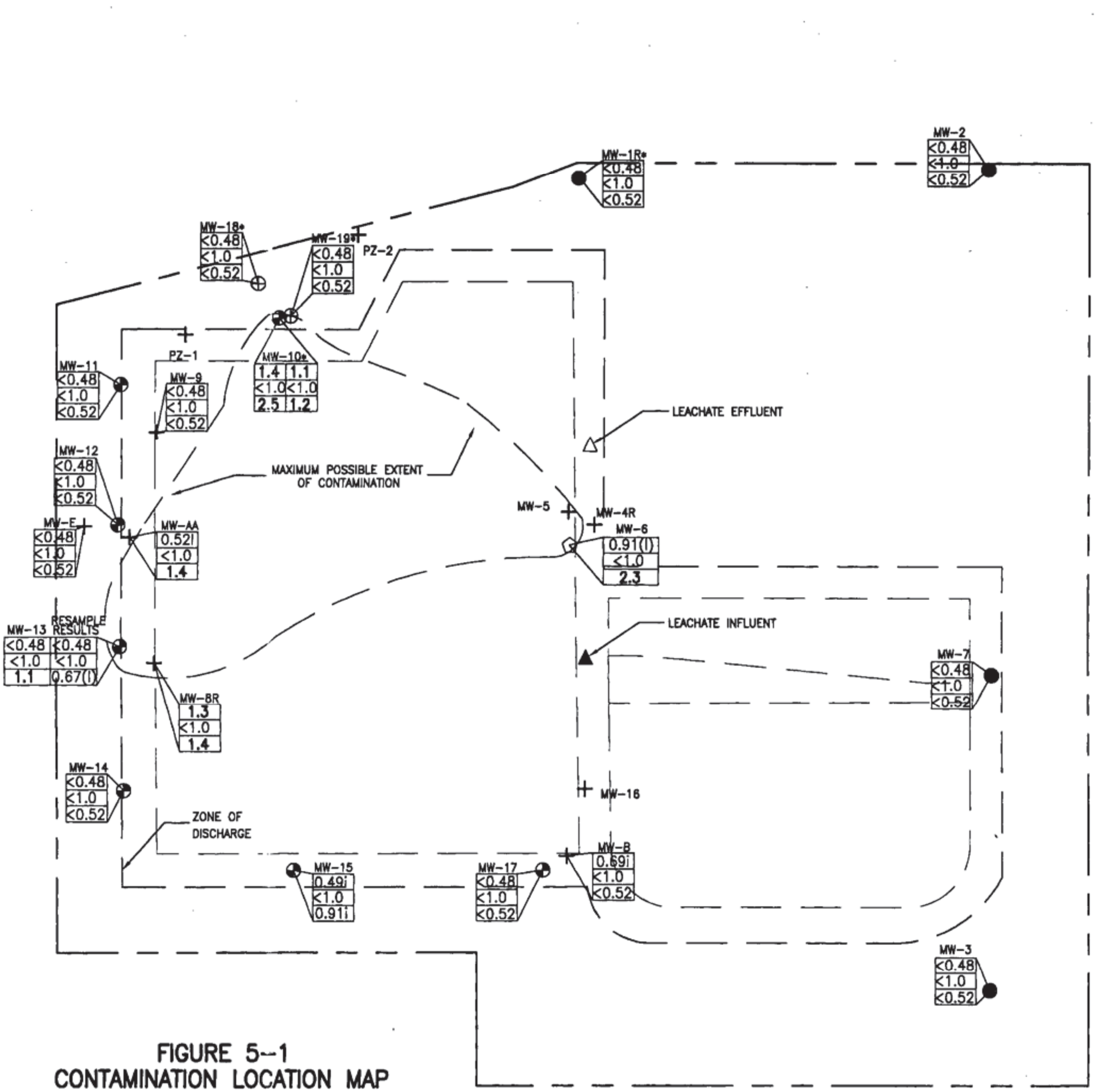
Southwest Florida Water Management District (SWFWMD). Land Use Map, 2004.

USGS Topographic Lecanto Quadrangle Map, 1988.

Vernon, R.O., 1951. *Geology of Citrus and Levy Counties, Florida.* The Florida Geological Survey, Geological Bulletin No. 33.

ATTACHMENT 3

CONTAMINANT CONCENTRATION MAPS



N

GRAPHIC SCALE
0 125 250 500
SCALE IN FEET

LEGEND

- ● BACKGROUND (UPGRADIENT) WELLS
- COMPLIANCE (DOWNGRADIENT) WELLS
- ⊕ ASSESSMENT WELLS
- ▲ LEACHATE INFLUENT SAMPLING LOCATION
- △ LEACHATE EFFLUENT SAMPLING LOCATION
- \+ PIEZOMETERS
- ⬠ INTERMEDIATE WELL

ANALYTICAL RESULTS

1	BENZENE
5	METHYLENE CHLORIDE
1	VINYL CHLORIDE

CONCENTRATION IN PPB
BOLD NUMBERING INDICATES EXCEEDANCE OF PRIMARY DRINKING WATER STANDARD LISTED ABOVE
ANALYTICAL DATA IS FROM THE FIRST SEMIANNAUL 2007 SAMPLING EVENT
* MEANS ANALYTICAL DATA IS FROM ASSESSMENT SAMPLING ON 2/28/2007
MW-AA AND MW-8R ARE DESIGNATED WATER LEVEL ONLY WELLS IN THE NEW PERMIT

FIGURE 5-1
CONTAMINATION LOCATION MAP
CITRUS COUNTY LANDFILL

JONES EDMUNDS

LAST SAVED: 1/21/2009 9:59 AM THAYS K:\Jones Edmunds\Citrus County\Central Landfill\SAR\SAR RAI\Fig 5.1_corrected.dwg

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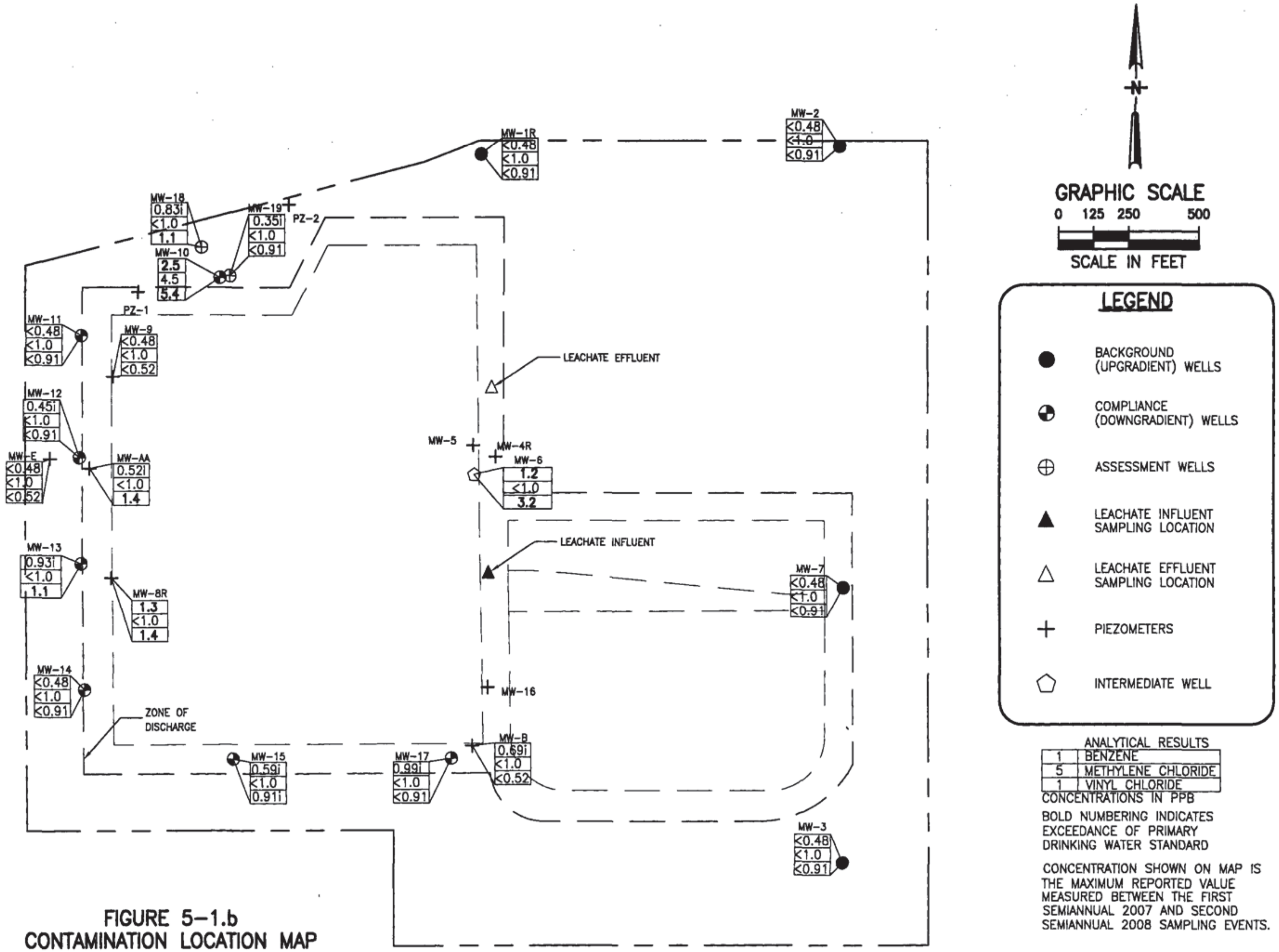

FIGURE 5–1.b
CONTAMINATION LOCATION MAP
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-025-01

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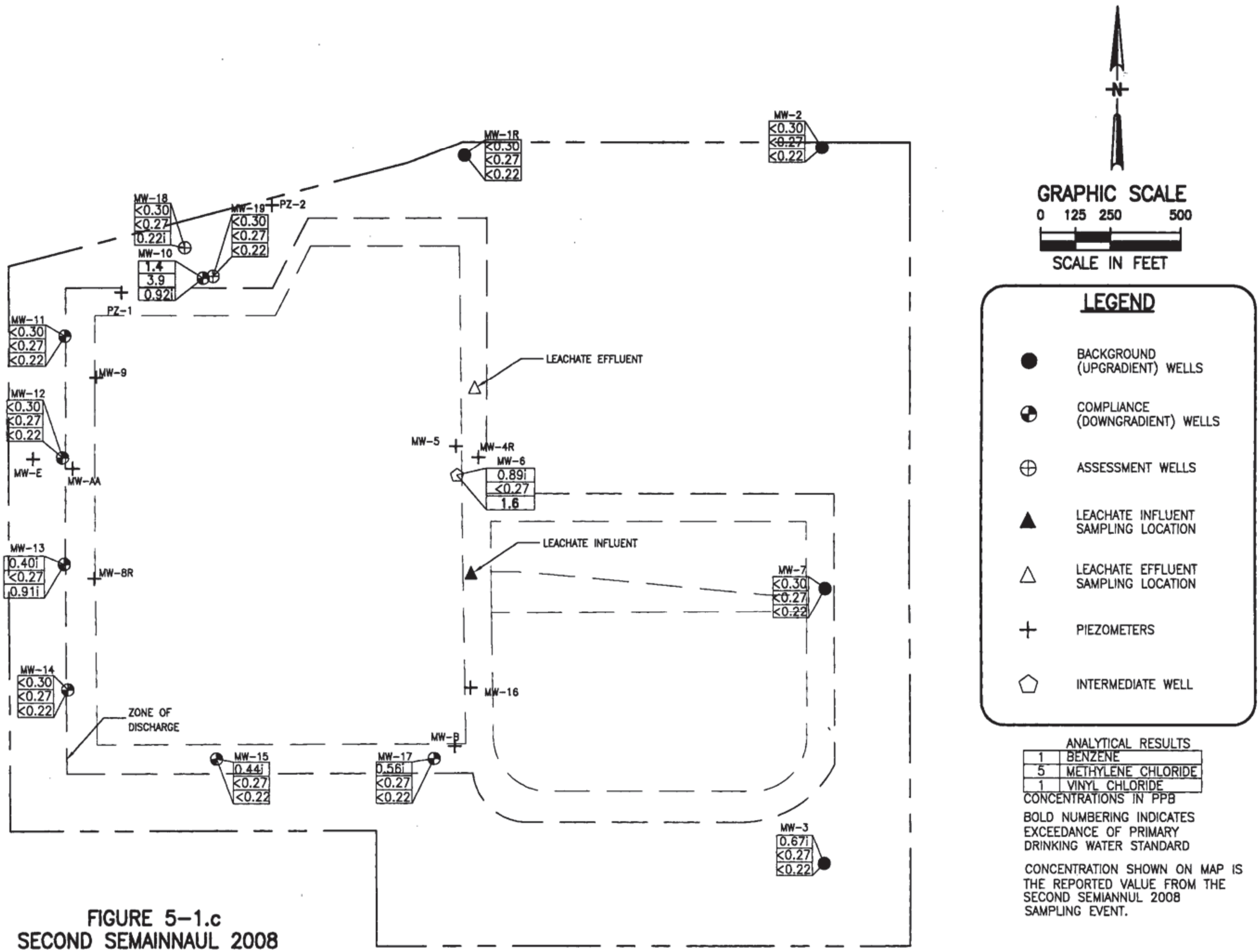

FIGURE 5–1.c
SECOND SEMAINNAUL 2008
CONTAMINATION LOCATION MAP
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-025-01

K:\Jones Edmunds\Citrus County\Central Landfill\SAR\SAR RA\Fig 5.1.c_2S08_concentrations.dwg

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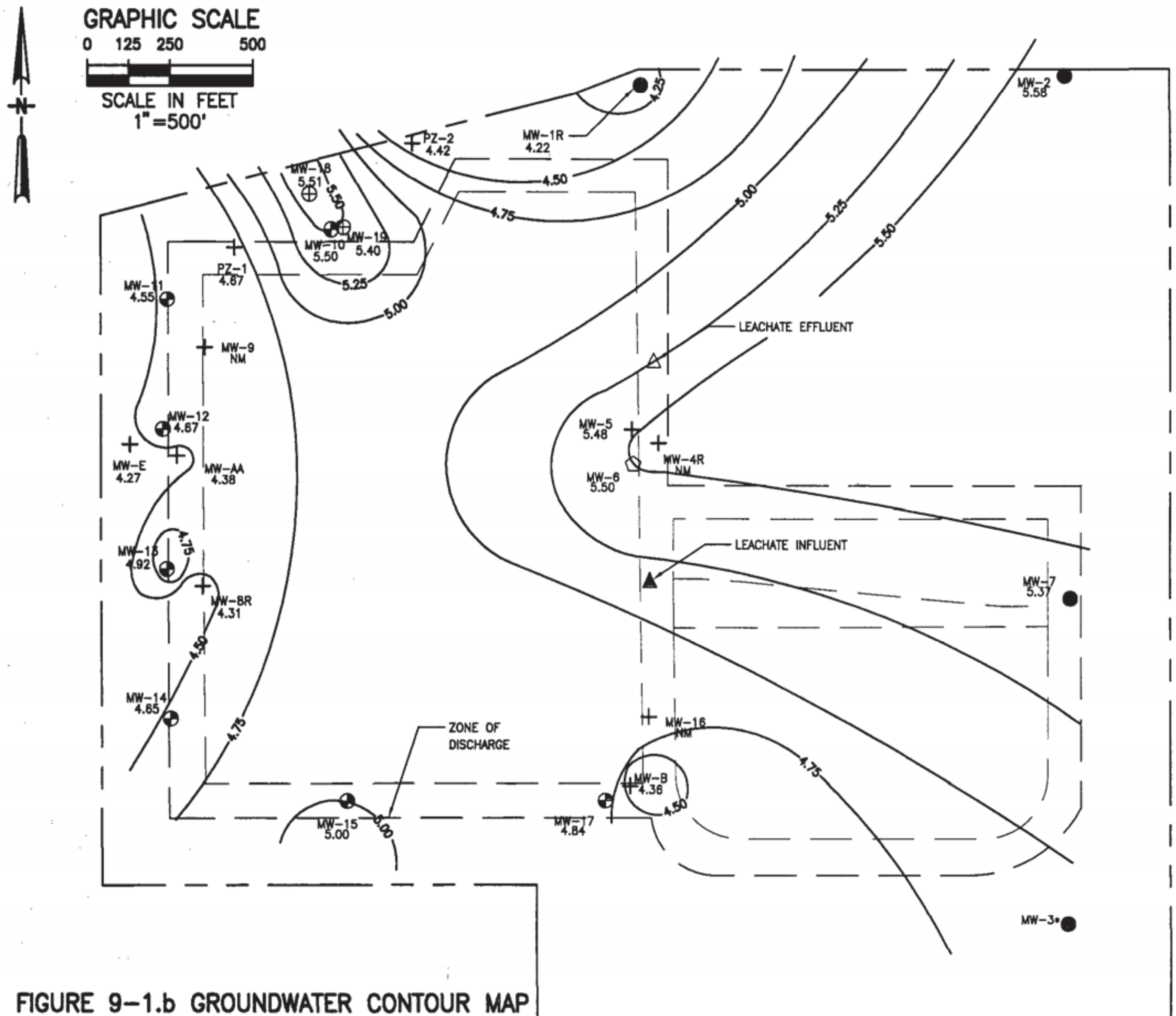
Plotted: 12/31/08 2:27pm thays

ATTACHMENT 7

UPDATED SAR FIGURES AND TABLES



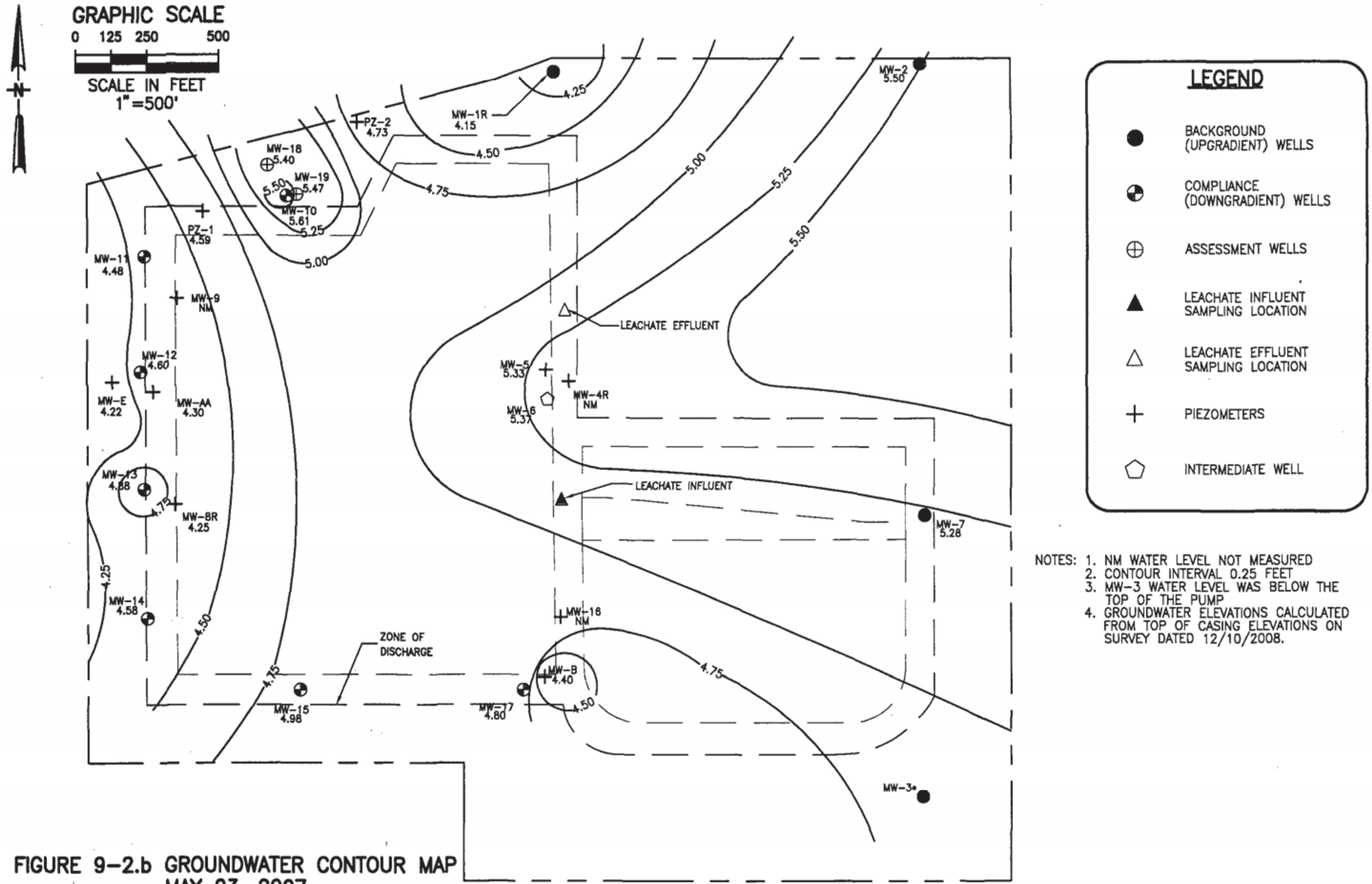
LEGEND

- ● BACKGROUND (UPGRADIENT) WELLS
- ◕ COMPLIANCE (DOWNGRADIENT) WELLS
- ⊕ ASSESSMENT WELLS
- ▲ LEACHATE INFLUENT SAMPLING LOCATION
- △ LEACHATE EFFLUENT SAMPLING LOCATION
- \+ PIEZOMETERS
- ⬠ INTERMEDIATE WELL

NOTES:
1. NM WATER LEVEL NOT MEASURED
2. CONTOUR INTERVAL 0.25 FEET
3. MW-3 WATER LEVEL WAS BELOW THE TOP OF THE PUMP
4. GROUNDWATER ELEVATIONS CALCULATED FROM TOP OF CASING ELEVATIONS ON SURVEY DATED 12/10/2008.

FIGURE 9-1.b GROUNDWATER CONTOUR MAP
MAY 8, 2007
CITRUS COUNTY LANDFILL

JONES EDMUNDS



NOTES:
1. NM WATER LEVEL NOT MEASURED
2. CONTOUR INTERVAL 0.25 FEET
3. MW-3 WATER LEVEL WAS BELOW THE TOP OF THE PUMP
4. GROUNDWATER ELEVATIONS CALCULATED FROM TOP OF CASING ELEVATIONS ON SURVEY DATED 12/10/2008.

FIGURE 9-2.b GROUNDWATER CONTOUR MAP
MAY 23, 2007
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-028-01

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Plotted: 12/31/08 2:35pm thays

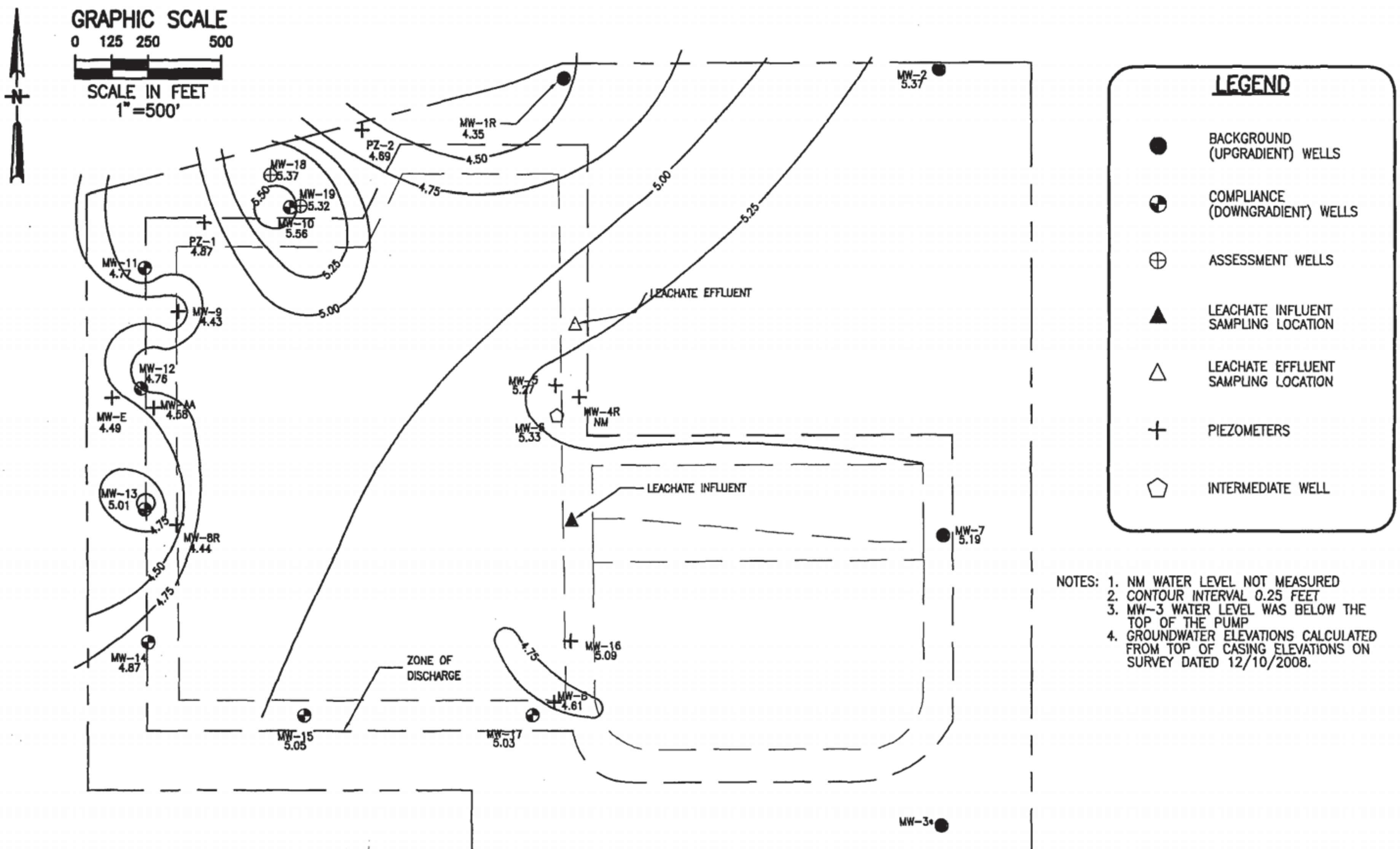

FIGURE 9-3.b GROUNDWATER CONTOUR MAP
JUNE 6, 2007
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-028-01

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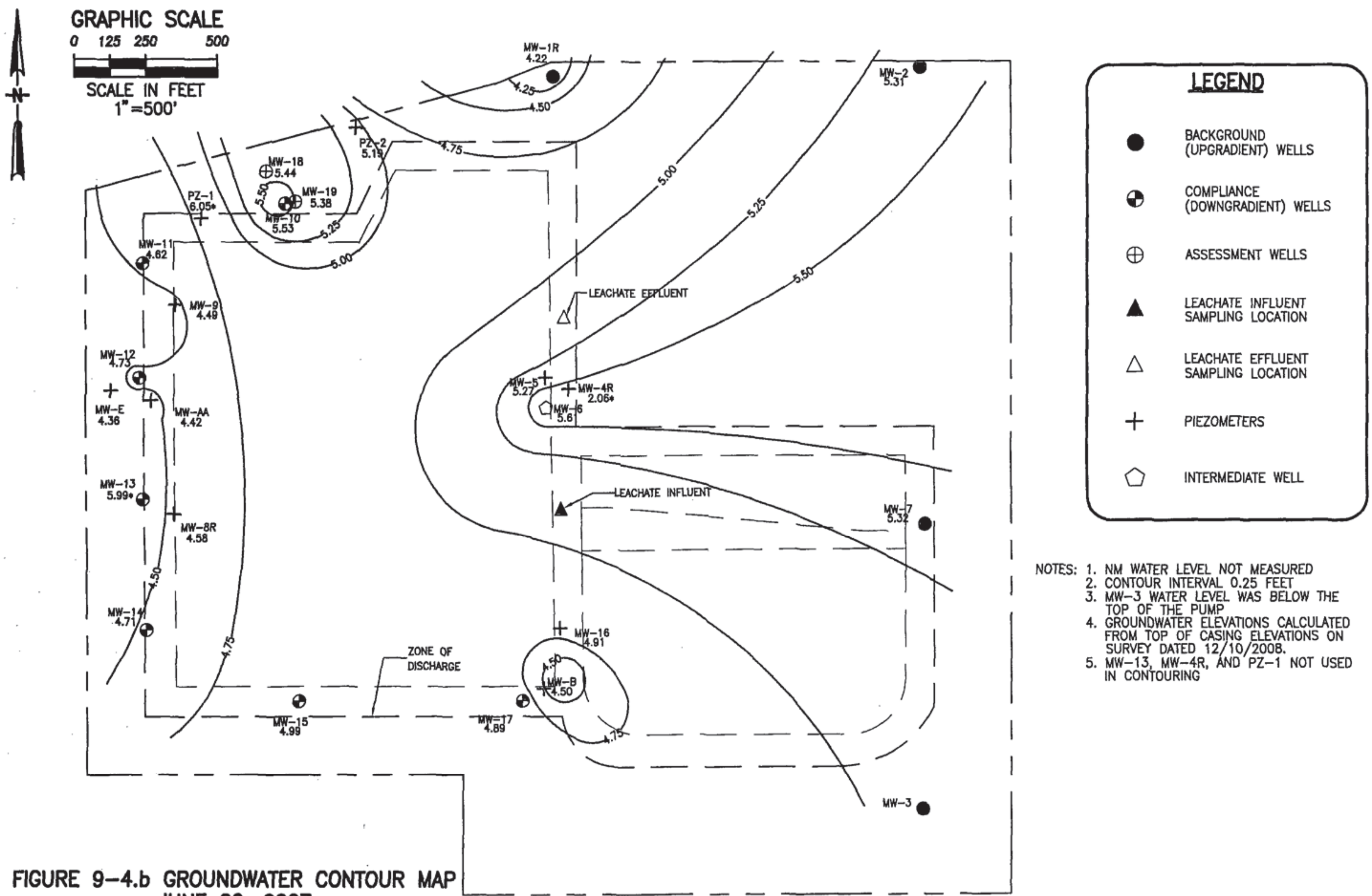


NOTES:
1. NM WATER LEVEL NOT MEASURED
2. CONTOUR INTERVAL 0.25 FEET
3. MW-3 WATER LEVEL WAS BELOW THE TOP OF THE PUMP
4. GROUNDWATER ELEVATIONS CALCULATED FROM TOP OF CASING ELEVATIONS ON SURVEY DATED 12/10/2008.
5. MW-13, MW-4R, AND PZ-1 NOT USED IN CONTOURING

FIGURE 9-4.b GROUNDWATER CONTOUR MAP
JUNE 20, 2007
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-028-01

LAST SAVED: 12/26/2008 11:54 AM THAYS K:\Jones Edmunds\Citrus County\Central Landfill\SAR\SAR RAI\GW 6-20-2007_new toc.dwg

Plotted: 1/20/09 3:30pm thays

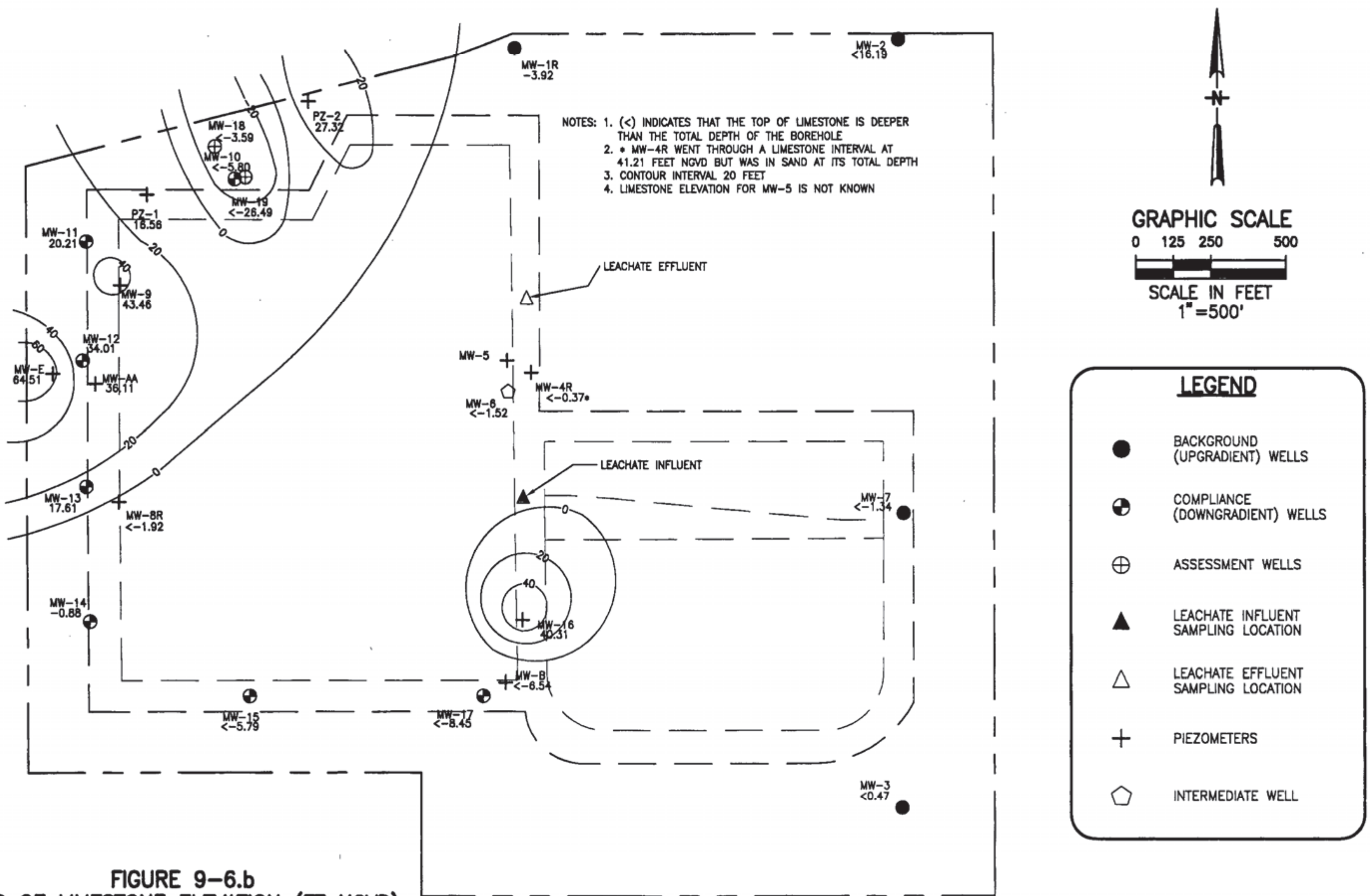


FIGURE 9-6.b
TOP OF LIMESTONE ELEVATION (FT NGVD)
CITRUS COUNTY LANDFILL

JONES EDMUNDS

03860-028-01

LAST SAVED: 12/30/2008 9:18 AM THAYS K:\Jones Edmunds\Citrus County\Central Landfill\SAR\SAR RAI\Fig 9-1.b Limestone Elevation_new toc.dwg

Plotted: 12/31/08 2:33pm thays

TABLE 8-1.b
CITRUS COUNTY CENTRAL LANDFILL
WELL CONSTRUCTION DETAILS

Well Name	Well Designation	Date Installed	Top of Casing Elevation (Ft. NGVD 1929)	Ground Elevation (Ft. NGVD 1929)	Total Depth (Ft. BLS)	Total Depth (Ft. BTOC)	Screen Details					Filter Pack (Silica Sand)	Well Location	
							Length (Ft.)	Depth (Ft. BLS)		Elevation (Ft. NGVD 1929)			Northing (Ft.)	Easting (Ft.)
								Top	Bottom	Top	Bottom			
MW-AA[1]	Piezometer	NR	106.11	104.7	116	117.4	10	106	116	-1.3	-11.3	NR	1642944.69	514330.1915
MW-B[1]	Piezometer	NR	113.46	111.1	128	128.8	20	108	128	4.7	-15.3	NR	1641952.201	515703.188
MW-E[1]	Piezometer	NR	109.51	107.0	118	120.9	20	98	118	8.6	-11.4	NR	1642978.872	514187.411
MW-1R[1]	Background	NR	118.08	115.3	125	127.8	10	115	125	0.3	-9.7	NR	1644075.031	515734.4675
MW-2[1]	Background	NR	136.19	133.5	161	163.8	15	146	161	-12.6	-27.6	NR	1644134.012	517016.947
MW-3[1]	Background	NR	120.47	119.7	119	119.8	15	104	119	15.7	0.7	NR	1641528.493	517026.689
MW-4R	Piezometer	11/9/05	116.21	119.71	125.0	124.6	20	105.0	125.0	11.6	-8.4	NR	1642794.06	515836.95
MW-5[1]	Piezometer	NR	121.14	118.6	120	122.5	10	110	120	8.6	-1.4	NR	1643027.587	515706.7199
MW-6[1]	Intermediate	NR	118.48	115.8	122	124.7	10	112	122	3.8	-6.2	NR	1642921.813	515710.8712
MW-7[1]	Background	NR	128.66	NR	137	139.06	20	117	137	9.6	-10.4	NR	1642518.15	517032.495
MW-8R[1]	Piezometer	NR	118.08	NR	128	127.98	20	108	128	10.1	-9.9	NR	1642551.088	514408.379
MW-9[1]	Piezometer	NR	113.46	NR	121	120.96	20	101	121	12.5	-7.5	NR	1643276.437	514411.959
MW-10	Compliance	11/2/05	114.20	114.05	120.5	118.6	20	100.5	120.5	15.6	-4.4	20/30	1643658.80	514808.73
MW-11	Compliance	11/2/05	105.21	105.17	112.0	111.5	20	92.0	112.0	13.7	-6.3	Gravel	1643432.56	514300.80
MW-12	Compliance	11/2/05	104.01	103.98	110.0	108.8	20	90.0	110.0	15.2	-4.8	20/30	1642972.51	514307.73
MW-13	Compliance	11/10/05	112.61	112.55	120.0	118.8	20	100.0	120.0	13.8	-6.2	20/30	1642402.16	514320.79
MW-14	Compliance	11/10/05	109.12	109.09	116.0	115.9	20	96.0	116.0	13.2	-6.8	20/30	1641950.73	514332.03
MW-15	Compliance	11/10/05	124.21	124.15	130.0	129.5	20	110.0	130.0	14.7	-5.3	20/30	1641702.99	514864.91
MW-16	Piezometer	10/31/05	120.31	120.22	127.0	126.5	20	107.0	127.0	13.8	-6.2	20/30	1642141.07	515781.53
MW-17	Compliance	11/3/05	111.55	111.50	118.0	117.6	20	98.0	118.0	14.0	-6.0	20/30	1641705.53	515647.01
MW-18	Assessment	1/23/07	116.41	116.28	120.0	119.6	20	100.0	120.0	16.8	-3.2	20/30	1643745.78	514731.67
MW-19	Assessment	1/22/07	114.16	114.04	140.0	139.6	10	130.0	140.0	-15.4	-25.4	20/30	1643659.75	514817.07
PZ-1	Piezometer	1/26/07	111.56	111.42	120.0	119.6	20	100.0	120.0	12.0	-8.0	20/30	1643505.21	514454.92
PZ-2	Piezometer	1/24/07	117.32	117.19	120.0	119.6	20	100.0	120.0	17.7	-2.3	20/30	1643832.98	515021.33

BLS = Below Land Surface
BTOC = Below Top of Casing
NR = Not recorded
Ft. = Feet
NGVD = National Geodetic Vertical Datum of 1929
OH = Open Hole

Notes:
[1] Well Construction information obtained from the Two-Year Groundwater Monitoring Report for Years 1997 and 1998, prepared by CH2MHill

Elevation and survey data complied Citrus County Public Works survey dated December 10, 2008

Table 8-2.b
Water-Level Elevations and
Depth-to-Water Measurments

Well	Top of Casing (ft NGVD 1929)	Top of Casing (Ft NGVD 1929) measured 12/10/2008	Groundwater Elevation (ft NGVD 1929)											
			5/8/2007			5/23/2007			6/6/2007			6/20/2007		
			Depth to water	Elevation from old survey	Elevation from 12/10/2008 survey	Depth to water	Elevation from old survey	Elevation from 12/10/2008 survey	Depth to water	Elevation from old survey	Elevation from 12/10/2008 survey	Depth to water	Elevation from old survey	Elevation from 12/10/2008 survey
MW-1R	118.25	118.08	113.86	4.39	4.22	113.93	4.32	4.15	113.73	4.52	4.35	113.86	4.39	4.22
MW-2	136.19	136.19	130.61	5.58	5.58	130.69	5.5	5.50	130.82	5.37	5.37	130.88	5.31	5.31
MW-3	120.43	120.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4R	119.63	116.21	NM	NM	NM	NM	NM	NM	NM	NM	NM	114.15	5.48	2.06
MW-5	121.13	121.14	115.66	5.47	5.48	115.81	5.32	5.33	115.87	5.26	5.27	115.87	5.26	5.27
MW-6	118.48	118.48	112.98	5.5	5.50	113.11	5.37	5.37	113.15	5.33	5.33	112.87	5.61	5.61
MW-7	128.58	128.66	123.29	5.29	5.37	123.38	5.2	5.28	123.47	5.11	5.19	123.34	5.24	5.32
MW-8R	118.08	118.08	113.77	4.31	4.31	113.83	4.25	4.25	113.64	4.44	4.44	113.50	4.58	4.58
MW-9	113.46	113.46	NM	NM	NM	NM	NM	NM	109.03	4.43	4.43	108.97	4.49	4.49
MW-10	113.51	114.20	108.70	4.81	5.50	108.59	4.92	5.61	108.64	4.87	5.56	108.67	4.84	5.53
MW-AA	106.07	106.11	101.73	4.34	4.38	101.81	4.26	4.30	101.53	4.54	4.58	101.69	4.38	4.42
MW-B	113.46	113.46	109.10	4.36	4.36	109.06	4.4	4.40	108.85	4.61	4.61	108.96	4.50	4.50
MW-E	109.51	109.51	105.24	4.27	4.27	105.29	4.22	4.22	105.02	4.49	4.49	105.15	4.36	4.36
MW-11	105.11	105.21	100.66	4.45	4.55	100.73	4.38	4.48	100.44	4.67	4.77	100.59	4.52	4.62
MW-12	103.89	104.01	99.34	4.55	4.67	99.41	4.48	4.60	99.25	4.64	4.76	99.28	4.61	4.73
MW-13	112.48	112.61	107.69	4.79	4.92	107.73	4.75	4.88	107.60	4.88	5.01	106.62	5.86	5.99
MW-14	109.00	109.12	104.47	4.53	4.65	104.54	4.46	4.58	104.25	4.75	4.87	104.41	4.59	4.71
MW-15	124.05	124.21	119.21	4.84	5.00	119.23	4.82	4.98	119.16	4.89	5.05	119.22	4.83	4.99
MW-17	111.41	111.55	106.71	4.7	4.84	106.75	4.66	4.80	106.52	4.89	5.03	106.66	4.75	4.89
MW-16	120.12	120.31	NM	NM	NM	NM	NM	NM	115.22	4.9	5.09	115.40	4.72	4.91
MW-18	115.98	116.41	110.90	5.08	5.51	111.01	4.97	5.40	111.04	4.94	5.37	110.97	5.01	5.44
MW-19	113.64	114.16	108.76	4.88	5.40	108.69	4.95	5.47	108.84	4.8	5.32	108.78	4.86	5.38
PZ-1	111.12	111.56	106.89	4.15	4.67	106.97	4.43	4.59	106.69	5.61	4.87	105.51	5.61	6.05
PZ-2	117.00	117.32	112.90	4.41	4.42	112.59	4.37	4.73	112.63	4.87	4.69	112.13	4.87	5.19

Notes: 1. NA = In MW-3 the water level was below the top of the sampling pump for all measurement events.
2. NM = not measured

Table 12-1.b
Slug Test Results
(Hvorslev Method)
Citrus County Central Landfill

Well ID	Type	r (in)	R (in)	Le(ft)	To (sec)	To (min)	To(day)	K (ft/day)
PZ-1	Slugout	1.00	3.00	12.81	5	0.083	5.79E-05	18.44
MW-18	Slugout	1.00	3.00	8.8	9737.5	162.292	1.13E-01	0.01
MW-19	Slugin	1.00	3.00	12	180	3.000	2.08E-03	0.54
	Slugout	1.00	3.00	12	213	3.550	2.47E-03	0.45

Site average K (average of all values) 4.86

Notes: MW-18's time at 37% was calculated using trendlines as the data was good although the tests were not alowed to run to completion.

Table 13-1.b

Horizontal Average Linear Groundwater Velocity Calculations for the Citrus County Central Landfill

Horizontal Average Linear Groundwater Velocity

Between wells:	Date Groundwater Elevation Measured	Upgradient Groundwater Elevation (ft NGVD)	Downgradient Groundwater Elevation (ft NGVD)	Distance Between Wells (ft)	Hydraulic Gradient (ft/ft)[1]	Hydraulic Conductivity (ft/day)[2] and well it was tested in		Effective Porosity (%)	Average linear velocity (ft/day)[3]	Travel Distance in 6 Months (feet)[4]
MW-18 and MW-10	5/8/2007	5.51	5.50	110	0.0001	0.01	MW-18	0.25	0.0000	0.00
		5.51	5.50	110	0.0001	6.60	MW-10	0.25	0.0024	0.43
	5/23/2007	5.61	5.40	110	0.0019	0.01	MW-18	0.25	0.000076	0.0137
		5.61	5.40	110	0.0019	6.60	MW-10	0.25	0.0504	9.07
	6/6/2007	5.56	5.37	110	0.0017	0.01	MW-18	0.25	0.000069	0.0124
		5.56	5.37	110	0.0017	6.60	MW-10	0.25	0.0456	8.21
	6/20/2007	5.53	5.44	110	0.0008	0.01	MW-18	0.25	0.00003	0.01
		5.53	5.44	110	0.0008	6.60	MW-10	0.25	0.0216	3.89
MW-10 and PZ-1	5/8/2007	5.50	4.67	390	0.0021	6.60	MW-10	0.25	0.0562	10.11
		5.50	4.67	390	0.0021	18.44	PZ-1	0.25	0.1570	28.26
	5/23/2007	5.61	4.59	390	0.0026	6.60	MW-10	0.25	0.0690	12.43
		5.61	4.59	390	0.0026	18.44	PZ-1	0.25	0.1929	34.72
	6/6/2007	5.56	4.87	390	0.0018	6.60	MW-10	0.25	0.0467	8.41
		5.56	4.87	390	0.0018	18.44	PZ-1	0.25	0.1305	23.49
	6/20/2007	6.05	5.53	390	0.0013	6.60	MW-10	0.25	0.0352	6.34
		6.05	5.53	390	0.0013	18.44	PZ-1	0.25	0.0983	17.70
MW-10 and PZ-2	5/8/2007	5.50	4.42	240	0.0045	6.60	MW-10	0.25	0.1188	21.38
	5/23/2007	5.61	4.73	240	0.0037	6.60	MW-10	0.25	0.0968	17.42
	6/6/2007	5.56	4.69	240	0.0036	6.60	MW-10	0.25	0.0957	17.23
	6/20/2007	5.53	5.19	240	0.0014	6.60	MW-10	0.25	0.0374	6.73

Notes:

1 = Hydraulic gradient = (upgradient groundwater elevation - downgradient groundwater elevation) / distance between wells

2 = Hydraulic conductivity determined by slug tests performed by Jones Edmunds personnel in monitoring well listed.

3 = Average linear velocity (Flow rate in ft/day); from Fetter (1994), $V_x = - K/n_e\ (dh/dl)$, where V_x = Velocity in X direction, K = hydraulic conductivity, n_e = effective porosity, and dh/dl = hydraulic gradient.

4 = Distance groundwater will travel in six months = average linear velocity (ft/day) times 180 days = feet groundwater

Table 14-1.b

Vertical Average Linear Groundwater Velocity Calculations for the Citrus County Central Landfill

Vertical Average Linear Groundwater Velocity

Between wells:	Date Groundwater Elevation Measured	Upgradient Groundwater Elevation (ft NGVD)	Downgradient Groundwater Elevation (ft NGVD)	Distance Between Center of Screened Intervals (ft)	Hydraulic Gradient (ft/ft)[1]	Hydraulic Conductivity (ft/day)[2] and well it was tested in		Effective Porosity (%)	Average linear velocity (ft/day)[3]	Travel Distance in 6 Months (feet)[4]
MW-19 and MW-10 (wells are clustered together and displayed an downward gradient)	5/8/2007	5.50	5.40	24.68	0.0041	MW-19	0.50	0.25	0.0081	1.46
		5.50	5.40	24.68	0.0041	MW-10	6.60	0.25	0.1070	19.25
	5/23/2007	5.61	5.47	24.68	0.0057	MW-19	0.50	0.25	0.0113	2.04
		5.61	5.47	24.68	0.0057	MW-10	6.60	0.25	0.1498	26.96
	6/6/2007	5.56	5.32	24.68	0.0097	MW-19	0.50	0.25	0.0194	3.50
		5.56	5.32	24.68	0.0097	MW-10	6.60	0.25	0.2567	46.21
	6/20/2007	5.53	5.38	24.68	0.0061	MW-19	0.50	0.25	0.0122	2.19
		5.53	5.38	24.68	0.0061	MW-10	6.60	0.25	0.1605	28.88

Notes:

1 = Hydraulic gradient = (upgradient groundwater elevation - downgradient groundwater elevation) / distance between wells

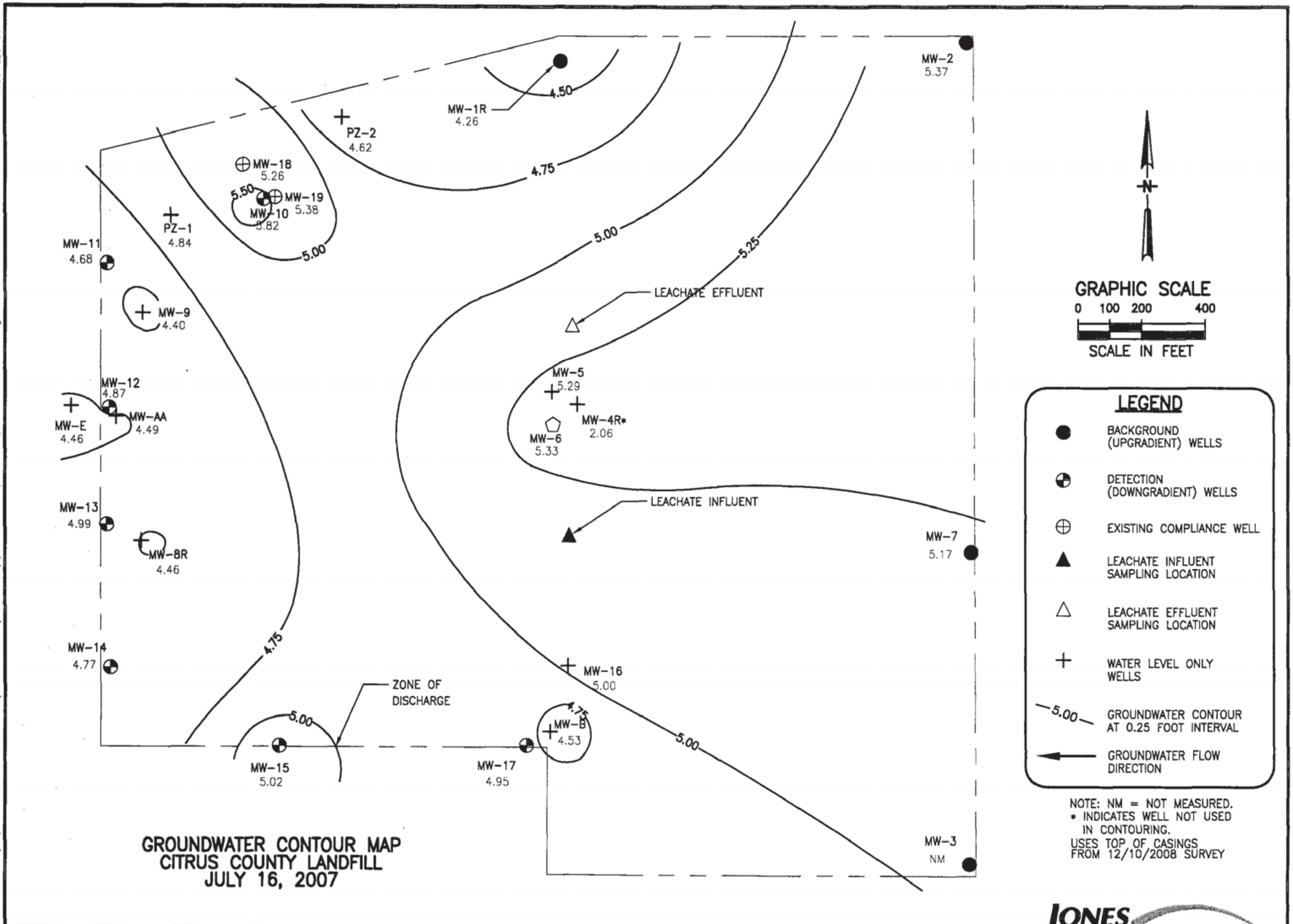
2 = Hydraulic conductivity determined by slug tests performed by Jones Edmunds personnel in monitoring well listed.

3 = Average linear velocity (Flow rate in ft/day); from Fetter (1994), $V_x = - K/n_e\ (dh/dl)$, where V_x = Velocity in X direction, K = hydraulic conductivity, n_e = effective porosity, and dh/dl = hydraulic gradient.

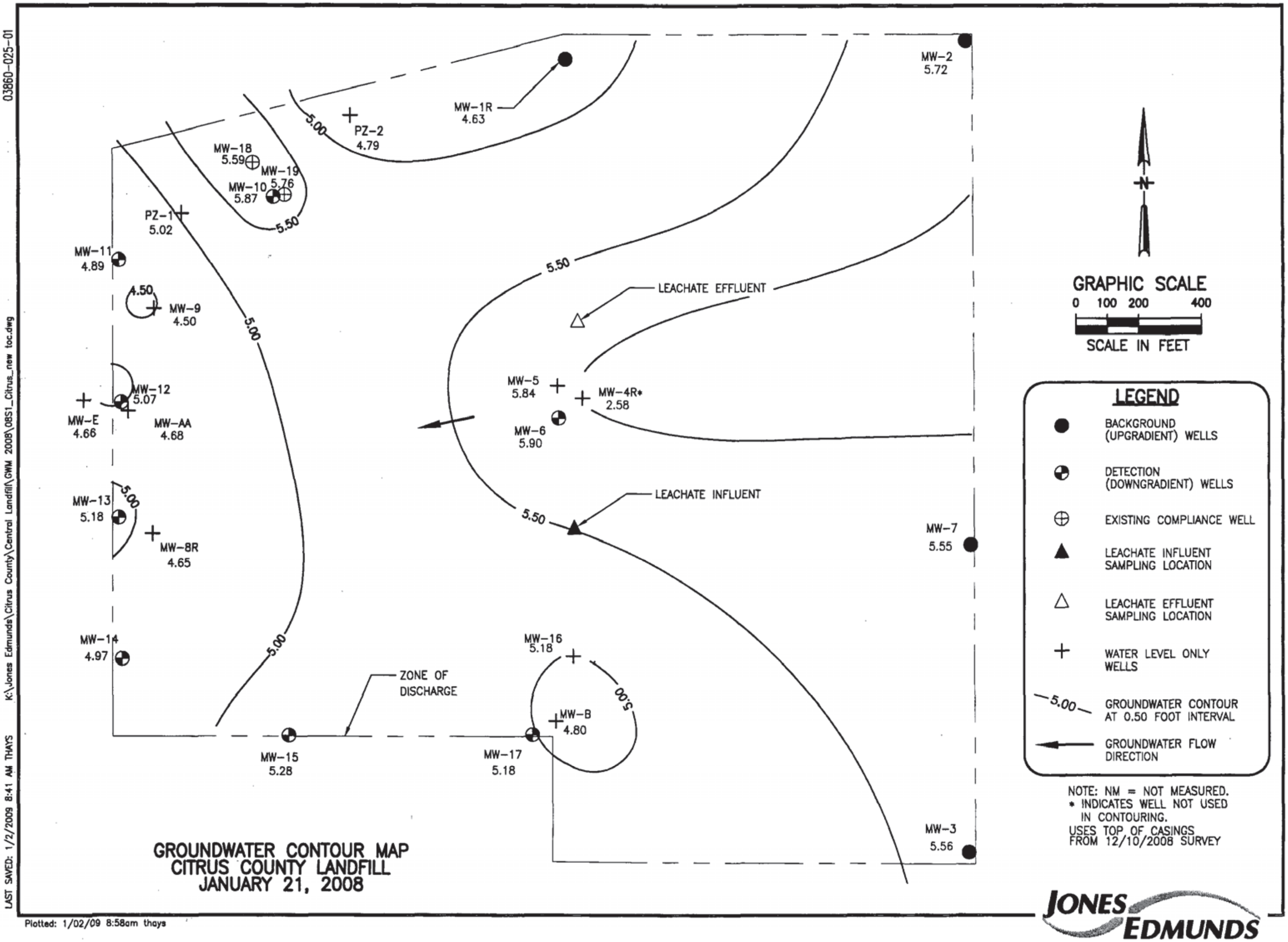
4 = Distance groundwater will travel in six months = average linear velocity (ft/day) times 180 days = feet groundwater travels in six

Depth to Water and Elevation Measurements Using Top of Casings from the Survey Conducted 12/10/2008 for the Last Three Semiannual Monitoring Events

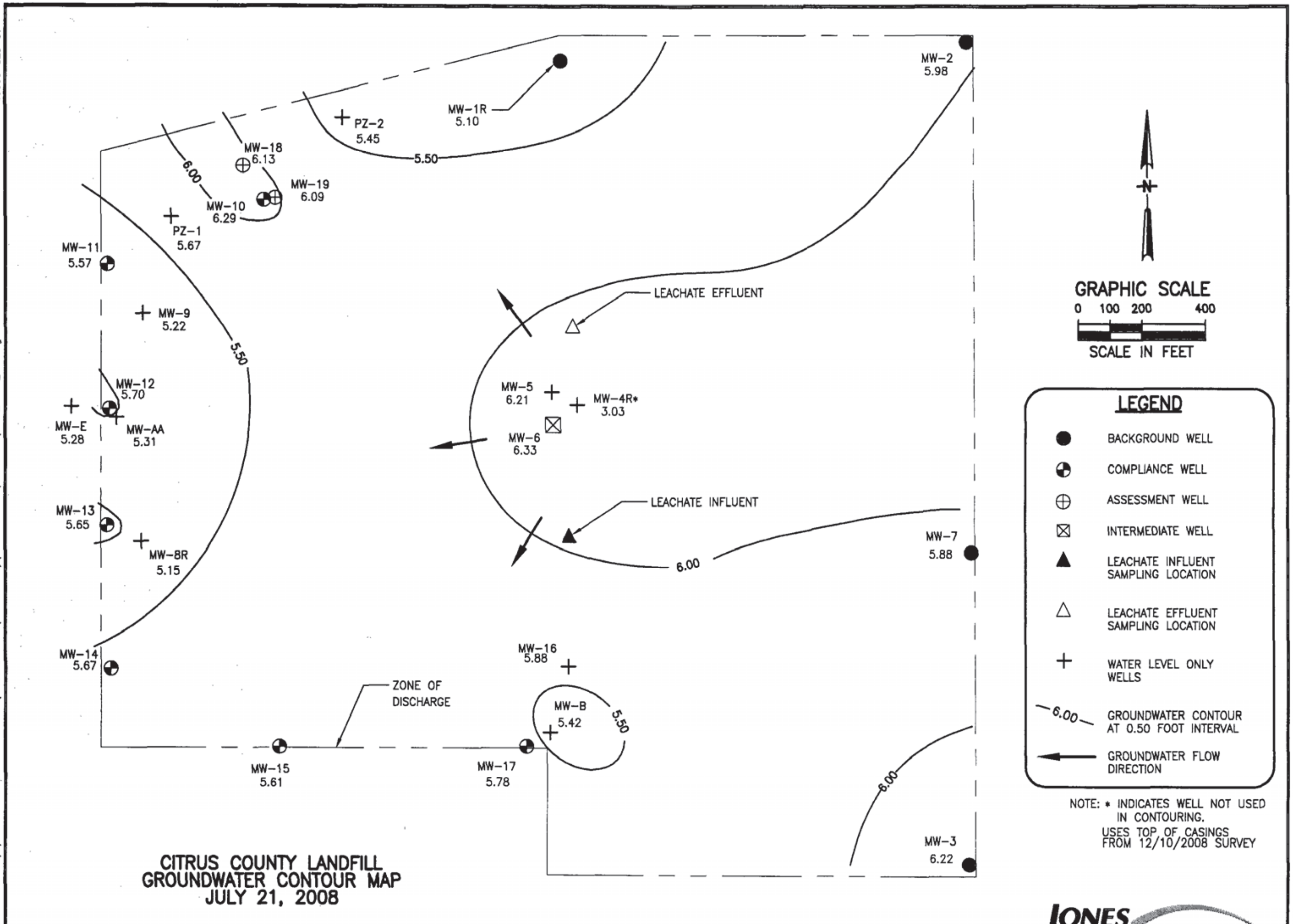
Well	Top of Casing (Ft NGVD 1929) measured 12/10/2008	Second Semiannual 2007		First Semiannual 2008		Second Semiannual 2008	
		Depth to Water (ft)	Elevation (ft NGVD)	Depth to Water (ft)	Elevation (ft NGVD)	Depth to Water (ft)	Elevation (ft NGVD)
MW-1R	118.08	113.82	4.26	113.45	4.63	112.98	5.10
MW-2	136.19	130.82	5.37	130.47	5.72	130.21	5.98
MW-3	120.47	NM	NM	114.91	5.56	114.25	6.22
MW-4R	116.21	114.15	2.06	113.63	2.58	113.18	3.03
MW-5	121.14	115.85	5.29	115.30	5.84	114.93	6.21
MW-6	118.48	113.15	5.33	112.58	5.90	112.15	6.33
MW-7	128.66	123.49	5.17	123.11	5.55	122.78	5.88
MW-8R	118.08	113.62	4.46	113.43	4.65	112.93	5.15
MW-9	113.46	109.06	4.40	108.96	4.50	108.24	5.22
MW-10	114.20	108.38	5.82	108.33	5.87	107.91	6.29
MW-AA	106.11	101.62	4.49	101.43	4.68	100.8	5.31
MW-B	113.46	108.93	4.53	108.66	4.80	108.04	5.42
MW-E	109.51	105.05	4.46	104.85	4.66	104.23	5.28
MW-11	105.21	100.53	4.68	100.32	4.89	99.64	5.57
MW-12	104.01	99.14	4.87	98.94	5.07	98.31	5.70
MW-13	112.61	107.62	4.99	107.43	5.18	106.96	5.65
MW-14	109.12	104.35	4.77	104.15	4.97	103.45	5.67
MW-15	124.21	119.19	5.02	118.93	5.28	118.6	5.61
MW-16	120.31	115.31	5.00	115.13	5.18	114.43	5.88
MW-17	111.55	106.6	4.95	106.37	5.18	105.77	5.78
MW-18	116.41	111.15	5.26	110.82	5.59	110.28	6.13
MW-19	114.16	108.78	5.38	108.40	5.76	108.07	6.09
PZ-1	111.56	106.72	4.84	106.54	5.02	105.89	5.67
PZ-2	117.32	112.7	4.62	112.53	4.79	111.87	5.45



GROUNDWATER CONTOUR MAP
CITRUS COUNTY LANDFILL
JULY 16, 2007



03860-025-01
MW-2
5.72
MW-1R
4.63
PZ-2
4.79
MW-18
5.59
MW-19
5.76
MW-10
5.87
PZ-1
5.02
MW-11
4.89
MW-9
4.50
MW-12
5.07
MW-E
4.66
MW-AA
4.68
MW-13
5.18
MW-8R
4.65
MW-14
4.97
MW-15
5.28
MW-17
5.18
MW-16
5.18
MW-B
4.80
MW-5
5.84
MW-4R*
2.58
MW-6
5.90
MW-7
5.55
MW-3
5.56
LEACHATE EFFLUENT
LEACHATE INFLUENT
ZONE OF DISCHARGE
5.00
5.50
4.50
N
GRAPHIC SCALE
0 100 200 400
SCALE IN FEET
LEGEND
BACKGROUND (UPGRADIENT) WELLS
DETECTION (DOWNGRADIENT) WELLS
EXISTING COMPLIANCE WELL
LEACHATE INFLUENT SAMPLING LOCATION
LEACHATE EFFLUENT SAMPLING LOCATION
WATER LEVEL ONLY WELLS
GROUNDWATER CONTOUR AT 0.50 FOOT INTERVAL
GROUNDWATER FLOW DIRECTION
NOTE: NM = NOT MEASURED.
* INDICATES WELL NOT USED IN CONTOURING.
USES TOP OF CASINGS FROM 12/10/2008 SURVEY
GROUNDWATER CONTOUR MAP
CITRUS COUNTY LANDFILL
JANUARY 21, 2008
JONES EDMUNDS
K:\Jones Edmunds\Citrus County\Central Landfill\GWM 2008\0851_Citrus_new toc.dwg
LAST SAVED: 1/2/2009 8:41 AM THAYS
Plotted: 1/02/09 8:58am thays



NOTE: * INDICATES WELL NOT USED IN CONTOURING.
USES TOP OF CASINGS FROM 12/10/2008 SURVEY

CITRUS COUNTY LANDFILL GROUNDWATER CONTOUR MAP JULY 21, 2008

JONES EDMUNDS

LAST SAVED: 9/8/2008 10:43 AM EKENNELLEY K:\Jones Edmunds\Citrus County\Central Landfill\GWM 2008\08S2_Citrus_EDK.dwg

Plotted: 1/02/09 8:54am thays

ATTACHMENT 12

MW-18 SLUG TESTS

In-Situ Inc. MiniTroll Std P

Report gen 5/9/2007 9:41:37
Report fror ...\SN15529 2007-05-08 131957 mw-18 slug in.bin
Win-Situ V 4.51

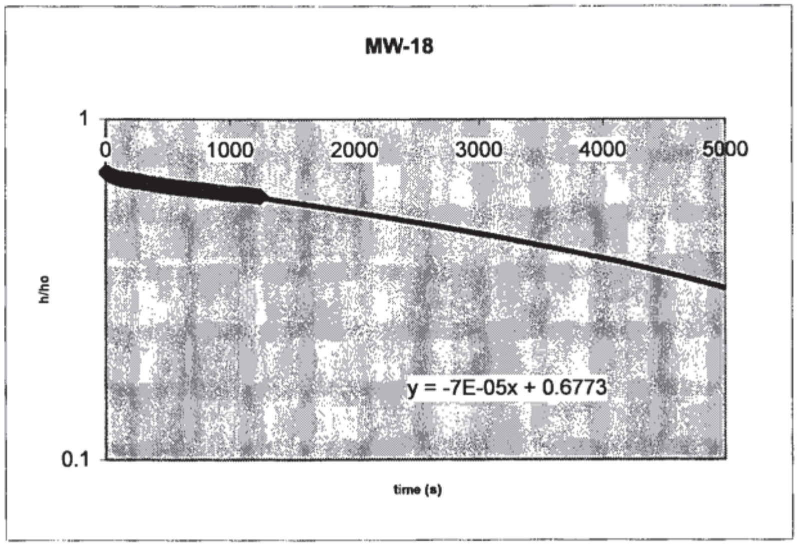
Serial num 15529
Firmware \ 3.09
Unit name: miniTROLL

Test name: mw-18 slug in

Test define 5/8/2007 13:19:53
Test starte 5/8/2007 13:19:57
Test stopp N/A N/A

Data gathered using Linear testing
Time bet Seconds.
Number (1405

TOTAL DA 1405



at 1393 the test was at 59 %

Channel number [2]
Measurer Pressure
Channel r depth
Sensor R 15 PSIG.
Specific g 1

t37% was calculated to be 4390 sec
DTW 110.9
h0 3.293

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O			
5/8/2007	13:19:57	0	7.942	0	0	
5/8/2007	13:19:58	1	7.944	0.002	0.000607	
5/8/2007	13:19:59	2	7.945	0.003	0.000911	
5/8/2007	13:20:00	3	7.945	0.003	0.000911	
5/8/2007	13:20:01	4	7.946	0.004	0.001215	
5/8/2007	13:20:02	5	7.947	0.005	0.001518	
5/8/2007	13:20:03	6	7.946	0.004	0.001215	
5/8/2007	13:20:04	7	7.947	0.005	0.001518	1404
5/8/2007	13:20:05	8	7.947	0.005	0.001518	
5/8/2007	13:20:06	9	7.948	0.006	0.001822	
5/8/2007	13:20:07	10	23.974	16.032	4.868509	
5/8/2007	13:20:08	11	11.235	3.293	1	
5/8/2007	13:20:09	12	10.661	2.719	0.825691	
5/8/2007	13:20:10	13	10.638	2.696	0.818706	
5/8/2007	13:20:11	14	10.579	2.637	0.80079	
5/8/2007	13:20:12	15	10.543	2.601	0.789857	
5/8/2007	13:20:13	16	10.521	2.579	0.783176	
5/8/2007	13:20:14	17	10.504	2.562	0.778014	

In-Situ Inc. MiniTroll Std P

Report gen 5/9/2007 9:42:10
Report fror ...\SN15529 2007-05-08 134420 mw-18 slug out.bin
Win-Situ V 4.51

Serial num 15529
Firmware \ 3.09
Unit name: miniTROLL

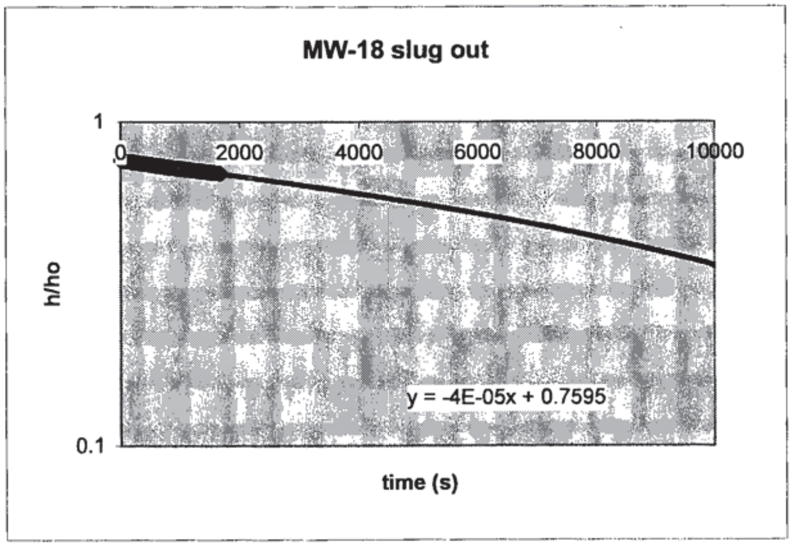
Test name: mw-18 slug out

Test define 5/8/2007 13:44:16
Test starte 5/8/2007 13:44:20
Test stopp N/A N/A

Data gathered using Linear testing
Time bet Seconds.
Number (3490

TOTAL DA 3490

Channel number [2]
Measurer Pressure
Channel r depth
Sensor R: 15 PSIG.
Specific g 1



DTW 110.9
ho 2.633

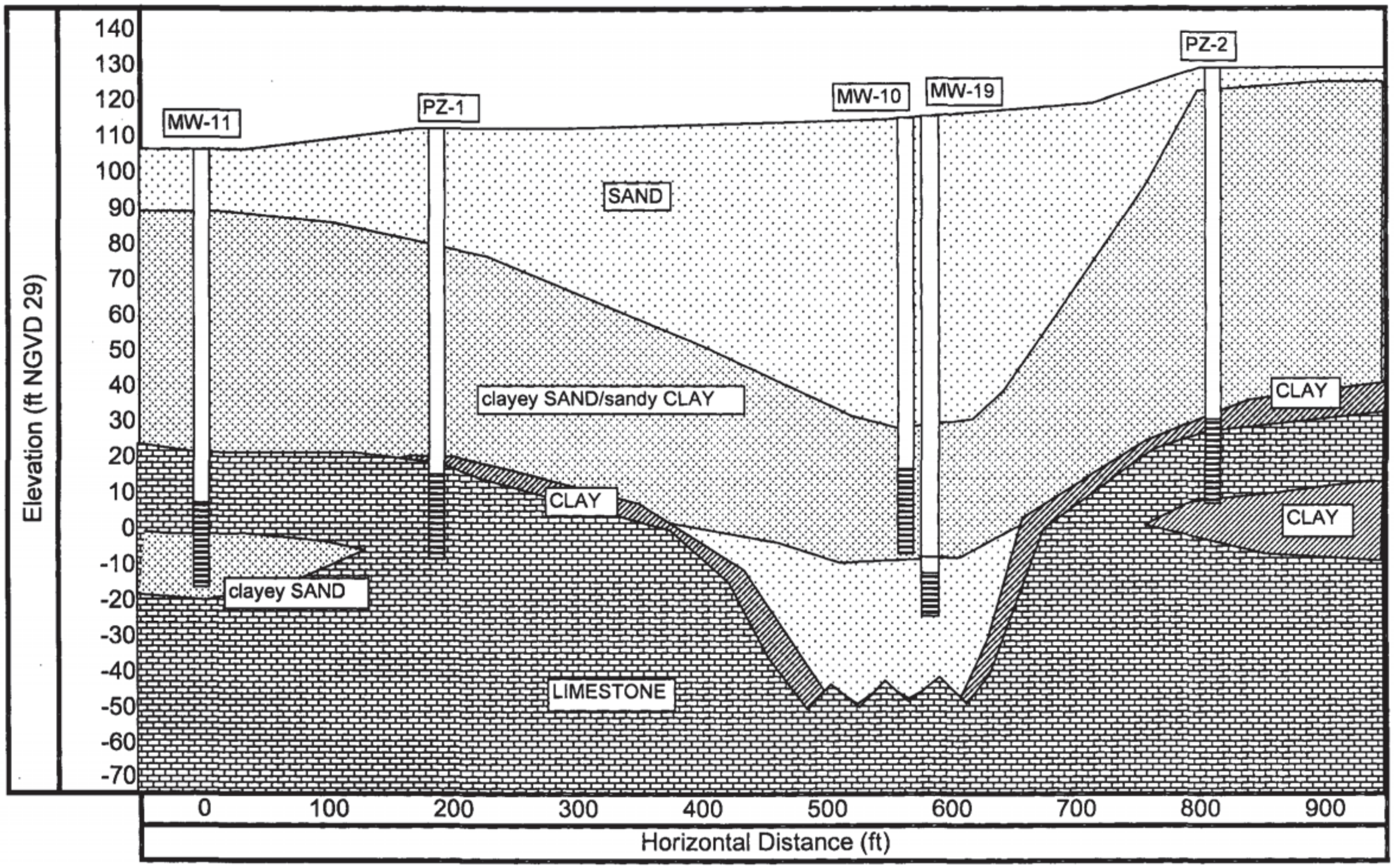
calculated t37 is 9737.50 sec

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O		
5/8/2007	13:44:20	0	9.906	0	0
5/8/2007	13:44:21	1	9.906	0	0
5/8/2007	13:44:22	2	9.906	0	0
5/8/2007	13:44:23	3	9.906	0	0
5/8/2007	13:44:24	4	9.906	0	0
5/8/2007	13:44:25	5	9.906	0	0
5/8/2007	13:44:26	6	9.906	0	0
5/8/2007	13:44:27	7	9.906	0	0
5/8/2007	13:44:28	8	9.906	0	0
5/8/2007	13:44:29	9	5.721	4.185	1.589442
5/8/2007	13:44:30	10	7.273	2.633	1
5/8/2007	13:44:31	11	7.31	2.596	0.985948
5/8/2007	13:44:32	12	7.304	2.602	0.988226
5/8/2007	13:44:33	13	7.318	2.588	0.982909
5/8/2007	13:44:34	14	7.32	2.586	0.98215
5/8/2007	13:44:35	15	7.336	2.57	0.976073
5/8/2007	13:44:36	16	7.365	2.541	0.965059
5/8/2007	13:44:37	17	7.351	2.555	0.970376

ATTACHMENT 19

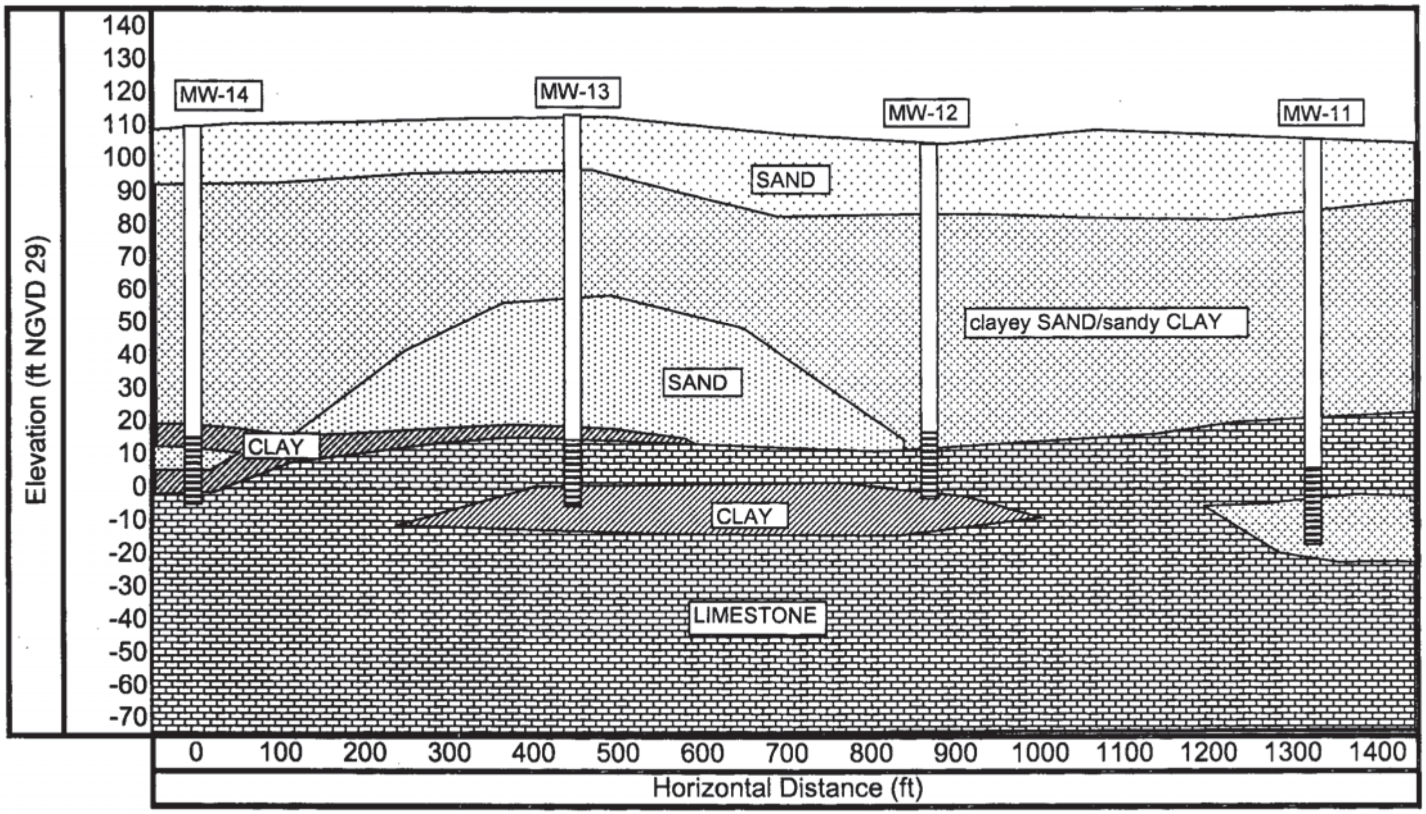
GEOLOGIC CROSS-SECTIONS

Figure 19-1
Cross-Section between MW-11 and PZ-2 at the Citrus Central Landfill



M:\03860-CitrusCounty\036-01-Citrus SAR RAI\SAR RAI #1\MW-11 to PZ-2 x-section.xls

Figure 19-2 Cross-section between MW-14 and MW-11 at the Citrus Central Landfill



ATTACHMENT 26

SUMMARY TABLE OF COCs

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
CITRUS COUNTY CENTRAL LANDFILL
JANUARY 2007 THROUGH SEPTEMBER 2008

Note: This report contains additional filters that are detailed on the final page of this report.

PARAMETER		BENZENE	METHYLENE CHLORIDE	VINYL CHLORIDE
STANDARD		1 µg/L*	5 µg/L*	1 µg/L*
UNITS		µg/L	µg/L	µg/L
Background				
MW-1R	01/24/07	<0.48	<1.0	<0.52
MW-1R	02/28/07	<0.48	<1.0	<0.52
MW-1R	07/19/07	<0.32	<0.19	<0.91
MW-1R	01/23/08	<0.34	<0.49	<0.91
MW-1R	07/23/08	<0.30	<0.27	<0.22
MW-2	01/23/07	<0.48	<1.0	<0.52
MW-2	07/18/07	<0.32	<0.19	<0.91
MW-2	01/22/08	<0.34	<0.49	<0.91
MW-2	07/22/08	<0.30	<0.27	<0.22
MW-3	01/22/07	<0.48	<1.0	<0.52
MW-3	07/18/07	<0.32	<0.19	<0.91
MW-3	01/23/08	<0.34	<0.49	<0.91
MW-3	07/23/08	0.67 I	<0.27	<0.22
MW-7	01/23/07	<0.48	<1.0	<0.52
MW-7	07/18/07	<0.32	<0.19	<0.91
MW-7	01/23/08	<0.34	<0.49	<0.91
MW-7	07/22/08	<0.30	<0.27	<0.22
Compliance				
MW-E	01/22/07	<0.48	<1.0	<0.52
MW-10	01/26/07	1.4	<1.0	2.5
MW-10	02/28/07	1.1	<1.0	1.2
MW-10	07/19/07	2.5	4.5	2.3
MW-10	01/22/08	2.5	<0.49	5.4
MW-10	07/23/08	1.4	3.9	0.92 I
MW-11	01/25/07	<0.48	<1.0	<0.52
MW-11	07/18/07	<0.32	<0.19	<0.91
MW-11	01/22/08	<0.34	<0.49	<0.91
MW-11	07/24/08	<0.30	<0.27	<0.22
MW-12	01/26/07	<0.48	<1.0	<0.52
MW-12	07/18/07	0.45 I	<0.19	<0.91
MW-12	01/22/08	0.39 I	<0.49	<0.91
MW-12	07/24/08	<0.30	<0.27	<0.22
MW-13	01/25/07	<0.48	<1.0	1.1
MW-13 R	02/26/07	-	-	0.67 I
MW-13	07/19/07	0.93 I	<0.19	<0.91
MW-13	01/21/08	0.58 I	<0.49	<0.91
MW-13	07/24/08	0.40 I	<0.27	0.91 I
MW-14	01/25/07	<0.48	<1.0	<0.52
MW-14	07/17/07	<0.48	<1.0	<0.52
MW-14	01/21/08	<0.34	<0.49	<0.91

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
CITRUS COUNTY CENTRAL LANDFILL
JANUARY 2007 THROUGH SEPTEMBER 2008

Note: This report contains additional filters that are detailed on the final page of this report.

PARAMETER		BENZENE	METHYLENE CHLORIDE	VINYL CHLORIDE
STANDARD		1 µg/L*	5 µg/L*	1 µg/L*
UNITS		µg/L	µg/L	µg/L
MW-14	07/24/08	<0.30	<0.27	<0.22
MW-15	01/25/07	0.49 I	<1.0	0.91 I
MW-15	07/17/07	<0.48	<1.0	0.64 I
MW-15	01/21/08	0.59 I	<0.49	<0.91
MW-15	07/24/08	0.44 I	<0.27	<0.22
MW-17	01/25/07	0.48 I	<1.0	<0.52
MW-17	07/18/07	0.99 I	<0.19	<0.91
MW-17	01/21/08	0.66 I	<0.49	<0.91
MW-17	07/24/08	0.56 I	<0.27	<0.22
Detection				
MW-8R	01/22/07	1.3	<1.0	1.4
MW-9	01/22/07	<0.48	<1.0	<0.52
MW-AA	01/24/07	0.52 I	<1.0	1.4
MW-B	01/23/07	0.69 I	<1.0	<0.52
Intermediate				
MW-6	01/24/07	0.91 I	<1.0	2.3
MW-6	07/17/07	0.52 I	<1.0	1.4
MW-6	01/23/08	1.2	<0.49	3.2
MW-6	07/22/08	0.89 I	<0.27	1.6
Leachate				
LS Master	07/17/07	2.0	<1.0	<0.52
LS Master	07/23/08	<0.30	<0.27	<0.22
LS Phase II	07/17/07	25	7.5	13
LS Phase II	07/23/08	34	<1.4	17
Leachate Effluent	01/24/07	<0.48	-	<0.52
Leachate Effluent	04/25/07	<0.48	-	<0.52
Leachate Effluent	07/17/07	<0.48	<1.0	<0.52
Leachate Effluent	10/17/07	<0.32	-	<0.91
Leachate Effluent	01/23/08	<0.34	-	<0.91
Leachate Effluent	04/16/08	<0.34	-	<0.91
Leachate Effluent	07/22/08	<0.30	<0.27	<0.22
Sludge	07/17/07	<48	-	<52
Sludge	07/23/08	<30	-	<22

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
CITRUS COUNTY CENTRAL LANDFILL
JANUARY 2007 THROUGH SEPTEMBER 2008

Note: This report contains additional filters that are detailed on the final page of this report.

PARAMETER		BENZENE	METHYLENE CHLORIDE	VINYL CHLORIDE
STANDARD		1 µg/L*	5 µg/L*	1 µg/L*
UNITS		µg/L	µg/L	µg/L
Other: Assessment				
MW-18	02/28/07	<0.48	<1.0	<0.52
MW-18	07/19/07	0.83 I	<0.19	<0.91
MW-18	01/22/08	0.44 I	<0.49	1.1
MW-18 R	03/24/08	-	-	<0.91
MW-18	07/23/08	<0.30	<0.27	0.22 I
MW-19	02/28/07	<0.48	<1.0	<0.52
MW-19	07/19/07	0.35 I	<0.19	<0.91
MW-19	01/22/08	<0.34	<0.49	<0.91
MW-19	07/23/08	<0.30	<0.27	<0.22

LEGEND

*	= Primary Drinking Water Standard
**	= Secondary Drinking Water Standard
***	= Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)
(1)	= No Standard
-	= Not Analyzed
I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
J	= Estimated value
V	= Analyte found in associated method blank
Q	= Estimated value; analyte analyzed after acceptable holding time