

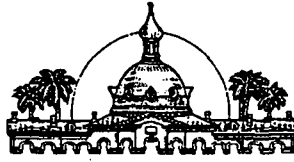
HILLSBOROUGH COUNTY

Florida

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January 13, 1995

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JAN 13 1995
Department of Environmental Protection
SOUTHWEST DISTRICT

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JAN 19 1995
EA, SOLID WASTE

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5029-256427

Mr. Kim Ford, P.E.
Solid Waste Permitting
Florida Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619

RE: Southeast County Landfill Permit Renewal - Responses to Additional Information Request

Dear Mr. Ford:

The Hillsborough County Department of Solid Waste (DSW) response to the Florida Department of Environmental Protection (DEP) December 15, 1994 request for additional information concerning the permit renewal for the County's Southeast County Landfill (Landfill) is enclosed. The responses were prepared by SCS Engineers in coordination with DSW staff.

However, based on our conversation of January 12, 1995, the DEP is now requesting that the DSW provide additional information concerning the following issues:

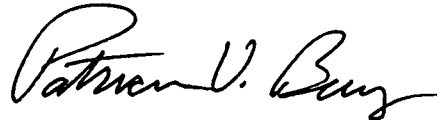
- based on the performance of the leachate collection system and current pumping data, reevaluate the amount of leachate over the liner, the amount of time required to lower the leachate head, and the sump area;
- evaluate and implement a system to record the actual flow rate of leachate being removed from the Landfill; and,
- evaluate expanding the Landfill monitoring program to include Phases III and IV leachate levels, raw leachate storage tank, and stormwater levels within Phases V and VI.

Mr. Kim Ford
January 13, 1995
Page Two

The DSW and SCS Engineers intend to evaluate the issues and provide responses to the DEP by January 27, 1995. This will enable the DEP to have an opportunity to review the responses prior to our scheduled meeting of January 31, 1995. Should the DEP have additional questions concerning the permit renewal responses, the DSW and SCS Engineers will also be prepared to discuss these issues at the meeting.

Please advise should you have any questions concerning this correspondence.

Sincerely,

A handwritten signature in cursive script that reads "Patricia V. Berry".

Patricia V. Berry
Landfill Services Section Manager
Department of Solid Waste

xc: Daryl H. Smith, DSW
Steve Morgan, DEP
Steve Hamilton, SCS
Paul Schipfer, EPC

SCS ENGINEERS

Offices Nationwide

January 13, 1995
File No. 0990018.35Ms. Patricia V. Berry
Hillsborough County
Department of Solid Waste
P. O. Box 1110
Tampa, Florida 33601*SCS Response to
FDEP 12-15-94 letter (PAT)*

Subject: Response to the Florida Department of Environmental Protection's letter dated December 15, 1994, regarding the Operation Permit Renewal for the Southeast County Landfill, Hillsborough County, Florida, Pending Permit No. S029-256427

Dear Patty:

As requested, SCS Engineers (SCS) has reviewed the referenced letter from the Florida Department of Environmental Protection (FDEP). We believe the following responses address the questions raised by the FDEP. Each of the FDEP's comments is restated in bold below, and followed by our response.

1. **FDEP Statement 1 - The cross-sections on Sheet 16B show increments of time other than 6 months. Are these correct? If not, please provide this corrected plan sheet.**

Response - As agreed in a meeting between SCS and FDEP on September 16, 1994, the additional cross-section beyond the 5-year permit period were moved to practical locations where the sections show the sequence operation intent for Lift 7. As discussed, Lift 7 is a large lift, therefore 2 more years of 6-month sections were not sufficient to show the intent of all the areas in Lift 7.

The location of these sections are approximate because the actual location will vary depending on the actual disposal rates. SCS presented the sections at sufficient intervals to show the sequence intent of the entire lift with sections that are a good representation of the layout for the different areas of Lift 7. Section "M" at 84 months, is a good representation of the layout for sections at 72 months, 78 months, and 90 months. Section "O" at 108 months is a good representation of the layout for sections at 102 months and 114 months.

2. **FDEP Statement 2 - Please describe the use of each type of temporary drainage device shown in Exhibit H, and provide the details for the existing "rip-rap velocity dissipators". The use of each should be based on the quantity and velocity of runoff conveyed. What is the maximum quantity and velocity for each type of conveyance? Provide calculations that verify the appropriate type of device has been used for each existing runoff conveyance.**

Response - Landfilling is a dynamic construction activity, therefore the runoff quantities to each conveyance will vary depending on the size of the areas that are active. The stormwater drainage devices were designed to accommodate the peak runoff conditions that are expected to occur after final closure.

Downchute calculations were presented in the permit application in Section 3.6 and calculations for the ditches are presented in Exhibit A of this letter. Landfill sideslopes with 4H:1V slopes will use the sideslope ditch detail, all other areas with slopes flatter than 4H:1V will use the topslope ditch detail. Calculations indicate that the sideslope ditches will be subject to a maximum flow of 42 cubic feet per second (cfs), the existing configuration can handle up 50 cfs with an approximate 3-inch freeboard. The topslope will be subject to a maximum flow of approximately 49 cfs, the existing configuration can handle up 50 cfs with an approximate 6-inch freeboard.

- 3. FDEP Statement 3 - Sheet C3 shows temporary sprinkler heads located on proposed Lifts 5 and 6. Are these sprinkler heads needed during the period of filling for Lifts 5 and 6, and if so, how will leachate be managed while these heads are removed for filling?**

Response - Spray irrigation will only occur in those lifts that have been completed and not in the active cell of the landfill. When landfilling operations move into a new area, the sprinkler heads in that area will be turned off and extended vertically for future use when the area becomes inactive again. At the same time that sprinkler heads are turned off in newly active areas, the sprinkler system in newly inactive areas will be turned on to maximize the available spray field area. This operation of the sprinkler system will continue in all lifts following the sequence described in the pending Permit Application Section 5.3.

Therefore, when filling begins in Lifts 5 and 6, the sprinkler system will be turned off in the active areas of Phase I and II, respectively. Simultaneously the sprinkler system will be expanded into the inactive areas of Phases III and IV.

- 4. FDEP Statement 4 - Maintaining an inward gradient is a critical element of this landfill's design. Ardaman's October 25, 1994 report concludes that higher leachate levels have no effect on the clay consolidation and recommended 7-year waiting period; and fluctuations of the groundwater table have no impact as long as the average water table remains the same. SCS's June 24, 1994 report concludes that up to 3.6 feet of leachate will not affect the gradient based on Figure 2 of the report. These reports appear to conflict with one concluding no effects from increased leachate levels above 3.6 feet. Please provide all equations, tables and figures necessary to establish the condition that adversely impact the gradient as the result of increased leachate levels, fluctuations of the groundwater table, and variable waiting periods.**

Response - This information was submitted in the pending Permit application Section 3.3.4. SCS believes that the information provided therein concerning this issue is sufficient. There is not a conflict, these are two separate issues which are described below.

- **Consolidation:** Ardaman & Associates, Inc. (Ardaman) indicates that leachate levels will have no effect on clay consolidation. SCS concurs.
- **Hydraulic head over the liner:** The leachate level that will induce 12 inches of hydraulic head over the liner will vary throughout the landfill over time based on the loading history and the consolidation characteristics of the clay. The lowest leachate level that will provide 12 inches or less of hydraulic head over the liner is 4.6 feet (3.6 feet being equilibrium), which may occur near the seventh year of loading. The 7-year snap shot was selected for this analysis, because the Phases will be reloaded near that time frame thereby again increasing the pore pressure within the phosphatic clays.

5. **FDEP Statement 5** - SCS states that Ardaman's boring PP-2 was at the worst case location because it had been 6.7 years since that area was last filled. At the time of Ardaman's investigation, how long had it been since Phase I was last filled? Did Ardaman test the worst case location?

Response - Ardaman performed test PC-1 in Phase I; however, the lapsed time in Phase I is over 8 years. According to current projections, the time interval between successive lifts should not exceed 7 years again. In addition, 7 years is the interval at which 95 percent consolidation is expected; therefore, SCS believes that PP-2 in Phase II is a closer representation of the sequence conditions planned for the Southeast Landfill (SELF).

We should have used the term "best case" scenario for calculating leachate levels that would induce a hydraulic head of 12 inches or less (i.e., 12 inches for year 7 and less for any year prior to the seventh). For example, piezoprobe PP-6 in Phase VI indicates that after 1.3 year preloading period, it would require 9 feet of liquid head to reach hydraulic equilibrium (see Exhibit B).

6. **FDEP Statement 6** - SCS's proposal to allow up to 3.6 feet of leachate within the Southeast Landfill appears to be beyond the intent of DEP's rule and entirely unnecessary. DEP estimates the maximum one foot depth requirement in the current operating permit allows one million gallons to be stored within the landfill. A depth of 3.6 feet would allow 9 million gallons to be stored within the landfill. Why is SCS and the County interested in allowing more leachate to be stored within its landfill?

Response - The intention of SCS and the Hillsborough County Department of Solid Waste (HCDSW) is not to permanently store leachate in the landfill. The HCDSW intends to maintain landfill leachate levels as low as possible. The intent is to establish a regulatory benchmark (i.e., 3.6 feet) by which the FDEP and HCDSW can monitor and establish equivalency leachate level in accordance to Section 62-701.400 (3) (b) Florida Administrative Code (FAC), and provide reasonable flexibility to operate the leachate treatment and spray irrigation system. The HCDSW intends to manage leachate at the rate it is collected in the landfill, and not to allow leachate levels to remain at the 3.6-foot depth.

In correspondence to the FDEP dated December 15, 1994, the HCDSW presented a detailed plan to lower leachate levels in the site. SCS's and the HCDSW's position is that a leachate level of 3.6 in the SELF feet represents a hydraulic head equilibrium condition which provides better protection than the 12-inches hydraulic head allowed by Chapter 62-701 FAC.

7. **FDEP Statement 7** - SCS indicates the proposed sump will be extended into all Phases of the landfill and that the "leachate levels should be maintained at less than 12 inches in the vicinity of the berms". Phases V and VI are not scheduled to be used for disposal until 1998. How will less than 12 inches be maintained along the interior berms between those Phases that have received waste and those that have not? Please describe methods that will be implemented to ensure that the depth of leachate will be continuously maintained at less than 12 inches along all berms.

Response - As indicated in the response to FDEP Statement 9 dated November 18, 1994, "The upward gradient is created as the landfill induced stresses consolidate the phosphatic clay deposits, expressing pore water upward into the sand leachate drainage layer. Therefore the upward gradient exists where there are phosphatic clay deposits within the landfill footprint and not under the synthetic liner along the perimeter berm". That statement actually represents a conservative approach, because the perimeter berm was built over a minimum 4-foot thick layer of phosphatic clays; therefore, there also will be pore pressures under the perimeter berm.

2
The interior berms are within the landfill footprint where an upward gradient exists. Therefore, 12 inches of hydraulic head over the synthetic liner in the interior berms will not occur until leachate levels in the temporary sump (i.e., Pump Station No. 3) exceed approximately 4.6 feet (3.6 feet being equilibrium in the temporary sump). However, to maintain a hydraulic head equilibrium at the internal berms, the water level in Phases V and VI will be monitored relative to the leachate level in Phases III and IV. The water level will be monitored weekly at the current stormwater sump in the northeast corner of Phase VI.

8. **FDEP Statement 8** - The top of clay contour map shows most settlement has occurred in Phases I and IV. Since Phase II will be filled in 1995, it appears that the top of clay will be lowest under Phase I for the next several years. Did the original design account for this shifting sump? If the sump moves to Phase I, how will the depth of leachate be reduced to no more than one foot?

Response - The top of clay contours show that the most settlement has occurred between Phases IV and VI. As the current lift (Lift 4) continues, SCS estimates that settlement will continue to be greater in this area thereby allowing leachate to flow into Pump Station No. 3. The locations of Pump Stations 1, 2, 3, and "B" were designed to be in areas that were expected to settle the most, based on the fill sequence. Greater settlement is estimated to continue in the areas where the phosphatic clays are thickest. For further information, see Section 3.5 of the original permit application for the construction and operation of the SELF, prepared by Camp Dresser McKee Inc. (CDM) in February 1983.

9. **FDEP Statement 9** - The June 21, 1994 agreement with the Public Utilities Department for disposal of leachate at Falkenburg WWTP allows up to 76,000 gpd. Is this a daily average for the month or a daily maximum? This agreement is only valid until July 19, 1995. Please provide an amended agreement to cover the next five year duration of the pending landfill operation permit.

Response - The agreement as well as the allowed disposal quantities is currently being modified by the Hillsborough County Public Utilities Department (PUD), and will be provided to the FDEP once it is completed. The revised agreement will allow the disposal of up to 200,000 gallons per day (gpd) of leachate from the HCDSW's facilities. A letter of confirmation is attached (Exhibit C). The PUD permits disposal capacity on an annual basis. However, the HCDSW has requested that the PUD provide a long-term commitment letter reserving capacity through the indefinite future. The PUD has indicated that this is acceptable with the provision of an annual review. A copy of the PUD's response will be provided to the FDEP upon receipt by the HCDSW.

10. **FDEP Statement 10** - 62-701.500(8) (e) requires a contingency plan for interruptions of discharges to a treatment plant. Please provide a contingency plan to be implemented in event of interruptions of discharges to the Falkenburg WWTP.

Response - The HCDSW intends to use the on-site treatment plant as the primary leachate treatment and disposal facility; therefore, the Falkenburg Waste Water Treatment Plant (WWTP) is the contingency facility. In addition the agreement with the PUD allows for disposal at the Valrico WWTP.

11. **FDEP Statement 11** - SCS states "HCDSW will continue to operate and maintain the SELF in compliance with all the applicable criteria of 62-701 F.A.C. rules". F.A.C. rules 62-701.400 (3) (b) and (c) limits the leachate head to one foot above the liner. The lined berms are considered part of the bottom liner system. SCS has provided information that shows up to 8 feet of leachate exists in the current disposal area. Please explain why this current condition at the SELF is in compliance with DEP's rules according to SCS.

Response - The statement was made within the context of the response to FDEP Statement 20b dated September 20, 1994 in reference to Sections 62-701.400 (3) (a), 62-701.400 (4) (a), and 62-701.500 (8) FAC, which refer to the construction and monitoring of the SELF's leachate collection and removal system (LCRS). The statement should state "the HCDSW will continue to operate and maintain the SELF in compliance with the above mentioned rules". SCS stands behind its statement that the HCDSW will continue to operate and maintain the LCRS at the SELF in compliance with Sections 62-701.400 (4) (a) and 62-701.500 (8) FAC (i.e., the construction and monitoring of the LCRS). The statement was not made to establish compliance with Section 62-701.400 (3) (b) and (c). The HCDSW has demonstrated to SCS that they intend to comply with all the applicable criteria of Chapter 62-701 FAC.

With respect to the FDEP's comment regarding up to 8 feet of leachate having been observed in the temporary sump (i.e., Pump Station No. 3), please see the response to FDEP Statement 12 below.

12. **FDEP Statement 12** - Specific Condition No. 12 states in part that "The leachate depth on top of the liner shall not exceed one foot depth of leachate". Daily logs provided by Waste Management on December 14, 1994 show leachate levels in excess of four feet over the liner for the past 5 years. These records also not for the past 5 years "PROBLEMS OBSERVED: LEACHATE LEVEL IN PHASE IV SUMP" and "CORRECTIVE ACTION: COUNTY NEEDS TO INCREASE REMOVAL AND OFF-SITE TREATMENT OF LEACHATE". These logs are signed by Hillsborough County's staff. Why did the County allow its landfill to be operated in violation of its current permit for the past 5 years?

Response - The Waste Management, Inc. of Florida (WMI) records referred to above indicate leachate levels in the temporary sump (i.e., Pump Station No. 3). Pump Station No.3 is in the vicinity of the landfill liner area that will have the most settlement. In addition, until recently, the HCDSW and SCS believed that the temporary sump had been installed as designed (i.e., was set into the clay liner). Therefore, the HCDSW was under the impression that the levels in Pump Station No. 3 were not an accurate representation of leachate levels in the landfill.

Regardless, based on WMI's records, in December 1993, the HCDSW requested that SCS analyze the high level condition in the temporary sump and its relationship to leachate levels over the liner. During SCS's investigation it was discovered that the degree of settlement of the clay liner in Phase VI (i.e., the location of the temporary sump) was less than expected due to the delay in pre-loading the liner in Phases V and VI. In addition, the bottom of Pump Station No. 3 was not installed as designed, and that the existing bottom is approximately equal to the elevation of the top of the clay liner in that area. This accounts for the discrepancy in our understanding of leachate levels in the site.

Upon completion of the analysis, SCS concluded that leachate levels in some areas of the landfill had exceeded the 12-inch limit in the current permit. Until that time, the HCDSW did not know that this potential violation condition existed. This information was formally communicated to the FDEP in correspondence to the FDEP dated March 11, 1994. Therefore, once the condition became known, the HCDSW immediately notified the FDEP, increased hauling of leachate to an off-site waste water treatment facility, and continued to expedite completion of the on-site leachate treatment facility. On December 15, 1994, the HCDSW submitted a plan to the FDEP to increase leachate hauling to 150,000 gpd.

Since the completion of this analysis, the bottom elevation of the sump has continued to settle. Therefore, it is likely that leachate levels observed in the sump now reflect a lower leachate level over the liner than at the time of the investigation.

13. **FDEP Statement 13** - Based on the leachate depth data provided, could leachate have discharged through the damaged liner in Phase II? Could groundwater have flowed into Phase II through the damaged liner due to an inward ingradient? It remained damaged for at least four months during the rainy season. Please quantify the flow and discharge through the damaged liner. What techniques were used to minimize the flow and subsequent discharge? Was a preliminary contamination assessment done? If the answer is no, why not?

Response - The information requested in this statement was submitted to the FDEP in the Geomembrane Repair Certification Documentation by SCS dated November 8, 1994, and correspondence dated August 9, 1994.

In the geomembrane certification report, SCS concluded that "Based on the observed leachate levels within the landfill, it would have been unlikely for leachate to reach the elevation of the damaged geomembrane. Therefore, SCS believes the water encountered in the trench during the repair work was from excess moisture in the subgrade soils and the soil backfill materials, and not leachate from the landfill". The flow quantity and prevention techniques also are discussed in the report.

Ms. Patricia V. Berry

January 13, 1995

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A contamination assessment was not conducted because there was no evidence of contamination caused by the damaged liner section (Also discussed in the geomembrane certification report). Correspondence dated August 9, 1994 indicates that the Environmental Protection Commission of Hillsborough County (EPC) and the FDEP were in agreement to proceed with the repair plan.

14. **FDEP Statement 14** - It appears, based on the applicant's submission, the discharges from the 30,000 gallon tank resulted in release of contaminants into the environment. Aside from failing to report this discharge, it appears that some remedial action in the form of pump and treat was performed. Why wasn't a more detailed preliminary assessment performed? What was the basis of ceasing the treatment while analytical data still reflected contamination? Please address and evaluate this issue in more detail.

Response - The quantity of leachate released from the 30,000-gallon tank is unknown. Numerous monitoring wells surround the area; none showed contamination. Therefore a detailed assessment was deemed not to be necessary. Remedial work was done as a precautionary measure. The remedial work was ceased when soil samples taken on August 4, 1993 showed values within the limits published in Section 62-701.550, FAC for primary and secondary standards. On December 19, 1994, the 30,000-gallon tank was removed. Soil samples were collected after removal. The analyses will be submitted to the FDEP as soon as they are available.

15. **FDEP Statement 15** - Are the stormwater basins performing adequately? Do all the basins drain completely in three days?

Response - The stormwater basins are performing adequately. Basin "D" was observed not to have drained completely in 3 days. In December 1994, the site operator removed the sediment in Basin "D" as described in the pending permit application Section 5.4.1.6. The HCDSW will continue to observe Basin "D" during future storm events to assess the basin's performance.

16. **FDEP Statement 16** - Please provide your response to resolve Ms. Allison Amram's concerns in her December 14, 1994 memorandum attached. You may contact Ms. Amram at (813) 744-6100, extension 336.

Response - The following responses address the questions raised by Ms. Allison Amram, P.G. Please note, only those comments which require a response are reproduced and addressed below.

General Comments - Are the proposed depths for these wells 23 feet? Other wells in the area are deeper. Other than the depths, the proposed well construction for surficial aquifer monitoring wells TH-57 and TH-58 are acceptable.

Response - The referenced wells will be 31 feet deep.

6.2.1 Groundwater Findings

2. Please provide the water elevations for the May 1994 groundwater sampling; this data was not legible on the Groundwater Reporting Forms in Appendix I.

Response - Please see Table 1 below.

TABLE 1. MAY 1994 GROUND WATER ELEVATIONS

Well No.	Groundwater Elevation (above MSL)	Water Level
TH-19	16.33'	113.60'
TH-20B	123.79'	9.97'
TH-22	123.97'	5.57'
TH-24A	123.61'	5.70'
TH-28	105.22'	26.86'
TH-30	105.44'	24.00'
TH-36	123.16'	31.27'
TH-38A	123.10'	9.65'
TH-40	12.13'	113.10'
TH-56A	118.93'	14.32'

6.3.1 Proposed Surficial and Floridan Aquifer Monitoring System

2. Please state which wells are in good condition for measuring Floridan aquifer water elevations. Those wells not in good condition should be remediated, or abandoned to prevent contaminants from entering these wells, and to prevent mixing of waters from the Floridan and surficial aquifers.

Response - The Floridan Aquifer monitoring wells listed in the 1994 SELF Permit Renewal include all Floridan aquifer wells. These wells are in good condition for measuring Floridan aquifer elevations.

3. **The Ardaman & Associates February 1983 report, "Hydrogeological Investigation, Southeast County Landfill" documents the installation of TH-33, TH-34A, and TH-38 as surficial aquifer piezometers in Section 3.4 of the report. This report also documents TH-49 as a boring only. Piezometer (well) construction described in the text of Section 3.4, and the boring log and well screened interval is shown in Figure A.3-8. No mention is made of abandonment of these wells. It appears that wells TH-33, TH-34A, and TH-38 were installed, but are no longer present. Were these wells abandoned? If so, please provide documentation of proper well abandonment.**

Also, the land surface elevation and total depth for well TH-38 in the Ardaman report are different from well TH-38A given in the permit renewal application. Why are you proposing to change the well designation from TH-38A to TH-38? It appears that TH-38A and TH-38 are two different wells. Please clarify.

Response - The three piezometers referred to were not actually used as wells due to their locations. TH-34A was located in what became the borrow area, TH-38 was located in the center of what became the paved service road on the eastern side of the landfill, and TH-33 was located on the northern side of the landfill where excavating was performed. The HCDSW assumes that the wells were properly abandoned in accordance with the requirements of Hillsborough County's contract with Camp Dresser & McKee Inc.

TH-38 in the Ardaman report refers to a piezometer and is not the same as well TH-38A. The HCDSW does not want to change designations but rather remove TH-38 from the list of well.

6. **Please provide the correct surveyed elevation for well TH-36, and revise all water elevation tables and figures to reflect the correct elevation.**

Response - TH-36 has not been surveyed since the damage was incurred. The HCDSW does not plan on having a survey performed as TH-36 is proposed for replacement.

New Item: Monitoring well TH-36

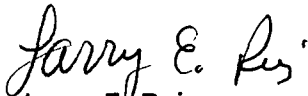
As requested in the December 1, 1994 letter from Hillsborough County Department of Solid Waste, the abandonment of well TH-36 can be include with the permit renewal activities. The installation of a new well should be conducted with the installation of proposed wells TH-57 and TH-58. As stated in the General Comments, well construction is acceptable, but a specific total depth for the well is required prior to approval.

Ms. Patricia V. Berry
January 13, 1995
Page 11

Response - The specific total depth of the proposed replacement well for well TH-36 will be 48.0 feet BLS.

Please do not hesitate to call if you have any questions.

Very truly yours,



Larry E. Ruiz
Project Engineer



Robert B. Gardner, P.E.
Vice President
SCS ENGINEERS

RBG/SMH/LER:lr
Attachments

EXHIBITS

- A Temporary Structures Calculation
- B Piezoprobe PP-6 Graph
- C Public Utilities Department Letter of Confirmation

EXHIBIT A
TEMPORARY STRUCTURES CALCULATIONS

Triangular Channel Analysis & Design
 Open Channel - Uniform flow

Worksheet Name: Sideslope Swale

Description: Sideslope Temporary Swale (Sodded)

Solve For Depth

Given Constant Data;

Z-Left..... 3.00
 Z-Right..... 4.00
 Mannings 'n'..... 0.042
 Channel Slope..... 0.0200

<u>Variable Input Data</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Increment By</u>
Channel Discharge	10.00	50.00	10.00

Z-Left (H:V)	Z-Right (H:V)	Mannings 'n'	Channel Slope ft/ft	COMPUTED VARIABLE COMPUTED	
				Channel Depth ft	Channel Velocity Discharge (fps) cfs
3.00	4.00	0.042	0.0200	0.97	10.00 3.01
3.00	4.00	0.042	0.0200	1.26	20.00 3.59
3.00	4.00	0.042	0.0200	1.47	30.00 3.97
3.00	4.00	0.042	0.0200	1.64	40.00 4.26
3.00	4.00	0.042	0.0200	1.78	50.00 4.51

Trapezoidal Channel Analysis & Design
 Open Channel - Uniform flow

Worksheet Name: SELF

Description: Topslope Temporary Ditch (sodded)

Solve For Depth

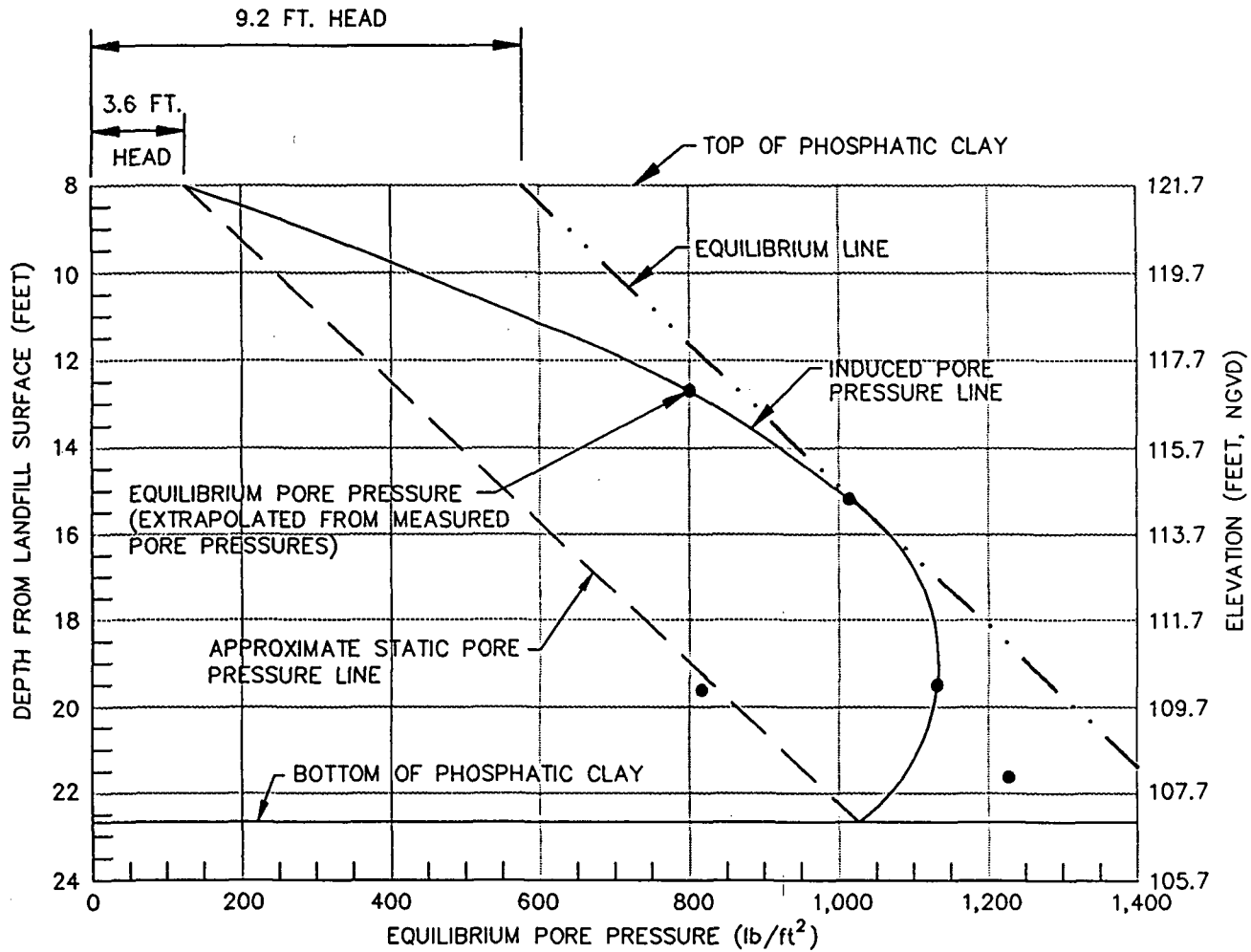
Given Constant Data;

Bottom Width..... 3.00
 Z-Left..... 3.00
 Z-Right..... 3.00
 Mannings 'n'..... 0.042
 Channel Slope..... 0.0200

<u>Variable Input Data</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Increment By</u>
Channel Discharge	10.00	50.00	10.00

Bottom Width ft	Z-Left (H:V)	Z-Right (H:V)	Mannings 'n'	Channel Slope ft/ft	COMPUTED VARIABLE COMPUTED		
					Channel Depth ft	Channel Discharge cfs	Channel Velocity fps
3.00	3.00	3.00	0.042	0.0200	0.67	10.00	2.99
3.00	3.00	3.00	0.042	0.0200	0.95	20.00	3.62
3.00	3.00	3.00	0.042	0.0200	1.15	30.00	4.03
3.00	3.00	3.00	0.042	0.0200	1.32	40.00	4.35
3.00	3.00	3.00	0.042	0.0200	1.47	50.00	4.61

EXHIBIT B
PIEZOPROBE PP-6 GRAPH



SOURCE: GEOTECHNICAL INVESTIGATION BY ARDAMAN & ASSOCIATES, INC.
DATED MARCH 7, 1994.

SCS ENGINEERS

Pore Pressure Versus Depth Relationship From Piezoprobe Test Results at PP-6.

EXHIBIT C

PUBLIC UTILITIES DEPARTMENT
LETTER OF CONFIRMATION

HILLSBOROUGH COUNTY

Florida

Office of the County Administrator
Daniel A. Kleman

BOARD OF COUNTY COMMISSIONERS:

- Dorrie Berger
- Phyllis Disansky
- Joe Chillum
- Chris Haert
- Jim Norman
- Ed Teranchuk
- Sandra Helen Wilson



Senior Assistant County Administrator
Patricia Bean


Assistant County Administrators
Edwin Hunsicker
Cynthia Johnson

RECEIVED
DEC 12 1994

by Solid Waste Department

DATE: December 12, 1994

TO: Patricia Berry, Section Manager
Department of Solid Waste

FROM:  Fred Freshcorn, Section Manager
Technical Support Section
Public Utilities Department

SUBJECT: LEACHATE DISCHARGE ASSESSMENT

In accordance with the existing Hillsborough County Public Utilities Department (HCPUD) Discharge Permit No. 0022, the Hillsborough County Department of Solid Waste (HCDSW) is currently permitted to dispose of 76,000 gallons per day (gpd) of leachate from the Southeast County Landfill (SELF). As requested by HCDSW, the maximum disposal capacity available for the SELF's leachate has been evaluated and is presented, as follows, along with related items:

1. The maximum disposal capacity available for the SELF leachate is 160,000 gpd at the Falkenburg Advanced Wastewater Treatment (AWT) facility and, 40,000 gpd at the Valrico AWT. The limiting factors employed to derive these amounts are Total Kjeldahl Nitrogen (TKN), which can affect treatability and is present in the SELF leachate at an average concentration of 276 milligrams per liter (mg/l), and Total Toxic Organics (TTO), which can affect biomonitoring.
2. The frequency for sampling all parameters listed in HCDSW's Leachate Discharge Permit No. 0022 will be increased to once per month, when the total volume of leachate (combined leachate from all HCDSW sources) discharged into the HCPUD facilities exceeds 130,000 gpd. The increased monitoring provides the added protection required when handling greater amounts of leachate.
3. In addition to the basic user fees (\$5.25 per 1,000 gallons), effective October 1, 1994, the High-strength Waste charge (cost to treat higher than normal conventional pollutant concentration discharges) and Industrial Pretreatment Special Project charge (prorated capacity fee) will be included in HCDSW's monthly wastewater bill. The

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following figures portray the expected charges to HCDSW for discharging 200,000 gpd of leachate:

High-strength Surcharge (TKN)	=	\$ 4,256
User Fee (\$5.25 / 1,000 gal)	=	\$31,500
Special Project Charge	=	\$ 5,650
Total Monthly Bill	=	\$41,406

4. To better accommodate the expected increase of trucks hauling leachate to the HCPUD facilities, HCDSW will be afforded 24 hour access to both Falkenburg AWT and Valrico AWT.

If you require additional information/assistance, please contact Victor Hernandez, Senior Engineer, at telephone 272-5977.

FLF/VMH/sjr

cc: Joe Cozatt, Public Utilities Department
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