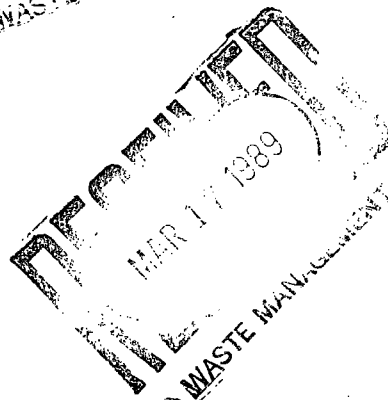


**SCS ENGINEERS**

# **OPERATION PERMIT RENEWAL RESPONSES**

## **SOUTHEAST LANDFILL**

4029C30075 ✓



**MARCH 17, 1989**

BOARD OF COUNTY COMMISSIONERS  
HILLSBOROUGH COUNTY, FLORIDA

Office of the County Administrator

Larry J. Brown  
County Administrator



P.O. Box 1110  
Tampa, Florida 33601

March 14, 1989

Richard D. Garrity, Ph. D.  
Deputy Assistant Secretary  
Florida Department of Environmental Regulation  
Southwest District  
4520 Oak Fair Boulevard  
Tampa, Florida 33610-7347

SUBJECT: FDER File No. SO29 - 158504  
Responses to Letter Dated January 12, 1989  
Concerning Hillsborough County's Southeast  
Landfill Operation Permit Renewal Application

Dear Dr. Garrity:

In response to the referenced letter concerning our incomplete permit application, Hillsborough County and SCS Engineers are hereby submitting the requested additional information.

Hillsborough County intends to continue working with the Florida Department of Environmental Regulation (FDER) in providing all information necessary for FDER to have a thorough understanding of the Southeast Landfill design, construction and operation. However, we are concerned about the type and degree of information being requested for this permit renewal since the original permit application and supporting documentation are approved and on file at FDER. Also, much of the information requested by FDER for this renewal is not supported by reference to any rule requirement and appears to be requested for purely informational purposes. As you are aware, in accordance with 403.7072, if a request for information cannot be accompanied by a rule citation, failure to provide such information cannot be grounds to deny a permit.

Again, we hope that FDER and the County will be able to work together to resolve any problems in our permit renewal so that we may continue the permitted operation of this critical landfill facility.

As a second issue, to comply with the newly adopted Waste Tire Rule and draft Construction and Demolition Debris Rule, the County intends to implement both an on-site tire shredding operation and a C&D landfill as permit modifications to be included with the Southeast Landfill permit renewal.



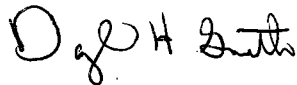
Richard D. Garrity, Ph. D.  
March 14, 1989  
Page 2

The County is currently working with its landfill Contractor to develop a proposal for operating both facilities under a Contract Change Order. The County intends to complete and submit to FDER a Waste Tire Processing Facility Permit Application for shredding tires at the Southeast County Facility. Secondly, the County intends to develop a C&D landfill in a borrow area adjacent to the Class I landfill and will provide FDER with the operating plan and sequence of filling for this project to be included in the Southeast Landfill permit.

Please let us know as soon as possible if these two new facilities should be handled in an alternate manner. Contact Patricia V. Berry of this office at 272-6674 if you need further information on this matter.

If there are any questions concerning the additional information submittal, please contact either Bob Gardner or Gayle Farrer of SCS Engineers at (813) 621-0080.

Sincerely,



Daryl H. Smith  
Director  
Department of Solid Waste

DHS/PVB/bn

cc: Patricia V. Berry, Landfill Services Section Manager  
Bob Gardner, SCS Engineers

**OPERATION PERMIT RENEWAL RESPONSES  
SOUTHEAST LANDFILL  
HILLSBOROUGH COUNTY, FLORIDA**

Submitted to:

Florida Department of Environmental Regulation  
4520 Oak Fair Boulevard  
Tampa, Florida 33610-7347

Submitted by:

SCS ENGINEERS  
3016 U.S. Highway 301 N., Suite 100  
Tampa, Florida 33619  
(813) 621-0080

For:

Hillsborough County Department of Solid Waste  
925 Twiggs East  
P.O. Box 1110  
Tampa, Florida 33601

March 17, 1989  
Job No. 985027.11

**Operation Permit Renewal Responses  
Southeast Landfill  
Hillsborough County, Florida**

**FDER Statement 1.** Please provide proof of publication of notice of application as per F.A.C. Sections 17-7.03(4) and 17-103.150(1).

Response - The County will have the Notice of Application published in the local newspaper once FDER has determined the permit application to be complete. The Notice will state that the application is for a permit renewal.

**FDER Statement 2.** Please address the concerns of the Hillsborough County EPC as specified in the attached memorandums, one by Paul Schipfer and one by Cathy Bohlke.

Response - Responses to the concerns of the Hillsborough County EPC follow the FDER responses.

**FDER Statement 3.** Please provide evidence that the facility is in conformance with local zoning. A letter from the County's planning and zoning office should be sufficient.

Response - A letter from the Planning Commission concerning the zoning and land use of the County's subject property (approximately 2030 acres) is presented in Appendix A.

**FDER Statement 4.** Please provide recent aerial photographs of the property owned by Hillsborough County.

Response - As per your suggestion, the property line is identified on Southwest Florida Water Management District aerial photographs in Appendix B.

**FDER Statement 5.** Please indicate locations that all construction plans and as-built drawings are available for the Department's review.

Response - Copies of all construction plans and as-builts have been forwarded to FDER throughout the construction of the site. Copies of all drawings are also available for review at the Administration Building at the landfill site, as well as at the Hillsborough County Department of Solid Waste.

**FDER Statement 6.** Please sign and seal plan sheet P-5. Please explain why the terraces that exist at the site are not shown. These terraces should be graded to promote drainage and lined to prevent erosion and percolation.

Response - Drawing P-5 as noted on the drawing, was compiled by composites of Sheets 14 and 15 as submitted by CDM in support of the original permit application in 1983. The FDER should have a signed and sealed copy of these

two drawings in their record files. SCS Engineers did not modify the drawings from their original design.

The terraces that exist at the site are interim stormwater ditches which were temporarily constructed to divert surface runoff as the landfill develops. Once portions of the site reach final contours, the proposed landfill stormwater system will be constructed with lined ditches as shown on the construction drawings.

**FDER Statement 7.** Exhibit 3-2 indicates that the rate of waste generation per person increases by 3 percent each year and by the year 2020 each person will dispose of 15 pounds of waste each day. Please explain. A copy of the County's HDR Solid Waste Report of June 1988 should be sufficient. Please describe ways that the County can improve its waste management practices to demonstrate an annual reduction in the volume of solid waste disposed of in the landfill rather than an increase. Please describe ways that the County can provide a recycling program to achieve a countywide solid waste balance of 1/3 recycled, 1/3 incinerated, and 1/3 landfilled. Do the County's future waste management alternatives include MSW composting, RDF, sorting, baling, or shredding waste to further reduce the volume to be disposed of in the landfill? What are the County's plans for yard trash, tires, waste oil, household hazardous waste, and ash. Ash should already be disposed of in a monofill as indicated in the attached July 6, 1987 memorandum, therefore please explain why this has not been done. Now seems to be a good time to implement new ash disposal practices since new areas have been developed but have not been used.

Response - The HDR Solid Waste Report of June 1988 is included as Attachment A. This report provides extensive information in response to your questions concerning the County's solid waste tonnage and disposal management projections.

The County's solid waste management practices depend in part, on the rules developed under the 1988 Solid Waste Act, Chapter 88-130. The County's future plans will be based on rule mandates and the County will comply as required. Appendix C contains a preliminary draft master plan of the Southeast Landfill which identifies the proposed future site usage.

With regard to ash management, the County is disposing of its ash in accordance with all current environmental rules and regulations. The referenced FDER Interoffice Memorandum concerning ash monofill was provided as a recommended management technique until final ash management rules are developed. Upon finalization of the ash rule, the County will modify the permit and landfill operations as necessary to comply with the new required management practices.

**FDER Statement 8.** Where can the information specified on the application form Section 3.e.(1), plan and hydrogeological survey, including foundation analysis, be found? Since settlement appears to significantly affect the landfill operations and bottom liner permeability, please establish long-

term settlement testing and devices to verify the anticipated settlement and consolidation of clay bottom liner.

Response - The referenced report, "Hydrological Investigation-Southeast County Landfill-Hillsborough County, Florida", by Ardaman & Associates, dated February 22, 1983 was included as Attachment D of the original permit submittal by CDM in February 1983. This report complies with the requirements of F.A.C. Rule 17-4.245(6)(d)1., and it also contains a section on the stability of the liner.

Ardaman & Associates currently is re-analyzing the landfill stability and consolidation based on existing and anticipated filling conditions. As soon as the analysis is complete, information will be forwarded to FDER and EPC.

**FDER Statement 9.** Please describe any future improvements or developments of the landfill, and provide material and construction specifications for the major landfill components to be constructed such as for the liner and leachate system expansions.

Response - The material and construction specifications for the liner system expansions for Phases V and VI are described in the project specifications and construction drawings previously submitted and approved by FDER and EPC. The leachate collection system is described in the existing specifications and construction drawings with the following exceptions:

- Kanaflex, series 110 CL or approved equal flexible PVC suction hose (minimum 6" Ø) has been submitted for the system force mains. This change was submitted and approved by FDER in 1986.
- The County currently is proposing to expand and relocate the leachate storage system with a new interim tank and containment area north of Phase V. This tank farm will initially consist of two above ground steel tanks, with a total capacity of approximately 100,000 gallons, and a containment structure. A lift station and new force main piping will be installed to transfer the leachate to the tank farm. Once drawings and specifications are developed, they will be submitted to FDER and EPC for approval of construction.

**FDER Statement 10.** The Department requests Certification of Construction Completion DER Form 17-7.130(2), signed and sealed by the professional engineer, for construction begun and completed after December 10, 1985 in accordance with F.A.C. Rule 17-7.030(6)(a).

Response - In February 1984, the County was issued a permit for the construction and operation of the Southeast Landfill. This permit did not require the County to complete an "Application to Operate Only Resource Recovery and Management Facility-Certification of Construction Completion"

form for each phase as now required in F.A.C. Rule 17-7.030(6)(a), nor did the permit require notification to FDER for construction initiation or completion as now required in F.A.C. Rule 17-7.030(7). All construction at the Southeast Landfill for Phases I through IV has been completed prior to the expiration of the Class I landfill permit.

The form referenced in F.A.C. Rule 17-7.030(6)(a) does not appear to be applicable to our situation especially since we are in the process of renewing the entire facility permit. Both FDER and EPC were notified of the construction schedule for Phases III and IV and were invited to observe all construction. Phase II construction was observed by EPC, who authorized its usage after a final inspection of construction. Phase I was constructed prior to 1985. However, CDM's letter certifying construction completion in accordance with the plans and specifications was forwarded to FDER along with the record drawings in October 1984.

The QA/QC report for Phases III and IV will be provided to FDER and EPC as soon as it is available, along with the as-built construction drawings for these phases. This information should satisfy the rule requirements.

**FDER Statement 11.** Please clarify the projected leachate generation rates including the actual rates and calculated rates. Is the future peak average annual leachate generation of 26,212,300 gal/year as indicated on page 4-2 correct? Please describe leachate recirculation operations. Please describe the leachate depth over the liner and any leachate mounding that occurs in previously filled areas.

Response - The H.E.L.P. model estimates approximate leachate quantities being generated under specific conditions. To improve the approximation, a comparison was made between actual values of leachate being generated at the landfill versus predicted quantities by the model. The next step was to adjust the assumptions used in the model so results equalled or slightly exceeded the actual leachate quantities being generated, giving a conservative estimate.

For example, the actual leachate generated at the landfill during one of the peak months in 1988 was approximately 38,500 gallons/day. The H.E.L.P. model predicted 45,500 gallons/day giving a conservative result (+15% over actual).

The final step in estimating leachate quantities was to determine the maximum amount of leachate that is likely to occur during active operation (26,212,300 gal/year). This number was generated under a worst case condition assuming a large portion of the landfill has a temporary or intermediate cover with bare surface conditions (no grass cover). As stated in the December 15, 1988 permit renewal submittal, the worst case scenario assumed was as follows:



- Phase I - 28% final cover, good grass  
72% intermediate cover, bare ground
- Phase II - 10% daily cover, bare ground  
90% intermediate cover, bare ground
- Phase III - Intermediate cover, good grass
- Phase IV - Intermediate cover, bare ground
- Phase V - Daily cover, bare ground

If the landfill is properly closed out as per the final contours and cover system, leachate generation should be approximately 9,851,000 gallons/year.

Leachate recirculation is the secondary method for leachate disposal at the landfill, with the primary method being off-site disposal at a County WWTP. The leachate recirculation process involves spraying leachate (from a spray bar mounted on the rear of a tank truck) onto recently active-fill areas of the landfill. The following guidelines are observed at the landfill for leachate recirculation operations:

- Leachate may only be sprayed on recently active-fill areas, including the working face, and areas with the required six inches of daily cover.
- Leachate may not be sprayed on areas with intermediate or final cover (seeded or unseeded).
- Leachate may not be sprayed on areas with greater than a 10:1 slope. Areas within 150 feet of a 4:1 sideslope may not be sprayed on. However, if at any time surface runoff contamination is suspected, leachate should only be sprayed on areas with slopes of 20:1 or less.
- Leachate spraying should only occur on days when evaporation exceeds precipitation. Prior to spraying, the area to be used should be inspected by authorized personnel to determine soil moisture conditions of the top six inches of soil. Leachate should only be applied when the soil is dry to the touch.
- The tank truck spray bar method tends to minimize evaporation of leachate in the air, mitigating odor problems, and maximizes soil moisture evaporation. The application rate of leachate should be such that leachate does not accumulate on the landfill surface, nor infiltrate quickly into the covered refuse. It is evaporation of soil moisture in the top three inches of soil that is the main goal of this leachate disposal method, rather than the actual recirculation of leachate.
- Leachate should not be sprayed at the end of the day on the daily cover of the working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until

early afternoon or until all available areas of the fill have been utilized.

- If precipitation is expected, leachate should not be sprayed. However, a late afternoon thundershower is not unusual in Florida, and on days such as these, only morning spraying may be conducted.
- High humidity is associated with a high evaporation rate. If the air is already very humid, very little leachate will evaporate. Close attention must be paid to meteorological conditions in the summer when both precipitation and evaporation are great.
- Leachate may be sprayed directly on refuse and residue. A close inspection of the moisture content of residue is necessary prior to spraying to ascertain that the top few inches are dry and can absorb additional moisture.
- A surface water sampling program must be implemented to ensure the continued correct operation of the leachate spraying program.

Depth of flow above the liner relates to lateral spacing between leachate collection, slope and permeability of the drainage layer over the liner. These are three of the many variables used by the H.E.L.P. model to give an average daily head over the liner. The average value is then converted to a peak value with equations established by the author of the H.E.L.P. model. An 18-inch thick temporary cover was assumed (worst case cover condition) allowing the greatest amount of precipitation to become leachate. Results indicate that the maximum head over the liner would equal 8 inches with the actual leachate collection design input parameters of 200 foot spacing, two percent slope and a sand layer hydraulic conductivity of  $10^{-2}$  cm/sec.

The leachate collection system as stated above was designed such that the maximum head above the liner will be maintained at less than one foot. This design should prevent leachate in the 3 foot sand layer from mounding into the solid waste layer. The County is not aware of any mounding occurring at the landfill.

**FDER Statement 12.** Because rainfall drains from the top and sides of previously filled but unclosed portions of the landfill, please verify that leachate does not leave the waste and is not transmitted with the runoff along the side slopes. Describe the intermediate cover used to demonstrate that leachate is prevented from escaping.

Response -Intermediate cover is placed on all landfill surfaces which will not receive refuse within 180 days. The intermediate cover is placed to a minimum compacted thickness of one foot. This material has a minimum hydraulic conductivity in the range of  $10^{-3}$  to  $10^{-5}$  cm/sec. When each operating area is brought to the intermediate grade and intermediate cover is applied, the surface is graded with a minimum two percent slope, seeded

and maintained to prevent erosion and increase the amount of surface runoff.

The characteristics of the intermediate cover material serve to minimize infiltration and subsequent leachate generation. County personnel perform daily visual inspections of the landfill area to note any unusual conditions (i.e., dead vegetation, saturated areas, odors, etc.) that may exist. The County has not noted any such conditions nor observed any leachate release into the stormwater.

**FDER Statement 13.** Please describe ash disposal and its effects upon leachate drainage, gas buildup and migration, and surface water quality. Layers of compacted ash may inhibit leachate collection and gas venting and may contribute to surface water contamination.

Response - Ash at the landfill is co-mingled with and handled in much the same manner as refuse. It is dumped at the top of the working face and spread toward the bottom. The ash is landfilled as it arrives at the site therefore, it is not disposed of in one continuous layer.

The County is not aware of any leachate, gas or surface water quality problems related to the co-disposal of ash and refuse at the landfill.

**FDER Statement 14.** Please provide documents or letters outlining the surface water and leachate sampling programs. Please provide an evaluation of the quality of groundwater, surface water, and leachate, and indicate whether or not additional monitoring wells, stations, or parameters are needed. Please describe the purpose of the well points or where this information may be found.

Response - As previously stated in the December 15, 1988 permit renewal submittal, the surface water monitoring program in operation at the landfill is as submitted and approved in the original permit submittal by CDM in February 1983. No modifications to the program have been issued. Presented in Appendix D are excerpts taken from Section 5 of the original permit submittal pertaining to the surface water monitoring program.

The leachate sampling program that the County currently is performing is not a requirement of FDER or EPC. This sampling is done on a quarterly basis for the County's own records and knowledge, and is submitted to FDER as part of the site monitoring data.

The leachate collection system was described in Section 3.5 of the original permit submittal. Due to the nature of the clay consolidation, a basin or low spot will develop within the center of the site to which leachate will naturally drain. The development of a well point system at this low point was chosen as the most feasible method of draining the leachate.

**FDER Statement 15.** Department approval is required prior to closure of any portions of the landfill which includes the outside slopes. Please provide closure plans to include a gas migration investigation and final cover installation plans showing the sequence of applying final cover, including thickness and type of material that will be used. Gas or odor control systems shall be installed at landfills which have a gas or odor problem as determined in the gas migration investigation report. Please provide details for closure of side slopes particularly adjacent to the top of the synthetic side liner. Describe construction methods and quality control procedures. The 4 to 1 side slopes should have a permeability no greater than  $1 \times 10^{-5}$  cm/sec. Flatter slopes should have a less permeable final cover. Side slopes steeper than 4 to 1 are not recommended. Please verify the permeability and thickness of final cover on the closed portions of the site.

Response - The 4:1 portion of the outside slope of Phases I and II is the only portion that is final. The 20:1 slope which is covered with intermediate cover will receive another lift of refuse. The intermediate cover materials are sufficiently permeable to allow the escape of gas to the atmosphere; therefore, a gas migration investigation is not practical until final closure is completed. Details of the final cover system and the final cover sequencing were provided in Section 7 of the December 15, 1988 permit renewal submittal.

Details as to how the synthetic sidewall liner keys into the clay base and how the final cover is applied on the side slope were shown on the construction drawings for Phases I and II which FDER has copies of. The construction QA/QC for these phases was visually inspected by County staff.

Enclosed in Appendix E is a copy of the soil testing results for the permeabilities of the final cover materials for Phases I and II.

With regard to the statements concerning the 4:1 side slopes, we found no such references in Chapter 17-7. Our interpretation is that side slopes shall not exceed a 3:1 slope (Rule 17-7.073(6)(c)2.a.), and that the types of materials used in a final cover are dependent upon the leachate control system used, and nothing in the rule shall be construed to require final cover which is incompatible with the leachate control system, including a system which utilizes permeable final cover, which has been permitted by the Department and meets all other applicable department standards and criteria (Rule 17-7.073(6)(c)). The landfill was permitted according to the original submittal to have an impermeable cap with a minimum hydraulic conductivity of  $10^{-5}$  to  $10^{-6}$  cm/sec.

**FDER Statement 16.** Please describe safety measures taken to prevent fires or explosions in the leachate pumping stations or sumps, and warning signs or instructions for landfill personnel.

Response - All leachate pump stations contain explosion-proof pumps and have a vent hole to allow adequate ventilation of any gases which may accumulate inside. Landfill personnel are properly trained in the operation of available firefighting equipment and to handle emergency situations.

**FDER Statement 17.** Please provide evidence that adequate funds are already set aside in a separate account for closure and long-term care in case the landfill was to begin closure in 1989.

Response - If the landfill was to begin closure in 1989, it would be handled by the existing landfill contractor as a change order to his contract. Landfill maintenance would be handled through the operating budget which is budgeted on an annual basis.

As outlined in the FDER Interoffice Memorandum dated July 29, 1986, for government owned landfills, an annual sinking fund item in the budget is an acceptable plan for financial closure responsibility. Presented in Appendix F is a copy of the funding item printout showing the Southeast Landfill closure fund for the current year. In addition to this fund, the County also has access to a reserve account which is set aside for emergency situations. The County also intends to comply with Chapter 88-130, Section 40, subsection (3)(b) by December 31, 1989.

If the facility were to begin closure in 1989, the estimated closure cost would be approximately \$2.76 million. This would include a final cover system installed at Phases I and II, and the re-installation of the side-wall liner to separate the Phase III and IV leachate collection system from the Phase I and II collection system. Since there is no refuse currently in Phases III and IV there will not be any leachate generated therefore, the water that hits the sand layer and collection system will only be stormwater which would be diverted into the existing stormwater system. From further analysis of the landfill operations and discussions with County landfill personnel, this would be the most expensive closure scenario as opposed to the scenario that was assumed in the December 15, 1988 permit renewal submittal.

**(PS) EPC Statement 1.** It has been brought to our attention that the site may have a problem with unauthorized entry. The reviewer was unable to locate fencing or effective barrier locations in Appendix B, Drawing P-2. Pursuant with 17-7.050(5)(c), please submit plans to preclude future unauthorized site entry and locate effective barriers, fencing, etc. on plot plan or additional drawing.

Response - The existing site fence is identified on Drawing P-2 in Appendix B. In areas where the fence is not shown there is a constructed earthen berm. No trespassing signs are also posted along the perimeter fence. County personnel perform a full site perimeter inspection on a daily basis.

The County has new perimeter fencing budgeted for the site, which will be installed in phases during the 1989-90 fiscal year.

**(PS) EPC Statement 2.** Currently, salvaging is not proposed at the landfill site. Does the applicant intend to propose salvaging/recycling at the site, in the spirit of the 1988 Solid Waste Management Act? If so, please discuss plans briefly.

Response - The County has no plans to initiate salvaging at the landfill. Proposed recycling will occur through dropoff centers and curbside pickups.

**(PS) EPC Statement 3.** Please submit Geoservices report regarding installation of the synthetic side liner and leachate collection system in Phase III and Phase IV. Also submit as-builts upon completion.

Response - The QA/QC report for Phases III and IV will be provided to FDER and EPC as soon as it is available, along with the as-built construction drawings for these phases.

**(PS) EPC Statement 4.** Pursuant with 17-7.050(4)(d)1.a, indicate if leachate characterization has been performed and if it will increase the hydraulic conductivity of the clay liner.

Response - Numerous studies have been conducted and reported, demonstrating the compatibility of clay and leachate. Such reference include "Chemical Effect on Clay Hydraulic Conductivity" by James K. Mitchell and Fritz Madsen, and "Earthen Liners for Land Disposal Facilities" by David E. Daniel.

Studies have shown that municipal landfill leachate is not strong enough to have any effect on the hydraulic conductivity of clays. According to Ardaman & Associates, the waste phosphatic clays at the Southeast Landfill have a basic pH and will neutralize the acidic leachate.

**(PS) EPC Statement 5.** Pursuant with 17-7.050(4)(c)1., the clay liner, as proposed, requires specific sequencing to allow proper consolidation for increased shear strength; please provide existing or proposed quality control plan to ensure proper compaction, settling and consolidation is occurring in the liner.

Response - Ardaman & Associates currently is re-analyzing the landfill stability and consolidation based on existing and anticipated filling conditions. As soon as the analysis is complete, information will be forwarded to FDER and EPC.

Currently, the County reviews quarterly topographic maps and performs visual inspections of the landfill to monitor, record and calculate the volume and compaction of the landfilled areas.

(PS) EPC Statement 6. Pursuant with 17-7.050(4)(c)1., please indicate sequence of filling and projected schedule. Also, include any proposed changes in existing filling sequence. The referenced existing Ardaman Report does not appear to preclude adding lifts to Phase IV while filling Phase III. In light of leachate management for the site, please indicate if Phase IV lift is proposed.

Response - The fill sequence in operation at the landfill is as submitted and approved in the original permit submittal of February 1983. At present, the County is filling as per this sequence. Due to the stability re-analysis that Ardaman & Associates currently is performing, the filling scenario may require modifications. If any changes in the fill sequence are required, FDER and EPC will be notified.

The referenced 17-7.050(4)(c)1. pertains to liner quality control plans and not sequence of filling.

(PS) EPC Statement 7. Pursuant with 17-7.050(4)(d)2.c., please submit current or proposed synthetic side liner quality control plan to ensure all field seams are pressure or vacuum tested for seam continuity using suitable non-destructive techniques.

Response - Currently, the County performs full time inspection and takes photographs of all construction activities that occur at the landfill. Construction QA/QC services are provided by the existing contractor, and are planned for all future construction activities.

(PS) EPC Statement 8. Pursuant with 17-7.050(4)e, please submit method of ensuring that the depth of leachate remains below one foot over the liner.

Response - See response to FDER Statement 11.

(PS) EPC Statement 9. Your current leachate collection system includes pipe with gravel pack and gravel pack without pipe. Filter fabric is placed above and below gravel in trenches. Pursuant with 17-7.050(4)(e) and (4)(f), please explain how fine sands are prevented from clogging the gravel system. Also explain how system is tested for clogging and proposed method for cleaning system if it becomes clogged. Field discussions at the site have indicated filter material used may become clogged due to fungus. Please include any investigation into the use of newly developed materials for leachate collection system and synthetic liner to take advantage of today's best available technology.

Response - The three feet of special fill that surrounds the crushed rock was specified to conform to the following gradation limits:

<u>Sieve Size</u>	<u>% Finer by Weight</u>
1/2-in.	100
No. 4	70-90
No. 40	10-40
No. 200	0-5

Gradation specifications are designed to eliminate void areas.

The original leachate collection trench design proposed crushed rock wrapped in a filter fabric envelope. This envelope was of concern to possible fungus clogging therefore, the design was modified to the existing system which has filter fabric on the top and bottom only, with open sides. The County is not aware of any clogging problems with the filter fabric installed as per this design. Visual inspections at the leachate pump stations are performed by County personnel on a daily basis to verify that the system is functioning properly.

No investigation into the use of newly developed materials for the leachate collection system has been conducted. With regard to the synthetic liner, HDPE was evaluated, but was eliminated from further consideration due to a possible bonding problem between HDPE and the existing Hypalon liner.

**(PS) EPC Statement 10.** In Section 4-2 of your application submittal, applicant estimates 26,212,300 gal/year average annual leachate generation may occur. This will require applicant to manage over 72,012 gallons of leachate per day. Applicant is currently managing 20,000 to 40,000 gallons per day by trucking to wastewater treatment plant for treatment. Please discuss any immediate plans for leachate management and provide tracking plan to ensure applicant will have an established management/treatment system prior to emergency conditions.

**Response** - See response to FDER Statement 9 concerning proposed modifications to the existing leachate storage system.

The County is presently tracking all quantities of leachate disposal and recirculation, and is monitoring the recovery time for the leachate collection system.

The County has plans as required in the future to investigate on-site pretreatment prior to disposal at a WWTP, or total on-site treatment for discharge to the stormwater system or spray irrigation.

**(CB) EPC Statement 1.** EPC has not received copies of all well completion data for monitor wells at the site. Information on the current status of wells and piezometers not included in the GWMP is also needed (wells plugged, capped, etc.).



Response - This information was originally submitted to FDER. Copies have recently been submitted by the County to EPC.

**(CB) EPC Statement 2.** A well survey indicating well locations and elevations has not been received at EPC.

Response - This information was originally submitted to FDER. Copies have recently been submitted by the County to EPC.

**(CB) EPC Statement 3.** Specific condition 5.d. of the current permit requires sampling and analysis for EPA Method 608 on all monitor wells prior to permit renewal. Results of 608 analyses were found for the supply well only.

Response - As per F.A.C. Chapter 17-22, the primary organic parameters require sampling and analysis in accordance with EPA Method 608. The results of the 608 analyses for these parameters for all the groundwater monitoring wells was included in the December 15, 1988 permit renewal submittal.

**(CB) EPC Statement 4.** Some modifications of the required groundwater monitoring parameters appear appropriate. Suggested modifications include the deletion of color and corrosivity, and the addition of sulfate and ammonia for quarterly monitoring. The additional monitoring of selected wells on an annual basis (as was previously required in the permit, but omitted in the latest modification) needs to be discussed.

Response - The suggested parameters were analyzed prior to the December 1986 groundwater permit modification. The County concurs with the suggested modifications and is willing to discuss additional annual monitoring similar to previous requirements of the original permit.

**(CB) EPC Statement 5.** All requirements for surface water monitoring were omitted in the current permit. Hillsborough County is currently monitoring several surface water points, although not required to. The need for surfacewater monitoring conditions needs to be discussed.

Response - See response to FDER Statement 14 concerning the surface water monitoring program.

# APPENDIX A

Hillsborough County  
City-County  
Planning  
Commission

# THE PLANNING COMMISSION

# RECEIVED

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by Solid Waste Department

201 E. Kennedy, Suite 600  
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Executive Director

## MEMORANDUM

DATE: November 1, 1988

TO: Patricia Berry,  
Solid Waste Department

FROM: Ray Chiaramonte, *RAC*  
Principal Planner

RE: Landfill Site

As per the legal description you have provided, the landfill site is located in the Rural (R) land use category. The zoning on this property is Agricultural (A) and Acreage Agricultural (A-A).

Both the zoning district and the land use category would permit a government operated facility. The landfill would be permitted under the major Public/Semi-Public (P) land use category in the Future of Hillsborough Land Use Element.

If you have any questions, please contact our office.

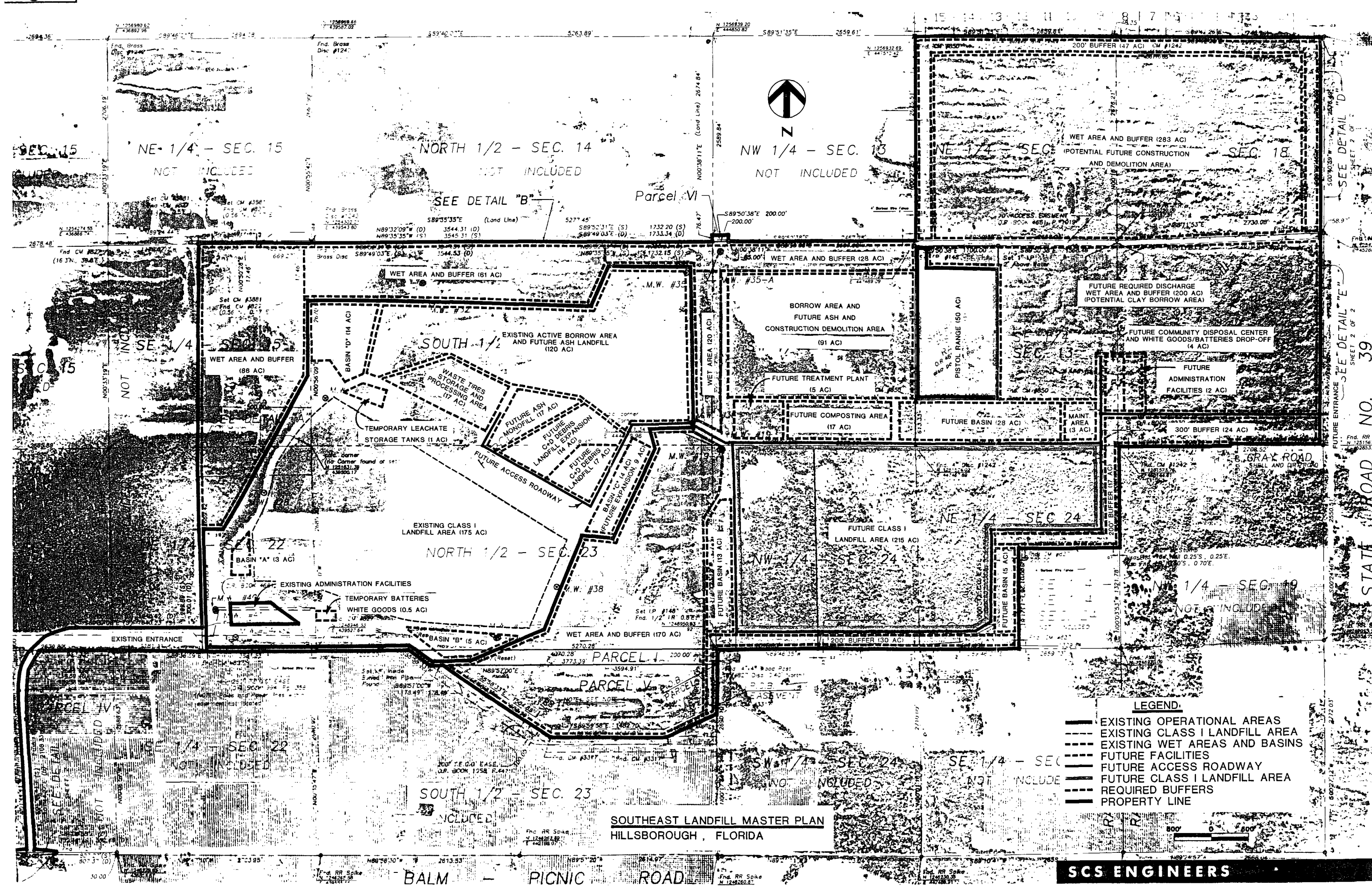
RAC/HH/lc

Attachment

## APPENDIX B

OVERSIZE  
DOCUMENT WAS  
REMOVED AND  
INSERTED INTO  
OCULUS  
SEPARATELY.

# APPENDIX C



# APPENDIX D



## EXISTING SURFACE WATER MONITORING PROGRAM

### 5.3 Surface Water Monitoring Program

#### 5.3.1 Background Surface Water Quality

Existing on-site bodies of surface water located east, southeast, south, and west of the site will be sampled and tested to establish the site's surface water quality prior to placement of refuse. Surface water samples will be analyzed for the key test parameters and collected during the same periods as specified in the background groundwater quality program. A composite sample representative of standing surface water at the east and southeast fill limits will consist of at least five (5) grab samples, taken from five locations, shown on Plans D-2 and D-3, and identified as 1A, 1B, 1C, 1D and 1E. Surface water at the south of the landfill limits flows from west to east, adjacent to and across the site boundaries. One surface water sample, shown on Plan D-2 as surface water sample location 2, will be taken at the discharge of the site boundary. Surface water at the west of the landfill limits flows from south to north, across the site boundaries. Three surface water sampling locations will be selected to establish water quality along this waterway. Two sample locations are to be at the entrance and discharge of the site boundary, and the third sample will be taken at a location approximately equidistant from the entrance and discharge points.

#### 5.3.2 Surface Water Quality Monitoring Program

Schedule of sampling and parameters to be tested during this program will be identical to the program developed for the groundwater monitoring program. Samples will be collected at the same locations described in the background surface water selection. The surface water locations selected will monitor the water quality discharged from the stormwater detention filtration basins. Increased sampling frequency and/or additional test parameters may be required if a change in surface water quality, other than seasonal variations, is identified when compared to background quality.

#### 5.2.2 Background Groundwater Quality

Background groundwater quality will be determined at each selected permanent monitoring well location prior to placement of refuse. Samples will be collected for a duration of one (1) year on a quarterly basis. Two of the sampling periods will be during the wet and dry season and the times of the other two sampling periods will be equally spaced apart to make up the remainder of the one-year duration. Samples will be analyzed in accordance with the methods described in Chapter 17-4, F.A.C. The following key parameters, presented in Table 5-2, have been selected to establish background groundwater quality and will be analyzed during each quarter of this program. These parameters were selected because they are key leachate indicators and the groundwater from the monitoring wells will also be analyzed for these indicators during landfill operations.

TABLE 5-2

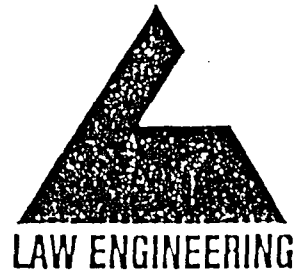
#### KEY GROUNDWATER TEST PARAMETERS FOR THE PRESENCE OF LEACHATE

ph	chloride
temperature	total Kjeldahl nitrogen
specific conductance	alkalinity
chemical oxygen demand	iron
total organic carbon	

One volatile organic analysis (VOA) and one priority pollutant analysis will be performed at each sampling location during this program. Groundwater quality characteristics identified in the hydrogeological investigation performed by Ardaman and Associates, Inc. will also be used in conjunction with these results to establish background water quality. These test results will establish the overall background water quality at the site and will be used to compare/monitor water quality during and after landfilling operations.

Source: CDM 1983 Permit Submittal

# APPENDIX E



SOUTHEAST LANDFILL - SOIL TESTING

HILLSBOROUGH COUNTY, FLORIDA

LAW ENGINEERING PROJECT NO. TM-1103A



LAW ENGINEERING

GEOTECHNICAL, ENVIRONMENTAL  
& CONSTRUCTION MATERIALS  
CONSULTANTS

September 2, 1988

Southeast Landfill  
P.O. Box 997  
Lithia, Florida 33547

ATTENTION: Mr. Tom Nelson

SUBJECT: Southeast Landfill - Soil Testing  
Hillsborough County, Florida  
Law Engineering Project No. TM-1103A

Gentlemen:

Law Engineering has been providing soil testing services for the placement of final cover material for the Southeast Landfill in Hillsborough County, Florida. This work was performed in general accordance with our Proposal No. 1071-M. Previously we issued a report dated November 4, 1987 which included soil testing results for Phase One.

#### PROJECT INFORMATION

As detailed by project requirements, the landfill's final cover material was to be placed in two lifts to a total minimum thickness of 18 inches. This material is required to have an average permeability not to exceed  $1.0 \times 10^{-5}$  cm/sec. This means that the average of all permeability values for the entire final cover must fall at or below  $1.0 \times 10^{-5}$  cm/sec. This averaging of results allows for individual values of permeability to be greater than  $1.0 \times 10^{-5}$  cm/sec, provided there exist a sufficient number of tests with results below the specified maximum to produce an acceptable average permeability.

Quality control field testing procedures for placement of the final cover material were provided to us by Waste Management Inc. In accordance with these procedures, samples were collected and tested as follows:

- o Field Density Tests - One per lift per 1/2 acre.
- o Washed 200 Sieve Analysis - One per lift per 1/2 acre.
- o Permeability Test - One per lift per acre.

Prior to implementing the above testing program, a Standard Proctor compaction test was run on the appropriate sample mixtures to determine the moisture density relationships. The specified field density requirement was set at 90 percent of



Standard Proctor maximum dry density. Any areas that did not meet this density requirement were recompactd by Waste Management personnel. Field densities were then rechecked prior to removal of material for wash 200 sieve analysis and permeability testing. Thickness of final cover material was checked at all wash 200 sieve sample locations as well as at all permeability sample locations. Test areas which exhibited less than the required 9 inch thickness per lift were not tested until the necessary material was added and retested for the required density.

#### TEST DATA

The attached summary sheets present the permeability data, wash 200 sieve data, proctor and density data collected to date for Phase One and Phase Two. Drawings One and Two in the Appendix illustrate the areas tested as well as the approximate sample locations for testing covered by this report. We now understand that soil testing for these two phases of the landfill's final cover material is complete.

If you have any questions concerning the information contained in this report, please do not hesitate calling us. Law Engineering appreciates the opportunity to be of service to you.

Very truly yours,

LAW ENGINEERING

Bruce D. Hazen, E.I.  
Materials Engineer

William R. Goodson, P.E.  
Senior Materials Engineer

BDH:djg

Copies submitted: 5 - Addressee  
                          2 - Waste Management of North America, Inc.  
                          ATTN: Mr. Scott W. McCallister

Attachments: Proctor Data  
                  Density Data  
                  Washed 200 Sieve Data  
                  Permeability Data  
                  Field Reports  
                  Test Location Plan - First Lift  
                  Test Location Plan - Second Lift

**PERMEABILITY  
DATA**

PERMEABILITY RESULTS

TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
1	6/3/87	First Lift Center of W. Slope at Sta. 150+00, Acre 1	$7.8 \times 10^{-6}$	-
2	6/3/87	First Lift Center of S. Slope at Sta. 450+00, Acre 2	$9.3 \times 10^{-6}$	$8.6 \times 10^{-6}$
3	6/3/87	First Lift Bottom of S. Slope at Sta. 800+00, Acre 3	$8.5 \times 10^{-6}$	$8.5 \times 10^{-6}$
4	6/3/87	First Lift Center of S. Slope at Sta. 1100+00, Acre 4	$3.7 \times 10^{-6}$	$7.3 \times 10^{-6}$
5	6/3/87	First Lift Center of S. Slope at Sta. 1400+00, Acre 5	$9.9 \times 10^{-6}$	$7.8 \times 10^{-6}$
6	6/3/87	First Lift Top of S. Slope at Sta. 1600+00, Acre 6	$6.3 \times 10^{-6}$	$7.6 \times 10^{-6}$
7	6/3/87	First Lift Top of S. Slope at Sta. 2000+00, Acre 7 (Retested, see Test No. 9	$1.2 \times 10^{-5}$	$8.5 \times 10^{-6}$

TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
8	6/3/87	First Lift Top of S. Slope at Sta. 2300+00 Acre 8 (Retested, see Test No. 10)	$1.9 \times 10^{-5}$ *	-
9	6/19/87	First Lift Top of S. Slope at Sta. 1900+00 Retest of No. 7	$3.3 \times 10^{-6}$	$6.9 \times 10^{-6}$
10	6/19/87	First Lift Top of S. Slope at Sta. 2250+00 Retest of No. 8	$1.1 \times 10^{-5}$	$7.4 \times 10^{-6}$
11	7/28/87	Second Lift Center of W. Slope at Sta. 150+00, Acre 1	$9.6 \times 10^{-6}$	$7.7 \times 10^{-6}$
12	9/22/87	Second Lift Center of S. Slope at Sta. 500+00 Acre 2 (Retested, see Test No. 13)	$5.7 \times 10^{-5}$ *	-
13	10/6/87	Second Lift Center of S. Slope at Sta. 470+00, Retest of No. 12	$2.6 \times 10^{-6}$	$7.2 \times 10^{-6}$
14	10/6/87	Second Lift Bottom of S. Slope at Sta. 800+00, Acre 3	$5.2 \times 10^{-6}$	$7.0 \times 10^{-6}$
15	10/6/87	Second Lift Center of S. Slope at Sta. 1100+00, Acre 4	$7.1 \times 10^{-6}$	$7.0 \times 10^{-6}$



TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
16	10/6/87	Final Lift Bottom of S. Slope at Sta. 1400+00 Acre 5	$1.7 \times 10^{-5}$	$7.8 \times 10^{-6}$
17	10/6/87	Final Lift Top of S. Slope at Sta. 1700+00 Acre 6	$1.3 \times 10^{-5}$	$8.1 \times 10^{-6}$
18	10/6/87	Final Lift Center of S. Slope at Sta. 1900+00 Acre 7	$1.6 \times 10^{-5}$	$8.7 \times 10^{-6}$
19	10/6/87	Final Lift Top of S. Slope at Sta. 2300+00 Acre 8	$1.2 \times 10^{-5}$	$8.9 \times 10^{-6}$
20	10/6/87	Final Lift Center of S. Slope at Sta. 2600+00 Acre 9	$9.9 \times 10^{-7}$	$8.4 \times 10^{-6}$
21	11/11/87	First Lift Center of E. Slope at Sta. 4700+00, Acre 16	$7.2 \times 10^{-6}$	$8.3 \times 10^{-6}$
22	12/3/87	First Lift Bottom of S. Slope at Sta. 3400+00, Acre 12	$1.2 \times 10^{-5}$	$8.5 \times 10^{-6}$
23	12/3/87	First Lift Middle of E. Slope at Sta. 4100+00, Acre 14 (Retested, see Test No. 28)	$3.5 \times 10^{-5*}$	-----

TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
24	12/3/87	First Lift Top of S. Slope at Sta. 3750+00, Acre 13 (Retested, see Test No. 26)	$2.5 \times 10^{-5}*$	-----
25	12/10/87	First Lift Bottom of E. Slope at Sta. 4350+00, Acre 15	$8.0 \times 10^{-6}$	$8.5 \times 10^{-6}$
26	12/17/87	First Lift Top of S. Slope at Sta. 3650+00, Acre 13	$8.9 \times 10^{-6}$	$8.5 \times 10^{-6}$
27	12/17/87	First Lift Phase One Top of Slope at Sta. 2550	$5.9 \times 10^{-6}$	$8.4 \times 10^{-6}$
28	12/17/87	First Lift Middle of E. Slope at Sta. 4000+00, Acre 14	$1.3 \times 10^{-5}$	$8.6 \times 10^{-6}$
29	12/23/87	Second Lift Middle of E. Slope at Sta. 4775+00, Acre 16 (Retested, see Test No. 41)	$1.3 \times 10^{-5}*$	-----
30	12/23/87	First Lift Bottom of N. Slope at Sta. 5175+00, Acre 18	$1.5 \times 10^{-5}$	$8.9 \times 10^{-6}$
31	12/23/87	First Lift Middle of E. Slope at Sta. 4950+00, Acre 17	$3.5 \times 10^{-6}$	$8.7 \times 10^{-6}$

TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
32	12/23/87	First Lift Bottom of N. Slope at Sta. 5850+00, Acre 20	$7.3 \times 10^{-6}$	$8.6 \times 10^{-6}$
33	12/23/87	First Lift Middle of N. Slope at Sta. 5675+00, Acre 19	$9.1 \times 10^{-6}$	$8.6 \times 10^{-6}$
34	1/18/87	First Lift Top of S. Slope at Sta. 3200+00, Acre 11	$1.2 \times 10^{-5}$	$8.7 \times 10^{-6}$
35	1/18/87	First Lift Bottom of N. Slope at Sta. 6100+00, Acre 21	$1.2 \times 10^{-5}$	$8.9 \times 10^{-6}$
36	3/25/87	Second Lift Middle of S. Slope at Sta. 3100+00, Acre 11 (Retested, see Test No. 37)	$1.1 \times 10^{-5*}$	-----
37	4/21/88	Second Lift Top of S. Slope at Sta. 3150+00, Acre 11	$7.9 \times 10^{-7}$	$8.6 \times 10^{-6}$
38	4/21/88	Second Lift Middle of E. Slope at Sta. 4050+00, Acre 14	$9.2 \times 10^{-6}$	$8.6 \times 10^{-6}$
39	4/21/88	Second Lift Bottom of S. Slope at Sta. 3800+00, Acre 13	$6.6 \times 10^{-6}$	$8.5 \times 10^{-6}$

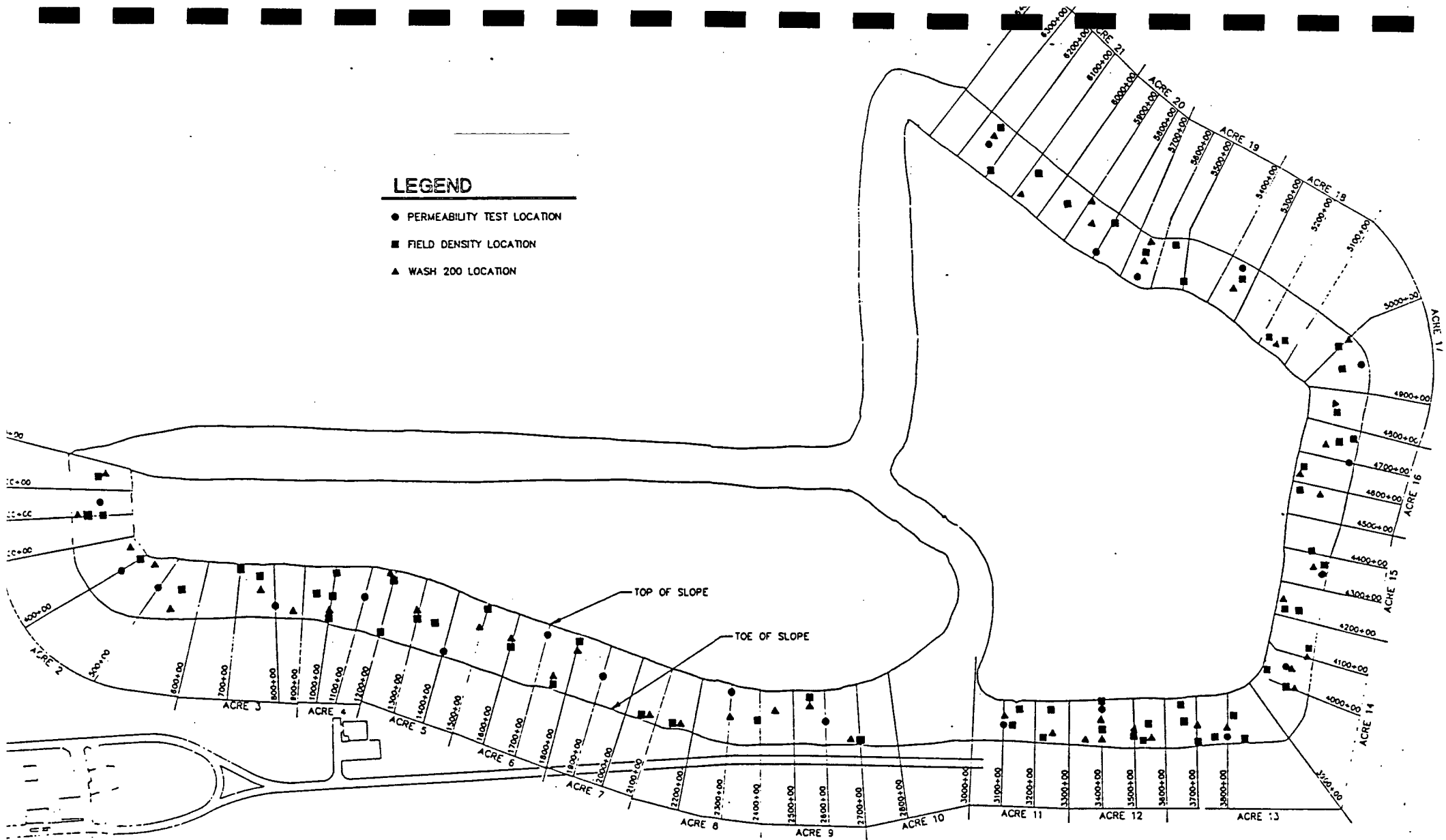
TEST NO.	DATE SAMPLED	LOCATION	PERMEABILITY TEST RESULT (CM/SEC)	AVERAGE (CM/SEC)
40	4/21/88	Second Lift Bottom of E. Slope at Sta. 4350+00, Acre 15	$5.3 \times 10^{-6}$	$8.4 \times 10^{-6}$
41	5/4/88	Second Lift Bottom of E. Slope at Sta. 4700+00, Acre 16	$1.3 \times 10^{-5}$	$8.6 \times 10^{-6}$
42	5/4/88	Second Lift Bottom of E. Slope at Sta. 4950+00, Acre 17	$7.5 \times 10^{-6}$	$8.5 \times 10^{-6}$
43	5/4/88	Second Lift Bottom of N. Slope at Sta. 5350+00, Acre 18	$5.4 \times 10^{-6}$	$8.5 \times 10^{-6}$
44	5/4/88	Second Lift Top of N. Slope at Sta. 5650+00, Acre 19	$2.2 \times 10^{-6}$	$8.3 \times 10^{-6}$
45	5/4/88	Second Lift Top of N. Slope at Sta. 5800+00, Acre 20	$3.7 \times 10^{-6}$	$8.2 \times 10^{-6}$
46	5/6/88	Second Lift Top of S. Slope at Sta. 3400+00, Acre 12	$1.1 \times 10^{-5}$	$8.2 \times 10^{-6}$
47	5/6/88	Second Lift Middle of N. Slope at Sta. 6250+00, Acre 21	$9.1 \times 10^{-6}$	$8.3 \times 10^{-6}$

\* Test result not included in average. Acre represented by this test was recompact and retested.

# **DRAWINGS**

# LEGEND

- PERMEABILITY TEST LOCATION
- FIELD DENSITY LOCATION
- ▲ WASH 200 LOCATION



## SITE PLAN

SCALE: 1"=200'

TEST LOCATION PLAN - 2nd LIFT  
SOUTHEAST LANDFILL  
LITHIA, FLORIDA

LAW ENGINEERING PROJECT NO. TM-1103

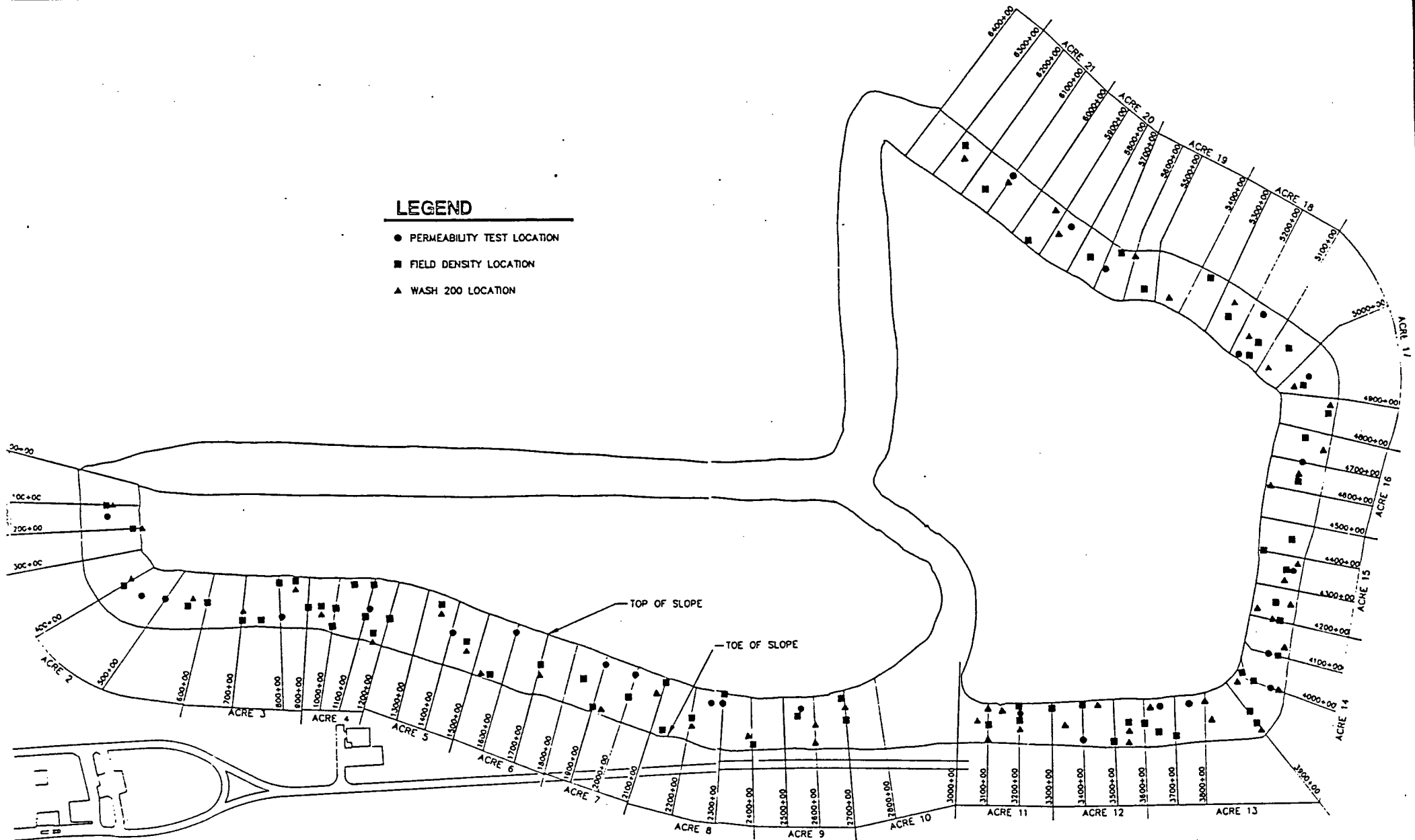
Drawn: STB, 8/24/88 | Checked: BDA

**LAW ENGINEERING**  
TAMPA, FLORIDA

2 OF 2

# LEGEND

- PERMEABILITY TEST LOCATION
- FIELD DENSITY LOCATION
- ▲ WASH 200 LOCATION



SITE PLAN

SCALE: 1"=200'

TEST LOCATION PLAN - 1st LIFT  
SOUTHEAST LANDFILL  
LITHIA, FLORIDA

LAW ENGINEERING PROJECT NO. TM-11634  
Drawn: STB, 8/24/88 | Checked: BDH

LAW ENGINEERING  
TAMPA, FLORIDA

# APPENDIX F





FISCAL MONTH 05

AS OF 02/17/89

PROJECT 032019 SOUTHEAST LANDFILL CLOSURE FINANCIAL DER AC CHAP 17-7.076  
FUND 40 ENTERPRISE FUNDSENTITLEMENT PERIOD 09/01/86 TO 00/00/00  
PORTION EXPIRED .0 %  
STATUS OPEN

ORGANIZATION/ PSEUDO DESCRIPTION	% OF BUDGET	CURRENT YR APPROPRIATIONS	** REVENUES / EXPENSES ** CURR MONTH CURR Y-T-D	OUTSTANDING ENCUMBRANCE	REMAINING BALANCE
REVENUES * * * *					
11-11-11 REVENUE & OTHER RECEIPTS					
021428 (019) INTEREST INCL PROFIT ON INVEST	35.0	3,500.00	.00 1,227.57	.00	2,272.43
021436 (019) INTEREST EARNINGS STATE BD ADM	92.6	8,500.00	.00 7,875.20	.00	624.80
072868 (019) FUND BAL BEGIN OF YEAR	99.9	378,878.00	.00 378,877.17	.00	.83
103325 (019) TRANSFER FR SWD/RR O&M FD032000	0.0	235,000.00	.00 .00	.00	235,000.00
ORGANIZATION 11-11-11		625,878.00	387,979.94		237,898.06
	0.0		.00	.00	
TOTAL REVENUES		625,878.00	.00 387,979.94	.00	237,898.06
EXPENDITURES * * * *					
90-91-92 RESERVES & REFUNDS					
794941 (019) RESERVE FOR CONT - GENERAL	0.0	625,878.00	.00 .00	.00	625,878.00
ORGANIZATION 90-91-92		625,878.00	.00 .00	.00	625,878.00
	0.0		.00	.00	
TOTAL EXPENDITURES		625,878.00	.00 .00	.00	625,878.00
RECAP: REVENUES LESS EXPENDITURES		.00	.00 387,979.94		