OGDEN MARTIN SYSTEMS OF LEE, INC.

40 LANE ROAD
P.O. BOX 2615
FAIRFIELD, NJ 07007-2615
(201) 882-9000

RECEIVED
JAN 04 1993
S.F.W.M.D. SOUTH DISTRICT

VIA FIRST CLASS MAIL

December 31, 1992

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33416-4680

Attention: Ms. Susan M. Coughanour, Senior Review Coordinator

Florida Department of Environmental Regulation
2295 Victoria Avenue, Suite 364
Ft. Myers, Florida 33901

Attention: Mr. Philip Barbaccia

Reference: **LEE COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY**
Ft. Myers, Florida
Power Plant Site Certification, Case No. 90-3942EPP

Subject: **Updated Plans**

Dear Susan and Philip:

On August 25, 1992 Ogden Martin systems of Lee, Inc. (OMSL) on behalf of Lee County, the Permittee of the above referenced Certification, submitted surface water management system construction plans and dewatering plans pursuant to the Certification. Such plans were subsequently approved by your offices.

This letter provides two sealed sets of the same previously submitted plans and calculations updated to reflect the current development of the overall Facility design. You will note that the revisions made are clearly called out, are minor, and have no significant effect on the stormwater management or dewatering plans approved. The purpose of this transmittal is to keep your records current and consistent with documents in the field.

Please also note that, under separate cover dated December 30, 1992, Malcolm Pirnie has provided a report to the SFWMD that supplements the plans and provides detention ponds for handling groundwater discharges during the dewatering operations. This item was previously discussed with the SFWMD staff in Ft. Myers on December 23, 1992.

pacheco/393

Entered into
OCULUS
South District

Do not hesitate to call me at (201) 882-7246 if you have any questions or further needs. We invite you and your staff to visit/inspect the construction site at any time. Rough grading is very active and dewatering for our refuse pit excavation is expected to be underway the first of the year.

Very truly yours,

L. Peter Young
Assistant V.P. - Project Management

LPY:lap

cc: C. Meridan - Ft. Myers SFWMD (w/1 set)
L. Sampson - Lee County (w/1 set)
D. Cerrato - Malcolm Pirnie (w/1 set)
D. Markley - Malcolm Pirnie (w/1 set)
L. Ware - UE&C
pf 5.1 SFWMD
Chrono

Enclosures:
- Storm/surface water management calculations: 7102-C-SWM-001, Rev. 2, dated 11/12/92.
- Civil Plot Plan: 7102-E-110000, Rev. 4, dated 11/6/92.
- Dewatering Plan, Sections & Details: 7102-E-110001, Rev. 4, dated 11/6/92.
- Sedimentation & Erosion Control Plan: 7102-E-110002, Rev. 4, dated 11/6/92.
- Misc. Details Sheet 1: 7102-E-110003, Rev. 4, dated 11/6/92.

pacheco/393

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY GROUNDWATER MONITORING WELL COMPLETION REPORT

Power Plant Siting Act Permit Application PA 90-30
Lee County, Florida

January, 1993

Project 1971-011-130

MALCOLM PIRNIE

ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

INTRODUCTION

In accordance with the provisions of the Conditions of Certification, a groundwater monitoring network consisting of 12 monitoring wells was installed at the site of the Lee County Solid Waste Resource Recovery Facility. These wells were installed in six nests of two wells each. Each well nest consists of a shallow well (designated with an "S") screened in the water table aquifer (Surficial Aquifer System) and a deep well (designated with a "D") screened in the sandstone aquifer (Intermediate Aquifer System).

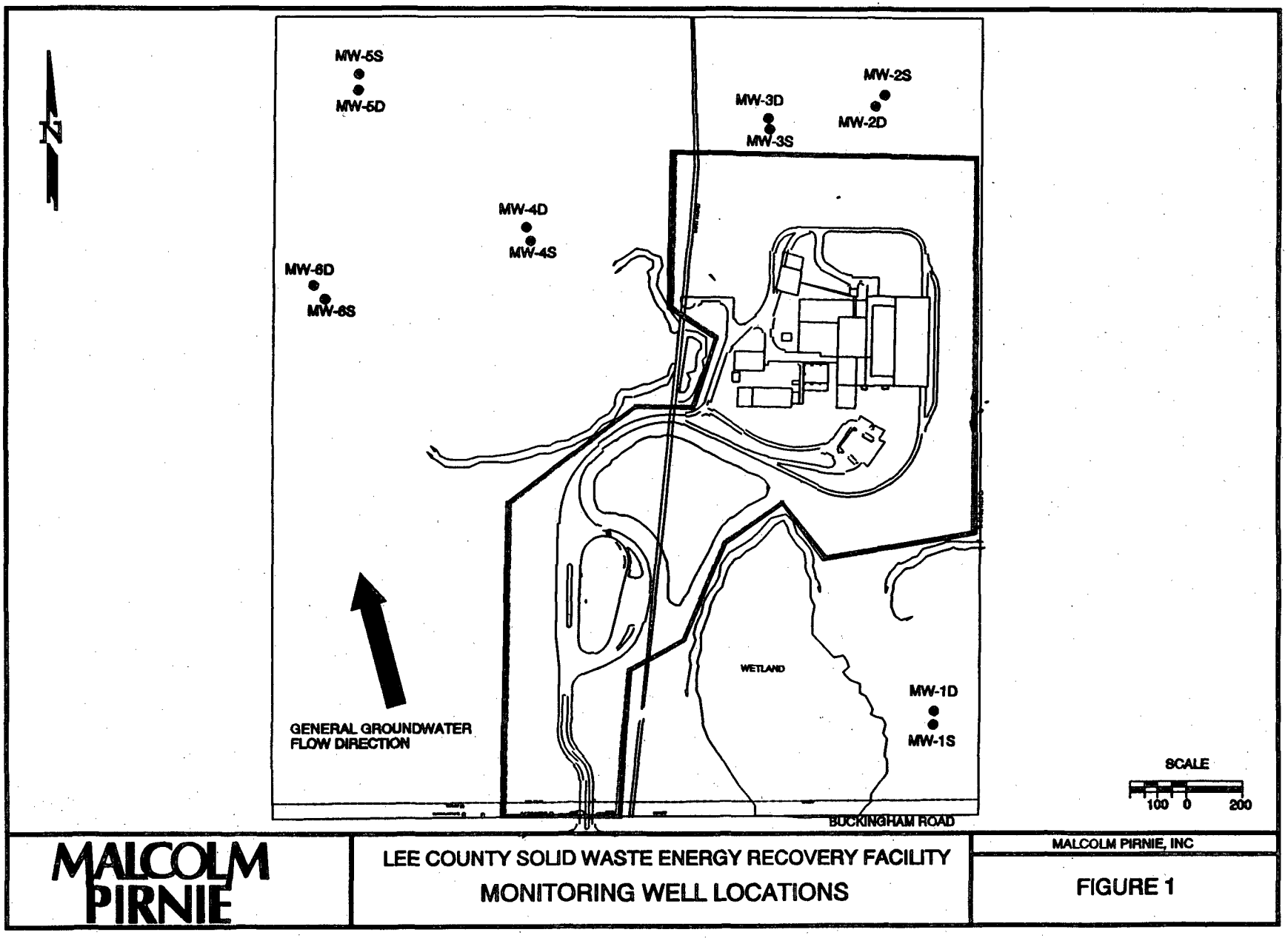
One well nest was located upgradient of the site facility boundary. Because the natural hydraulic gradient at the site is generally toward the north, well nest MW-1 was located south of the facility. The remaining five well clusters, MW-2 through MW-6, were located to the north and west of the facility. Three of the shallow monitoring wells (MW-1S, MW-3S and MW-4S) were installed in September 1992. The remaining three shallow wells and the six deep wells were installed in November 1992. These monitoring wells will serve as a permanent groundwater monitoring network for the facility.

The following information has been compiled for each of the monitoring wells installed on the site:

- Well Identification
- Well Northing and Easting
- Aquifer Monitored
- Elevation at Top of Pipe
- Elevation at Land Surface
- Casing Diameter
- Casing Type and Length
- Total Well Depth
- Screen Type and Slot Size
- Elevation of Top and Bottom of Screen

Well locations are represented as northings and eastings, as surveyed by the engineers of Ink Engineering, North Ft. Myers, FL. A site map illustrating the locations of the monitoring wells is also included (see Figure 1). All monitoring wells were constructed under Lee County Monitoring well permit numbers MW 1552 and MW 1553.

In addition to the above information, the driller's log of each borehole is included, except for wells MW-1S, MW-3S and MW-4S; these wells were not logged by the driller. However, because these wells were immediately adjacent to the deep members of these well clusters, the drillers logs for the deep wells should provide adequate characterization of the stratigraphy at this site.



MALCOLM PIRNIE

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY

MONITORING WELL LOCATIONS

MALCOLM PIRNIE, INC

FIGURE 1

Well Identification: MW-1S
Northing: 8742.37 **Easting:** 10510.43
Aquifer Monitored: Surficial (Water Table)
Elevation at Top of Pipe: 21.91 ft.
Elevation at Land Surface: 21.2 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 14.3 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: 11.9 ft.
Bottom: 6.9 ft.

Well Identification: MW-1D
Northing: 8746.32 **Easting:** 10502.54
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 22.96 ft.
Elevation at Land Surface: 21.1 ft.
Casing Diameter: 4 in. inside 8 in. outer casing
Casing Type and Length: 35 ft. PVC Schedule 40, 8 in.
83 ft. plus 2 ft. stick-up, PVC Schedule 40, 4 in., threaded
Total Well Depth: 93 ft.
Screen Type and Slot Size: 4 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: -62 ft.
Bottom: -72 ft.

Well Identification: MW-2S
Northing: 10885.57 **Easting:** 10444.67
Aquifer Monitored: Surficial (Water Table)
Elevation at Top of Pipe: 24.18 ft.
Elevation at Land Surface: 21.2 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 12.0 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: 14.2 ft.
Bottom: 9.2 ft.

Well Identification: MW-2D
Northing: 10877.66 **Easting:** 10431.45
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 23.52 ft.
Elevation at Land Surface: 21.0 ft.
Casing Diameter: 4 in. inside 8 in. outer casing
Casing Type and Length: 81 ft. PVC Schedule 40, 8 in.
84 ft. plus 2.6 ft. stick-up, PVC Schedule 40, 4 in., threaded
Total Well Depth: 14.3 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: -63 ft.
Bottom: -73 ft.

Well Identification: MW-3S
Northing: 10749.55 **Easting:** 9907.34
Aquifer Monitored: Surficial (Water Table);
Elevation at Top of Pipe: 23.15 ft.
Elevation at Land Surface: 21.3 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 13.1 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: 13.1 ft.
Bottom: 8.1 ft.

Well Identification: MW-3D
Northing: 10760.19 **Easting:** 9905.72
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 23.90 ft.
Elevation at Land Surface: 21.2 ft.
Casing Diameter: 4 inch inside 8 inch outer casing (partial)
Casing Type and Length: 80 ft. PVC Schedule 40, 8 in.
82 ft. plus 2.7 ft. stick-up PVC Schedule 40, 4 in., threaded
Total Well Depth: 92 ft.
Screen Type and Slot Size: 4 in. PVC, Schedule 40, 0.010 in. slot, threaded
Elevation at top and bottom of screen: Top: -61 ft.
Bottom: -71 ft.

Well Identification: MW-4S
Northing: 10389.31 **Easting:** 9113.44
Aquifer Monitored: Surficial (Water Table);
Elevation at Top of Pipe: 22.48 ft.
Elevation at Land Surface: 20.9 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 13.4 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: 12.5 ft.
Bottom: 7.5 ft.

Well Identification: MW-4D
Northing: 10397.85 **Easting:** 9108.26
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 23.81 ft.
Elevation at Land Surface: 20.9 ft.
Casing Diameter: 4 in. inside 8 in. outer casing (partial)
Casing Type and Length: 82 ft. PVC Schedule 40, 8 inch
86 ft. plus 2.9 ft. stick-up, PVC Schedule 40, 4 in., threaded
Total Well Depth: 96 ft.
Screen Type and Slot Size: 4 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: -65 ft.
Bottom: -75 ft.

Well Identification: MW-5S
Northing: 10896.92 **Easting:** 8399.51
Aquifer Monitored: Surficial (Water Table)
Elevation at Top of Pipe: 23.81 ft.
Elevation at Land Surface: 20.9 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 12.1 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot
Elevation at top and bottom of screen: Top: 10.9 ft.
Bottom: 5.9 ft.

Well Identification: MW-5D
Northing: 10880.87 **Easting:** 8408.35
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 24.50 ft.
Elevation at Land Surface: 21.2 ft.
Casing Diameter: 4 in. inside 8 in. outer casing (partial)
Casing Type and Length: 81 ft. PVC Schedule 40, 8 in., threaded
84 ft. plus 3.3 ft. stick-up, PVC Schedule 40, 4 in., threaded
Total Well Depth: 94 ft.
Screen Type and Slot Size: 4 in. PVC, Schedule 40, 0.010 in. slot, threaded
Elevation at top and bottom of screen: Top: -63 ft.
Bottom: -73 ft.

Well Identification: MW-6S
Northing: 10261.19 **Easting:** 8435.74
Aquifer Monitored: Surficial (Water Table)
Elevation at Top of Pipe: 23.66 ft.
Elevation at Land Surface: 20.9 ft.
Casing Diameter: 2 inch
Casing Type and Length: 10 ft. PVC Schedule 40, threaded
Total Well Depth: 12.2 ft.
Screen Type and Slot Size: 2 in. PVC, Schedule 40, 0.010 in. slot, threaded
Elevation at top and bottom of screen: Top: 13.7 ft.
Bottom: 8.7 ft.

Well Identification: MW-6D
Northing: 10259.89 **Easting:** 8423.76
Aquifer Monitored: Sandstone (Intermediate)
Elevation at Top of Pipe: 22.91 ft.
Elevation at Land Surface: 20.8 ft.
Casing Diameter: 4 in. inside 8 in. outer casing (partial)
Casing Type and Length: 82 ft. PVC. Schedule 40, 8 in.
86 ft. plus 2.1 ft. stick-up PVC schedule 40, 4 in., threaded
Total Well Depth: 96 ft.
Screen Type and Slot Size: 4 in. PVC, Schedule 40, 0.010 in. slot, threaded
Elevation at top and bottom of screen: Top: -65 ft.
Bottom: -75 ft.

DRILLER'S BORING LOGS

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" MW Sheet No. 1 of 14 Boring No.: MW-1-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
5'	4/3	GRAY SAND WITH SHELL		SW
10'	6/6			
15'	4/5 4/4	GRAY MARL / SOME ROCK		ML - LR
20'	1/1 0/1	WHITE SILT/ TRACE OF ROCKS		SM-LR
25'	3/2 2/8	WHITE SILT; SOME SHELL & ROCK		SM-LR
30'	2/1 1/1	LIGHT GRAY SILT;SHELL & PHOSPHATE		SM
35'	4/4 3/4	GREEN CLAY		CL
40'	3/4 15/9	GREEN CLAY;TRACE OF LIMEROCK		CL-LR
45'	2/2 2/2	GREEN CLAYEY SAND		SC

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

January 19, 1993

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33416-4680
Attention: Ms. Susan Coughanour

Florida Department of Environmental Regulation
2295 Victoria Avenue
Suite 364
Ft. Myers, FL 33901
Attention: Mr. Jeff Gould

Re: Lee County Solid Waste Energy Recovery Facility
Groundwater Monitoring Well Completion Report

Dear Sir/Madam:

Enclosed please find two copies each of the above referenced report being submitted pursuant to XIV.D.3 of the Conditions of Certification, Case Number PA 90-30, for the Lee County Solid Waste Energy Recovery Facility. This report provides well completion and construction information for monitoring wells installed as part of the Groundwater and Surface Water Monitoring Plan.

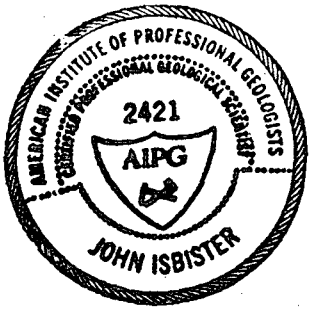
Please note that a certified Specific Purpose Survey showing the well locations will be submitted under seperate cover. If you have any questions, please do not hesitate to call.

Very truly yours,

MALCOLM PIRNIE, INC.

John Isbister

John Isbister, CPG
Vice President



c. L. Sampson, Lee Co.
M. Kincaid, SFWMD
D. Markley, MPI
D. Cerrato, MPI
P. Young, OMS
L. Ware, UEC

RECEIVED
JAN 20 1993
S.F.R. SOUTH DISTRICT

1 INTERNATIONAL BOULEVARD MAHWAH, NJ 07495-0018 201-529-4700 FAX 201-529-1415

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE,INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" MW Sheet No. 2 of 14 Boring No.: MW-1-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No.

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
50'	2/2 2/4	GREEN CLAY		CL
55'	3/3 2/2			
60'	2/4 4/4			
65'	2/2 2/4	GREEN CLAYEY SAND		SC
70'	3/4 4/7			
75'	2/2 3/3			
80'	6/12 18/8			
85'	50/22 12/28	LIME ROCK		LR
90'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 2 " MW Sheet No. 3 of 14 Boring No.: MW 2-S W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
2'		GRAY SAND		SW
4'		TAN SAND		SW
6'				
8'		GRAY SAND;TRACE OF ROCK		SW-LR
10'		GRAY SAND & SHELL		SW
12'				
14'		GRAY SILTY SAND & SHELL		SM
16'		BORING TERMINATED @ 15'		
18				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE,INC. Client No: 1080 Date: 11-11-92- 11-20-

Boring/Type: 8" DOUBLE CASE Sheet No. 4 of 14 Boring No.: MW2-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
		GRAY SAND		SW
10'		GRAY SAND; TRACE OF ROCK		SW-LR
		GRAY SAND		SW
20'				
30'		GRAY SAND;SOME SHELL		SW
		GRAY SAND; SOME CLAY		SW-CL
40'				
50'				
60'		GREEN CLAYEY SAND		SC
70'				
80'		GREEN CLAYEY SAND;SOME ROCK		SC-LR
90'		LIME-ROCK		LR
		BORING TERMINATED @ 95'		
100'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MONITORING WELL CERTIFIED CONSTRUCTION

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" DOUBLE CASE Sheet No. 5 of 14 Boring No.: MW-3D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
5'		GRAY SAND		SW
10'		TAN SAND		SW
15'		GRAY SAND & SOME SHELL		SW
20'				
25'				
30'	3/4 3/3	GRAY SILTY SAND& SOME PHOSPHATE		SM
35'	5/5 6/5	GRAY SAND & PHOSPHATE		SW
40'	4/5 8/7			
45'	3/7 12/18	GRAY SAND		SW

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20-

Boring/Type: 8"DOUBLE CASE Sheet No. 6 of 14 Boring No.: MW-3-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No.

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
50'	1/3 3/3			
55'				
60'		GRAY SAND (cont'd)		
65'	1/2 4/4			
70'				
75'	1/3 5/7	GREEN SAND		SW
80'	8/15 16/15	GREEN SAND & LIMEROCK		SW-LR
85'	40/7 11/29	LIMEROCK		LR
90'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" DOUBLE CASE Sheet No. 7 of 14 Boring No.: MW-4-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
5'		GRAY SAND		SW
10'		TAN SAND		SW
15'	3/4 5/9	GRAY SAND & SOME SHELL		SW
20'	4/4 3/4	GRAY MARL		ML
25'	5/5 6/3			
30'	3/6 9/9			
35'	4/8 12/11	GRAY SAND/TRACE OF PHOSPHATE		SW
40'				
45'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE,INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" DOUBLE CASE Sheet No. 8 of 14 Boring No.: MW-4-D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
50'				
55'				
60'		GRAY SAND/TRACE OF PHOSPHATE (cont'd)		SW
65'				
70'				
75'				
80'	11/28 22/18			
85'	9/16 22/24	BORING TERMINATED @ 82'		
90'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20-

Boring/Type: 2" MW Sheet No. 9 of 14 Boring No.: MW5+S W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
2'				
4'				
6'		TAN SAND		SW
8'				
10'				
12'		MARL & GRAVEL		ML
14'				
16'		BORING TERMINATED @ 15'		
18'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20-

Boring/Type: 8" DOUBLE CASE Sheet No. 10 of 14 Boring No.: MW-5D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
5'		GRAY SAND		SW
		TAN SAND		SW
10'	Spoon Sample			
15'		GRAY SAND & SHELL		SW
	Spoon Sample			
20'		MARL		ML
	Spoon Sample			
25'		GRAY SAND/SHELL & ROCK		SW-LR
	Spoon Sample			
30'		GRAY SAND		SW
	Spoon Sample			
35'				
	Spoon Sample			
40'				
	Spoon Sample			
45'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MONITORING WELL CERTIFIED CONSTRUCTION

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8" DOUBLE CASE Sheet No. 11 of 14 Boring No.: MW-5D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
50'				
	Split Sample			
55'		GRAY SAND (cont'd)		SW
60'				
65'		GREEN CLAYEY SAND		SC
70'				
75'				
80'				
85'		LIMEROCK		LR
90'				
95'		BORING TERMINATED @ 94'		

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MONITORING WELL CERTIFIED CONSTRUCTION

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 2" MW Sheet No. 12 of 14 Boring No.: MW-6S W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
2'		GRAY SAND		SW
4'				
6'		TAN SAND		SW
8'		GRAY SAND & SHELL		SW
10'				
12'				
14'		GRAY SILTY SAND & SHELL		SM
16'		BORING TERMINATED @15'		
18'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MONITORING WELL CERTIFIED CONSTRUCTION

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8"DOUBLE CASE Sheet No. 13 of 14 Boring No.: MW-6D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
5'				
10'		MARL & SHELL		ML
15'	16/9 12/7			
20'	3/3 1/1			
25'	2/5 7/9			
30'		GRAY SAND		SW
35'				
40'				
45'		GRAY CLAYEY SAND		SC

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

SFTD INC.

Project: LEE COUNTY ENERGY RECOVERY FACILITY Job No. S-2155

Project Location: STATE ROAD #82 & BUCKINGHAM ROAD, EAST FT.MYERS, FL.

Client: MALCOLM-PIRNIE, INC. Client No: 1080 Date: 11-11-92- 11-20

Boring/Type: 8"DOUBLE CASE Sheet No. 14 of 14 Boring No.: MW-6D W.T. Depth: N/A

Client Project No. 1971-011 Client Purchase Order No. _____

BORING LOG

Depth	Blows	Soil Description	Log	Unified Classification
50'				
55'				
60'		GRAY CLAYEY SAND(cont'd)		SC
65'				
70'				
75'		GRAY CLAYEY SAND & ROCK		SC-LR
80'		LIMEROCK		LR
85'		BORING TERMINATED @ 82'		
90'				

South Florida Testing & Drilling Inc.
Environmental/Geotechnical Drilling & Testing
P.O. Box 567 • Lehigh Acres, Florida 33970-0567

MONITORING WELL CERTIFIED CONSTRUCTION

FORM 5610 REV. 4/91

United Engineers & Constructors
A Raytheon Company

CALCULATION SUMMARY & CONTROL SHEET
Page 1 of 2

CALCULATION SET NO. 7102-C-SWM-001

PRELIM.	FINAL	VOID	REVISION
X			X 2 ⚠2

DISCIPLINE CIVIL

J.O. 7102.001

PROJECT TITLE LEE COUNTY FACILITY

RECEIVED
JAN 04 1993
S.F.W.M.D. SOUTH DISTRICT

STRUCTURE OF SYSTEM SITE-WIDE DESIGN CLASSIFICATION N/A

SUBJECT STORM/SURFACE WATER MANAGEMENT

COMPLETED BY CARMEN D'ANGELO DATE 7/29/92

CHECKED BY Gleone Trevelyan DATE 7/31/92

APPROVED BY _____ DATE _____
SDE OR MGR OF STAFF GROUP

REASON FOR REVISION: ORIGINAL ISSUE, REV. 0:
⚠1 REV. 1 - CHANGED CONTROL ELEVATION TO ELEVATION 21.40' NGVD & TOP OF BERM ELEVATION TO 24.00' NGVD. ADDED BASIN 1 25-YEAR, 5-DAY STORM ROUTING SHEETS. SEE ATTACHMENT D FOR NEW CONTROL ELEVATION VERIFICATION. ⚠2 CHANGE FLOOR EL. TO 24.26 NGVD.

TOTAL NUMBER OF SHEETS IN THIS ISSUE 35 ✓

SHEETS REVISED, ADDED OR DELETED 4, REV. ⚠2

PROBLEM STATEMENT: DETERMINE A SPECIFIC DESIGN FOR STORM/SURFACE WATER MANAGEMENT IN ACCORDANCE WITH STATE OF FLORIDA SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) REGULATIONS, LEE COUNTY/OGDEN MARTIN CRITERIA & SITE SPECIFIC DESIGN REQUIREMENTS OF SITE CERTIFICATION APPLICATION (CASE No. 90-3942 EPP). A PORTION OF THIS PROJECT SITE IS PROPOSED FOR WET DETENTION (BASIN 1) & ANOTHER PORTION WET RETENTION (BASIN 2)

SUMMARY/CONCLUSIONS: SECTION A OF ATTACHED SHEETS GIVES SITE DATA & DESIGN CRITERIA, SECTION B CONSISTS OF COMPUTATIONS FOR A DETENTION SYSTEM (BASIN 1) & A TOTAL RETENTION SYSTEM (BASIN 2) AND ATTACHMENTS A, B & C GIVE THE 10, 25 & 100-YEAR ROUTING RESULTS FOR EACH BASIN & STAGE-DISCHARGE RELATIONSHIPS. THE FOLLOWING TABLE SUMMARIZES THE ROUTING:

	BASIN 1		BASIN 2	
STORM EVENT	STAGE*	DISCHARGE	STAGE*	DISCHARGE
10-YEAR	23.31'	0.31 CFS	23.31'	0 CFS
⚠1 25-YEAR	23.92'	0.36 CFS	23.99'	0 CFS
100-YEAR	24.20'	1.30 CFS	24.26'	0 CFS**

* AS 1929 NGVD

** ADJACENT LANDS FLOODED

FORM 5610 REV. 4/91

CALCULATION SUMMARY
& CONTROL SHEET
Page 2 of 2

CALCULATION SET NO. 7102-C-SWM-001

PRELIM.	FINAL	VOID	REVISION
×			1

DISCIPLINE CIVIL

J.O. 7102.001

PROJECT TITLE LEE COUNTY FACILITY

DESIGN BASIS: PER SFWMD REGULATIONS, MINIMUM DESIGN AS FOLLOWS: ROADS @ 10-YR., 24-HR. EVENT, DESIGN @ 25-YR, 72-HR. EVENT & FLOORS @ 100-YR., 72-HR. EVENT STORMS. ALLOWABLE DETENTION AREA (BASIN 1) DISCHARGE IS 37 CSM (CFS/SQ. MI. OF AREA) OR 1.83 CFS TO PROJECT SITE LOCATION JURISDICTIONAL WETLANDS. NO FLOWS FROM OR ONTO OFF-SITE AREAS ARE CONSIDERED. CONTROL ELEVATION IS 21.4' NGVD. QUALITY DESIGN CRITERIA IS THE GREATER OF FIRST INCH OF RUNOFF OR 2.5 INS. TIMES % IMPERVIOUSNESS. POND STORAGE BEGINS @ ELEV 21.4' NGVD # IS VERTICAL OVER SURFACE AREA. SITE STORAGE IS LINEAR STARTING @ ELEV 22.0' NGVD. PERIMETER GRADING INCLUDES AN EARTH BERM W/ TOP ELEV. 24.00' NGVD.

UNVERIFIED ASSUMPTIONS/OPEN ITEMS: NONE.

REFERENCES: (SPECIFICATIONS, DRAWINGS, CODES, CALCULATIONS, TEXTS, REPORTS, COMPUTER DATA, FSAR, ETC.)

DRAWINGS: VE&C # E110000 - CIVIL PLOT PLAN
AGNOLI, BARBER & # 2838 BOUNDARY SURVEY
BRUNDAGE # 2902 TOPOGRAPHIC SURVEY
INK ENGINEERING #9133 SITE SPECIFIC SURVEY - WETLANDS

Joseph M. Benenato 12/17/92

MANUAL: SFWMD, PERMIT INFORMATION MANUAL, V. IV

SITE CERTIFICATION DOCUMENT: CASE NO. 90-3942 EPP, STATE OF FLORIDA.

Joseph M. Benenato 045454 10/19/92

Joseph M. Benenato 045454 11/12/92 REVISION 2

FORM 5611

UNITED ENGINEERS AND CONSTRUCTORS
COMPUTER DISCLOSURE SHEET
DISCIPLINE CIVIL

CLIENT - OGDEN MARTIN / LEE COUNTY
DATE 7/29/92

PROJECT - LEE COUNTY FACILITY
JOB NO. 7102.001

CALC. SET 7102-C-SWM-001

PROGRAM(S) USED SCS REV. NO. / REV. DATE 5/8/84
STATUS PRELIM. ☒
FINAL ☐
VOID ☐

UE&C PREQUALIFICATION YES ☐
NO ☒ SFWMD APPROVED & DISTRIBUTED SCS PROGRAM

RUN NO.	DESCRIPTION
1	

ANALYSIS DESCRIPTION REVIEWER EDITION OF SFWMD SOILS CONSERVATION SERVICE (SCS) PROGRAM TO EXECUTE STORM/STAGE ROUTING CALCS.

THE ATTACHED COMPUTER OUTPUT HAS BEEN REVIEWED, THE INPUT DATA CHECKED,
AND THE RESULTS APPROVED FOR RELEASE, INPUT CRITERIA FOR THIS ANALYSIS WERE ESTABLISHED

BY C. D'ANGELO ON 7/29/92

RUN BY C. D'ANGELO CJD

CHECKED BY Eleonora Tronolone

APPROVED BY _____

REMARKS 1 REV. 1 TO CALCULATION SHEETS CHANGES COMPUTER STORM ROUTING PER CHANGE IN CONTROL ELEVATION.

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.	REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001	0	CJD DATE 7/17/92	I.M.T. DATE 7/31/92
PRELIM. X / FINAL / VOID			
SHEET 1 OF 22	1	CJD DATE 8/18/92	I.M.T DATE 8/25/92
J.O. 7102.001			

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

A. DESIGN NEW FACILITY FOR BOTH RETENTION AND DETENTION SYSTEMS AS INDICATED ON UE&C PLOT PLAN DRAWING #7012-E-110000, ⚠ REV. 0, DATED 8/24/92 AND THE FOLLOWING DATA:

1. SITE LOCATION: BUCKINGHAM ROAD NEAR STATE ROUTE 82, LEE COUNTY, FL, SECTION 24 IN TOWNSHIP 44 SOUTH, RANGE 25 EAST.

2. SITE ZONING: INDUSTRIAL PLANNED DEVELOPMENT (IPD)

3. SOILS & HIGH WATER TABLE: SURFICIAL STRATUM OF LOOSE FINE SANDS (SP) UNDERLAIN BY INTERMITTENT STRATUM OF CLAYEY SANDS (SC/SM) & SOME WEATHERED/FRACTURED LIMESTONE. SEASONAL HIGH GROUNDWATER LEVEL OCCURS DURING LATE SUMMER MONTHS & IS ABOUT 6 INS. ⚠ ABOVE EXISTING GROUND SURFACE. SEE CAMP, DRESSER & McKEE, INC. REPORT, "LEE COUNTY - APPLICATION FOR POWER PLANT CERTIFICATION."

4. TOTAL SITE, PARCELS: 324.45 ACRES PER BOUNDARY SURVEY BY AGNOLI, BARBER & ARUNDAGE, INC. DRAWING #2838 DATED

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.	REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001	0	CJD DATE 7/17/92	I.M.T. DATE 7/31/92
PRELIM. × / FINAL / VOID	1	CJD DATE 8/19/92	I.M.T DATE 8/25/92
SHEET 2 OF 22			
J.O. 7102.001			

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

MAY 31, 1990.

5. DEVELOPED AREAS: (46.4 ACS. TOTAL)

SURFACE	BASIN 1 (SOUTH)	BASIN 2 (NORTH)
a - IMPERVIOUS		
BUILDINGS (ROOF)	1.6	1.3
ROADS & PARKING	4.7	1.0
b. WATER MANAGEMENT AREA	4.3	2.3
△ C. PERVIOUS	21.0 (*)	10.2
TOTAL, ACS.	31.6	14.8

6. ALLOWABLE DISCHARGE: PROJECT IS SITUATED IN LEE COUNTY C-43 DRAINAGE BASIN WHERE THE SITE CERTIFICATION APPLICATION (AS CASE No. 90-3942 EPP) ESTABLISHES THE PEAK DISCHARGE (POST-DEVELOPMENT BASIS) AS NOT EXCEEDING 37 CSM (CFS/SQUARE MILE OF AREA) FOR THE 25-YEAR, 72-HOUR DESIGN STORM EVENT. SEE ATTACHMENTS 1 & 2 FOR SITE SPECIFIC DESIGN REQUIREMENTS LISTING ALLOWABLE DISCHARGE, AUTHORIZED DISCHARGE FACILITIES & RECEIVING WATER AS WELL

△ * INCLUDES 0.8 AC. ARCHITECTURAL POND

AS CONTROL ELEVATION. NO FLOWS FROM OR ONTO OFF-SITE AREAS ARE CONSIDERED FOR EVENTS UP TO 25-YEAR, 3-DAY DURATION.

7. WATER LEVEL ELEVATIONS:

1 - WET SEASON HIGH GROUNDWATER = EL. 21.4' NGVD (CONTROL ELEVATION)

1 - RECEIVING WATER ELEV.: 21.7' NGVD

8. DESIGN STORM RAINFALL AMOUNTS:

a. ROADS @ 10-YEAR, 24-HOUR EVENT[2] = 6.0" DEPTH

b. DESIGN @ 25-YEAR, 72-HOUR EVENT = 7.2" @ 24-HRS. × 1.359 = 9.8" DEPTH

c. FLOORS @ 100-YEAR, 72-HOUR EVENT = 9.0" @ 24-HRS. × 1.359 = 12.2" DEPTH

SEE ATTACHMENTS 3, 4 AND 5 FROM SFWMD MANUAL (VOL. IV) FOR 1-DAY RAINFALL (P_{24}) DATA.

9. DESIGN CRITERIA, QUALITY:

a. FOR WET DETENTION SYSTEM, THE GREATER OF FIRST INCH OF RUNOFF FROM DETENTION AREA OR THE AMOUNT OF 2.5 INCHES × PERCENTAGE IMPERVIOUSNESS.

b. FOR THE RETENTION SYSTEM, SAME AS a. ABOVE WITH 50% VOLUME REDUCTION.

10. DESIGN CRITERIA, QUANTITY:

a. ROADS - ℄'s NO LOWER THAN BUCKINGHAM RD.℄ EL. 23.8'NGVD.℄ MINIMUM 2-FEET ABOVE THE CONTROL ELEVATION (21.4'NGVD + 2.0' = EL. 23.4'NGVD MINIMUM), △1

b. FLOORS - FIRST FLOOR ELEVATION NO LOWER THAN EL. ~~25.0~~ 24.26' NGVD, ℄ BASED ON 100-YR. EVENT. △2

c. WET DETENTION DISCHARGE ALLOWABLE IS 37 CSM FOR A 25-YEAR, 72-HOUR STORM.

11. PRETREATMENT: PROVIDE 0.5 INCH PRETREATMENT FOR WET DETENTION AREA ONLY.

12. PROJECT SURFACE STORAGE:

a. POND STORAGE COMMENCES AT EL. 21.4' NGVD △1 WHICH IS THE CONTROL ELEVATION FOR EACH OF BASINS 1℄2, ℄ ENDS AT EL. 22.0' NGVD. △1

b. POND STORAGE IS VERTICAL OVER THE POND SURFACE AREA.

⚠ c. SITE STORAGE IS LINEAR STARTING AT EL 22.0' NGVD, WHICH ALLOWS FOR EMBANKMENTS IN VOLUME CALCULATIONS.

d. PERIMETER GRADING PROVIDES FOR THE CONSTRUCTION OF AN EARTHEN CONTAINMENT

⚠ BERM SYSTEM (WITH A TOP ELEVATION OF 24.0' NGVD, WHICH WILL BE HIGHER THAN THE PEAK STAGE OF THE 25-YEAR, 72-HOUR DESIGN STORM).

B. COMPUTATIONS FOR RETENTION & DETENTION SYSTEMS - BASINS 1 & 2

1. BASIN 2 - TOTAL RETENTION ON-SITE

a. QUALITY - FIRST INCH OF RUNOFF FROM THE DEVELOPED PROJECT:

$= (1")(1\text{ FT.}/12")(14.8\text{Ac.}) = 1.2$ AC-FT. FOR FIRST INCH OF RUNOFF

- 2.5" x PERCENTAGE IMPERVIOUSNESS:

= RETENTION AREA - (POND AREAS + ROOF AREAS)

= 14.8 ACS. - (2.3Ac. + 1.3Ac.)

= 11.2 Ac. FOR RETENTION AREA WATER QUALITY PERVIOUS/IMPERVIOUS

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001			0	CJD DATE 7/17/92	I.M.T DATE 7/31/92
PRELIM.	FINAL	VOID			
X					
SHEET 6 OF 22				DATE	DATE
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

- IMPERVIOUS AREA ONLY:

= (SITE AREA FOR WATER QUALITY PERVIOUS/IMPERVIOUS - PERVIOUS)

= 11.2 Ac. - 10.2 Ac.

= 1.0 AC. OF IMPERVIOUS AREA FOR WATER QUALITY PERVIOUS/IMPERVIOUS

- PERCENTAGE OF IMPERVIOUSNESS FOR WATER QUALITY:

= (1.0 Ac./11.2 Ac.) x 100% = 8.9%

- FOR 2.5" x THE PERCENTAGE IMPERVIOUS

= (2.5")(8.9%) = 0.2" TO BE TREATED

- VOLUME REQUIRED FOR QUALITY DETENTION:

= 0.2" (14.8 Ac. - 2.3 Ac.)(1'/12")

= 0.2 AC.-FT. REQUIRED STORAGE

- FIRST INCH OF RUNOFF CONTROLS = 1.2 Ac.-Ft. (> 0.2 AC-FT. FOR QUALITY STORAGE)

- USE 50% VOLUME REDUCTION FOR A RETENTION SYSTEM:

REQUIRED STORAGE = (1.2 Ac.-Ft.) $\frac{1}{2}$ = 0.6 AC-FT.

- REQUIRED POND VOLUME = TOTAL REQUIRED STORAGE - PRETREATMENT

= 0.6 AC-FT. - 0 = 0.6 AC-FT.

b. FIND RUNOFF VOLUME FOR 25- & 100-YEAR STORM EVENTS IN RETENTION SYSTEM AREA:

1. COMPUTE DEPTH TO WATER TABLE = AVERAGE FINISHED SITE GRADE ELEVATION - WET SEASON WATER TABLE ELEVATION

⚠ (23.5' NGVD - 21.4' NGVD) ≅ 2 FT.

2. USE 25% REDUCTION DUE TO SOIL COMPACTION DURING SITE DEVELOPMENT:

- FROM ATTACHMENT 6, DEVELOPED AVAILABLE STORAGE IS 1.88".

3. COMPUTE S, SITE SOIL MOISTURE STORAGE:

= (PERVIOUS ACRES/TOTAL SITE ACRES) x SOIL STORAGE UNDER PERVIOUS AREAS

(10.2 ACS./14.8 ACS)(1.88") = 1.3" = S

4. FIND MAXIMUM POSSIBLE STAGE AS ZERO DISCHARGE DURING A 25-YEAR, 72-HOUR & 100-YEAR, 72-HOUR EVENTS:

$$Q_{25} = (P - 0.25)^2 / (P + 0.85)$$

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001			0	CJD DATE 7/20/92	I.M.T DATE 7/31/92
PRELIM.	FINAL	VOID			
X					
SHEET 8 OF 22			1	CJD DATE 8/18/92	I.M.T DATE 8/25/92
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

$$Q_{25} = (9.8" - 0.2(1.3"))^2 / (9.8" + 0.8(1.3"))$$

Q_{25} = 8.4" RUNOFF

VOLUME = 8.4" (14.8 Ac.)(1 FT./12")

= 10.4 AC.-FT. OF RUNOFF @ 25-YEAR EVENT

$$Q_{100} = (P - 0.2S)^2 / (P + 0.8S)$$

$$Q_{100} = (12.2" - 0.2(1.3"))^2 / (12.2" + 0.8(1.3"))$$

Q_{100} = 10.8" RUNOFF

VOLUME = 10.8" (14.8 AC.)(1 FT./12")

= 13.3 AC.-FT. OF RUNOFF @ 100-YEAR EVENT

5. DEVELOP RETENTION AREA STAGE-STORAGE CURVE:

STAGE (FT. NGVD)	BASIN 2 PONDS (AC.-FT.)	BASIN 2 SITE (AC.-FT.)	TOTAL (AC.-FT.)
21.4	0	0	0
22	2.3 x 0.6' = 1.4	0	1.4
23		2.3*	3.7
24		9.0*	10.4
25	2.3 x 0.6' = 1.4	20.3*	21.7

* SEE SH. 10

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

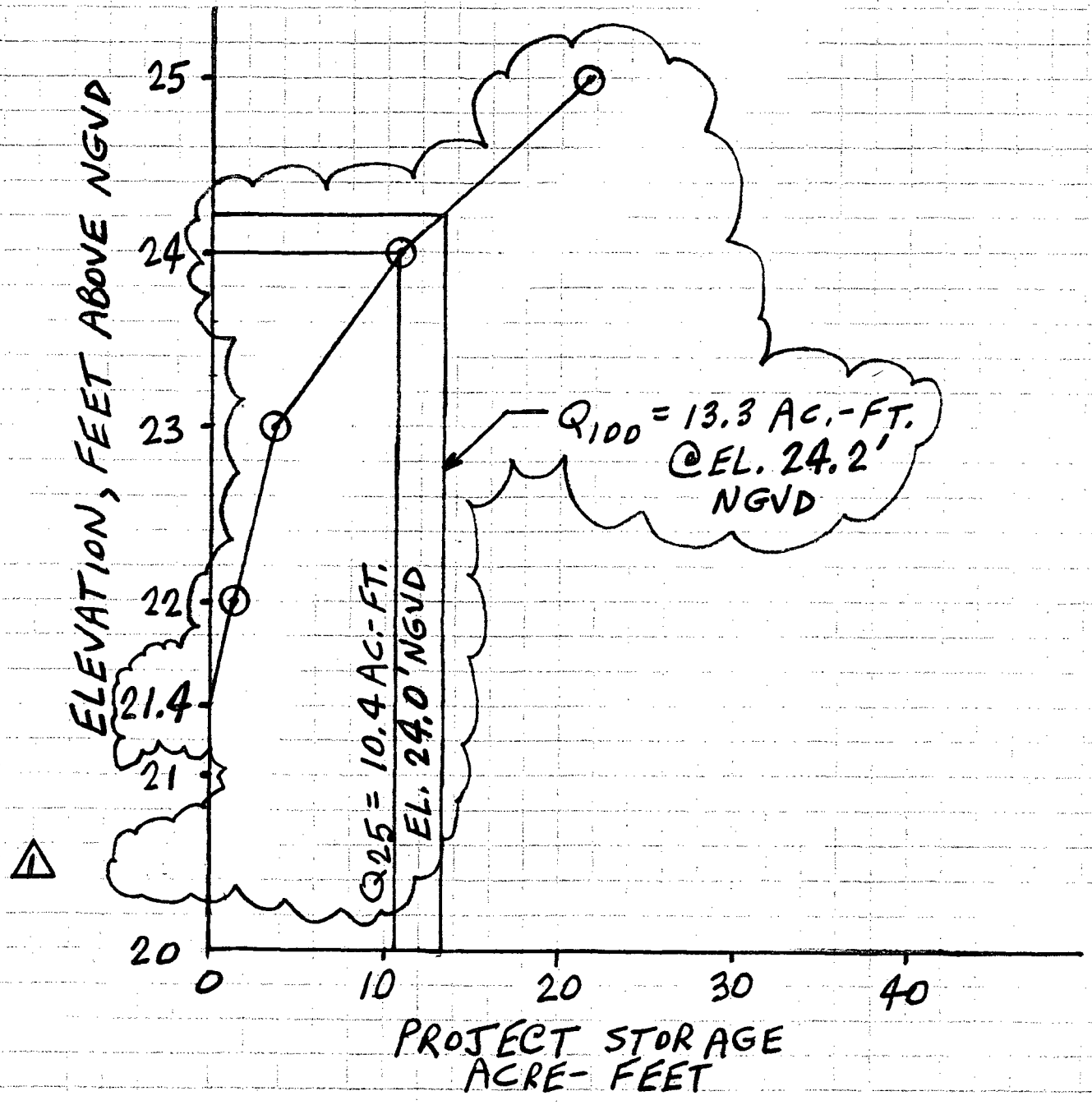
CALCULATION SET NO.	REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001	0	CJD DATE 7/17/92	I.M.T. DATE 7/31/92
PRELIM. X / FINAL / VOID	1	CJD DATE 8/18/92	I.M.T DATE 8/25/92
SHEET 9 OF 22			
J.O. 7102.001			

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

BASIN 2
STAGE-STORAGE CURVE
FOR ZERO DISCHARGE CONDITION

RETENTION SYSTEM



FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001					
PRELIM.	FINAL	VOID	0	CJD DATE 7/20/92	I.M.T DATE 7/31/92
X					
SHEET 10 OF 22			1	CJD DATE 8/18/92	I.M.T DATE 8/25/92
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

6. RETENTION AREA STORAGE (BASIN 2) = RETENTION AREA − ROOF AREA

= 14.8 Ac. − 1.3 Ac.
= 13.5 Ac.

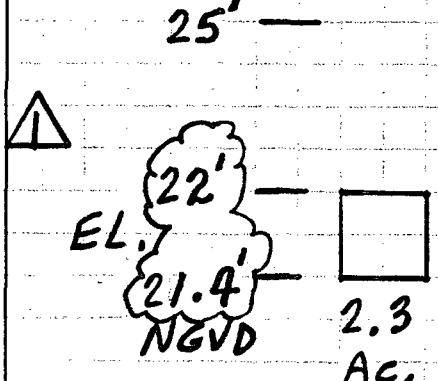
VOLUMES OF SITE STORAGE BY AVERAGE DEPTH METHOD:

	STAGE, FT. NGVD	VOLUME, AC.-FT.
BASIN 2	23	1/3 (13.5 Ac.)(1/2) = 2.3
	24	2/3 (13.5 Ac.)(2/2) = 9.0
	25	3/3 (13.5 Ac.)(3/2) = 20.3

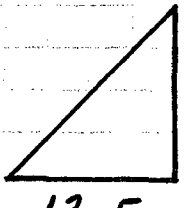
7. SITE (RETENTION) STORAGE DIAGRAM:

BASIN 2

PONDS



SITE



FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001			0	CJD	L.M.T
PRELIM.	FINAL	VOID		DATE 7/20/92	DATE 7/31/92
X					
SHEET 11 OF 22				DATE	DATE
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

2. WET DETENTION SYSTEM - BASIN 1

a. QUALITY - FIRST INCH OF RUNOFF:

= (1")(1 FT./12")(31.6 AC.) = 2.6 AC.-FT. FOR FIRST INCH OF RUNOFF

- 2.5"(% IMPERVIOUSNESS):

= DETENTION AREA - (POND SURFACE + ROOF AREAS)

= 31.6 Ac. - (4.3 Acs. + 1.6 Ac.)

= 25.7 Ac. FOR DETENTION AREA WATER QUALITY PERVIOUS/IMPERVIOUS

-IMPERVIOUS AREA ONLY:

= (SITE AREA FOR WATER QUALITY PERVIOUS/IMPERVIOUS - PERVIOUS)

= 25.7 Ac. - 21.0 Ac.

= 4.7 Ac. OF IMPERVIOUS AREA FOR WATER QUALITY PERVIOUS/IMPERVIOUS

- PERCENTAGE OF IMPERVIOUSNESS FOR WATER QUALITY:

= (4.7 Ac./25.7 Ac.) x 100% = 18.3 %

- FOR 2.5" x THE PERCENTAGE IMPERVIOUS:

= 2.5"(18.3%) ≅ 0.5" TO BE TREATED

- VOLUME REQUIRED FOR QUALITY DETENTION.

= 0.5"(31.6 Ac. - 4.3 Ac.)(1'/12") ≅ 1.1 Ac-F

- FIRST INCH OF RUNOFF CONTROLS = 2.6 AC.-FT (>1.1 AC.-FT. FOR QUALITY DETENTION)

- COMPUTE 1/2" OF PRETREATMENT:

= 1/2" (DETENTION AREA - POND AREAS)

= 1/2" (31.6 AC. - 4.3 AC.)(1'/12") ≅ 1.1 AC-FT.

- COMPUTE REQUIRED POND VOLUME, MIN.:

= TOTAL REQUIRED DETENTION - PRETREATMENT

= 2.6 AC.-FT. - 1.1 AC.-FT.

= 1.5 AC.-FT. MIN. POND VOLUME

b. FIND RUNOFF VOLUME FOR 25-& 100-YEAR STORM EVENTS FOR DETENTION SYSTEM (BASIN 1):

1. USE CRITERIA & SOIL MOISTURE STORAGE CALCULATION BASIS AS GIVEN ON SH. 7, b.:

S = (21.0 AC./31.6 AC.)(1.88") = 1.2"

2. FIND MAXIMUM POSSIBLE STAGE AS ZERO DISCHARGE DURING A 25-YEAR & 100-YEAR, 72-HOUR EVENTS:

$$Q_{25} = (P - 0.2S)^2/(P + 0.8S)$$

$Q_{25} = (9.8" - 0.2(1.2"))^2 / (9.8" + 0.8(1.2"))$

$Q_{25} =$ 8.5" RUNOFF

VOLUME = 8.5" (31.6 Ac.) (1 FT./12")

= 22.4 Ac.-FT. OF RUNOFF @ 25-YEAR EVENT

$Q_{100} = (P - 0.2S)^2 / (P + 0.8S)$

$Q_{100} = (12.2" - 0.2(1.2"))^2 / (12.2" + 0.8(1.2")$

$Q_{100} =$ 10.9" RUNOFF

VOLUME = 10.9" (31.6 Ac.) (1 FT./12")

= 28.7 Ac.-FT. OF RUNOFF @ 100-YEAR EVENT

3. DEVELOP DETENTION AREA STAGE-STORAGE CURVE:

BASIN 1

STAGE (FT. NGVD)	PONDS (AC-FT.)	SITE (AC-FT.)	TOTAL (AC.-FT.)
21.4	0	0	0
22	$4.3 \times 0.6' \cong 2.6$	0	2.6
23		5.0*	7.6
24		20.0*	22.6
25	$4.3 \times 0.6' = 2.6$	45*	47.6

* SEE SH. 15

△1

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

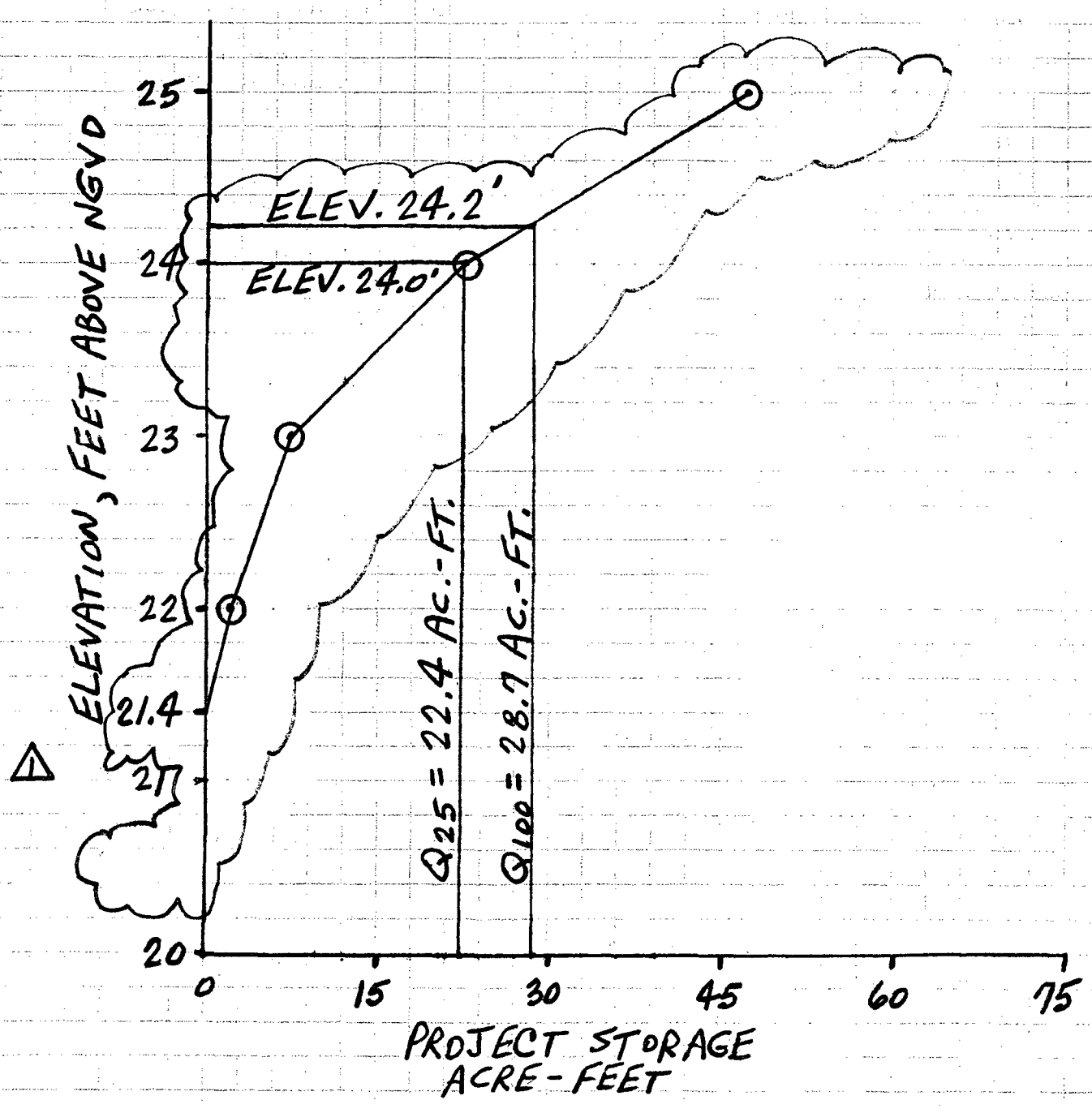
CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001					
PRELIM.	FINAL	VOID	0	CJD DATE 7/20/92	I.M.T. DATE 7/31/92
X			1	CJD DATE 8/18/92	I.M.T DATE 8/25/92
SHEET 14 OF 22					
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

BASIN 1
STAGE-STORAGE CURVE
FOR ZERO DISCHARGE CONDITION

DETENTION SYSTEM



United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.			REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001			0	CJD DATE 7/21/92	I.M.T DATE 7/31/92
PRELIM.	FINAL	VOID			
X					
SHEET 15 OF 22			1	CJD DATE 8/18/92	I.M.T DATE 8/18/92
J.O. 7102.001					

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

4. DETENTION AREA STORAGE = DETENTION AREA (AS BASIN 1) − ROOF AREA

= 31.6 Ac. − 1.6 Ac.
= 30.0 Ac.

VOLUMES OF SITE STORAGE BY AVERAGE DEPTH METHOD:

BASIN 1

STAGE, FT. NGVD	VOLUME, AC.-FT.
23	1/3 (30.0 Ac.)(1/2) = 5.0
24	2/3 (30.0 Ac.)(2/2) = 20.0
25	3/3 (30.0 Ac.)(3/2) = 45

5. DISCHARGE BASED ON 37 CSM CRITERIA:

$$D = 37 \frac{CFS}{Mi^2} \left(\frac{Mi^2}{640 Ac.}\right)(31.6 Ac.) \cong \frac{1.83 CFS}{PEAK}$$

6. CIRCULAR ORIFICE DISCHARGE STRUCTURE CALCULATION:

SIZE = 3" ϕ

INVERT ELEV. = 21.4' NGVD (REVISED FROM CERTIFICATION DOCUMENT)

FULL FLOW CONDITION: $Q = CA\sqrt{2gH}$

$C = 0.6$

FORM 5007 REV. 4/91

United Engineers & Constructors
A Raytheon Company

GENERAL COMPUTATION SHEET

CALCULATION SET NO.	REV.	COMP. BY	CHK'D. BY
7102-C-SWM-001	0	CJD DATE 7/21/92	I.M.T. DATE 7/31/92
PRELIM. ✕ / FINAL / VOID	1	CJD DATE 8/19/92	I.M.T DATE 8/25/92
SHEET 16 OF 22			
J.O. 7102.001			

PROJECT LEE COUNTY FACILITY

SUBJECT SURFACE WATER MANAGEMENT

7. BASIN 1 - STAGE-DISCHARGE DATA

STAGE EL., FT. NGVD	BLEEDER (CFS)	WEIR (CFS)	DISCHARGE (CFS)
20.5	0	0	0
21.0	0	0	0
21.4	0	0	0
DATUM EL. 21.53' ⚠1 22.0	0.16	0	0.16
22.5	0.23	0	0.23
23.0	0.29	0	0.29
23.5	0.33	0	0.33
TOP OF BERM 24.0	0.37	0	0.37
24.5	0.41	3.32	3.73
25.0	0.44	8.02	8.46

WEIR: BROAD CRESTED, CREST EL. 24.1 NVGD, ⚠1
3' WIDE, $Q = CLH^{1.5}$ WITH $C = 3.13$ OR
$Q = 3.13LH^{1.5}$

Discharge structures, where appropriate, shall include a baffle, skimmer, or other mechanism suitable for preventing oil, grease, or other floatable materials from discharging to and/or from retention/detention areas. Reference: sections 373.413(a), and 373.416(a), F.S.; Rules 40E-4.091(1)(a), 40E-4.301, and 40E-4.381, F.A.C.

f. Correction of Water Quality Problems

The Permittee shall be responsible for the correction of any sedimentation, turbidity, erosion, shoaling and/or other water quality problems that result from the construction, operation, and/or maintenance of the works authorized under this Certification. Reference: Sections 373.41391) and 373.416(1); Rules 40E-4.091(1)(a), 40E-4.301, and 40E-4.381, F.A.C.

g. Additional Water Quality Requirements

The Permittee may be required to incorporate additional water quality treatment methods into the surface water management system if such measures are shown to be necessary. Reference: Section 373.413(1), and 373.416(1); Rules 40E-4.091(1)(a), 40E-4.301, and 40E-4.381, F.A.C.

2. Site Specific Design Requirements

a. Allowable Discharge

The surface water management system for the proposed project facilities will be designed such that peak post-development discharges from the project site do not exceed 37 csm for the 25 year/3 day design storm.

b. Authorized Discharge Facilities

1-3.0 ft. wide Weir with a crest at elevation ~~23.5'~~ 24.1' NGVD,
1-3.0" diameter Bleeder Orifice with an invert elevation at ~~20.5'~~ 21.4' NGVD,
1 Screw Gate incorporated into the the structure
for potential restriction of discharge when closed.
Discharge from the system will be through 70 linear feet of 24" diameter RCP Culvert.

c. Authorized Receiving Water

Six Mile Cypress Slough

* SEE ATTACHMENT D

(FROM SITE CERTIFICATION APPLICATION)
CASE NO. 90-3942 EPP, P.30

d. Authorized Control Elevation
21.4
~~20.5~~ Feet NGVD.

e. Should Lee County determine that this project should discharge to the Orange River, it may be necessary to revise these facilities in order to bring them into compliance with the appropriate drainage criteria. Reference: Section 373.413 and 373.414, F.S.; Rules 40E-4.091, 40E-301, and 40E-4.381, F.A.C.

3. Additional Information Requirements

a. Surface Water Management System Construction Plans

Prior to the commencement of construction of any portion of the project which affects the movement of waters, all construction activities for that portion of the proposed project which may obstruct, divert, control, impound or cross waters of the state must be reviewed by the SFWMD for a determination of compliance with the non-procedural requirements of Chapters 40E-2 and 40E-4, F.A.C. All plans, detail sheets and calculations shall be signed and sealed by a Florida Registered professional Engineer. For all construction activities, the following information shall be submitted:

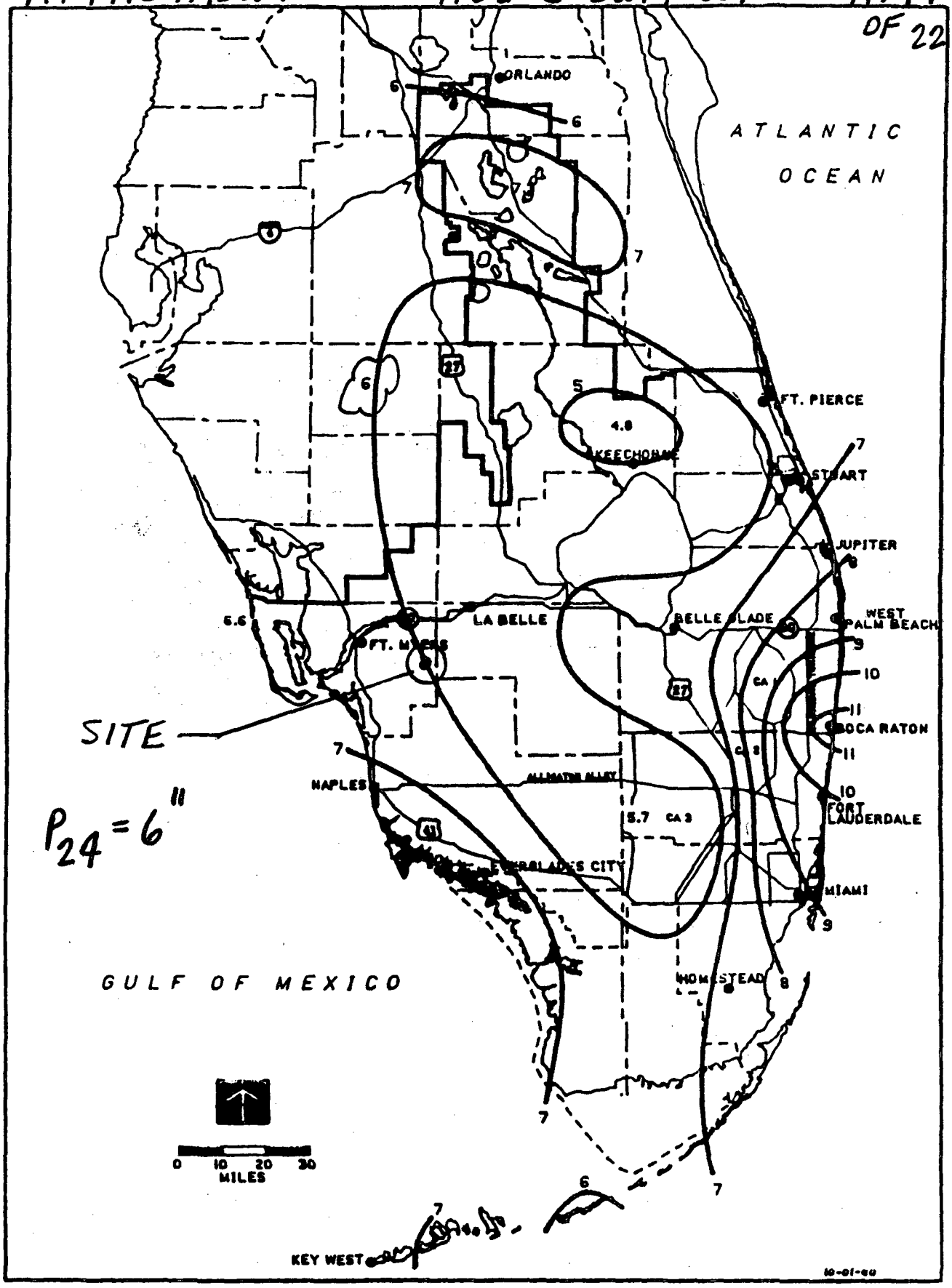
(1) Detailed paving, grading and drainage plans, including on-site water management areas and on-site and perimeter site grades, which clearly indicate how run-off will be routed within and discharged from the site, demonstrate that the design storm will be held on-site, and verify the stage/storage assumptions;

(2) If control elevations are revised for any portion of the proposed surface water management system, revised calculations which demonstrate compliance with the SFWMD's retention/detention criteria for both quantity and quality purposes;

(3) If control elevations are revised for any portion of the proposed surface water management system, revise soil storage calculations;

(4) Detailed plans of all proposed roads, parking lots and building pads which demonstrate compliance with Lee County and SFWMD flood protection criteria;

(5) Cross-section of all proposed control structures which demonstrate compliance with SFWMD water quality and quantity criteria;

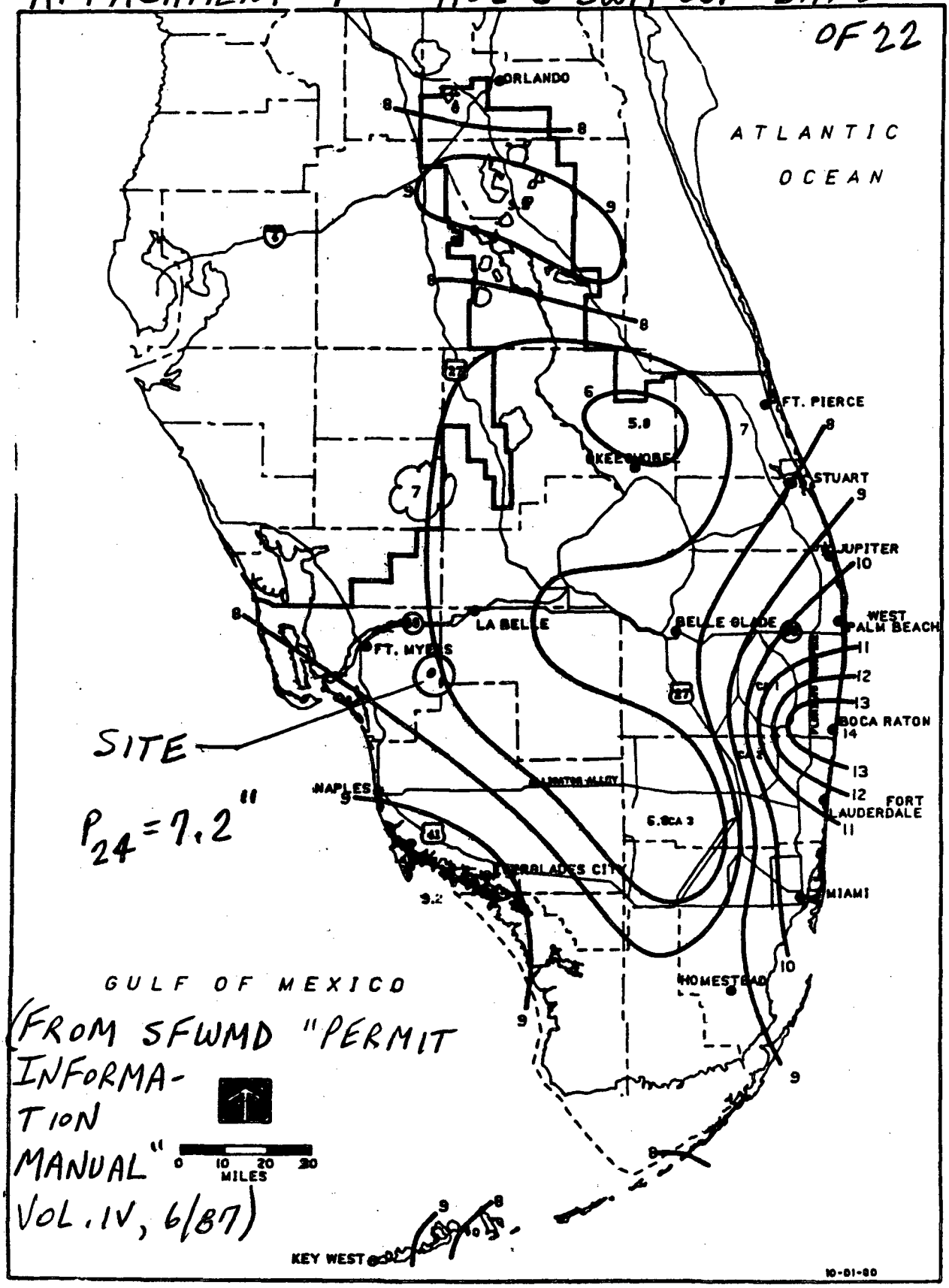


1-DAY RAINFALL : 10 YEAR RETURN PERIOD

Figure C-I-4

(FROM SFWMD "PERMIT INFORMATION MANUAL", VOL. IV, 6/87)

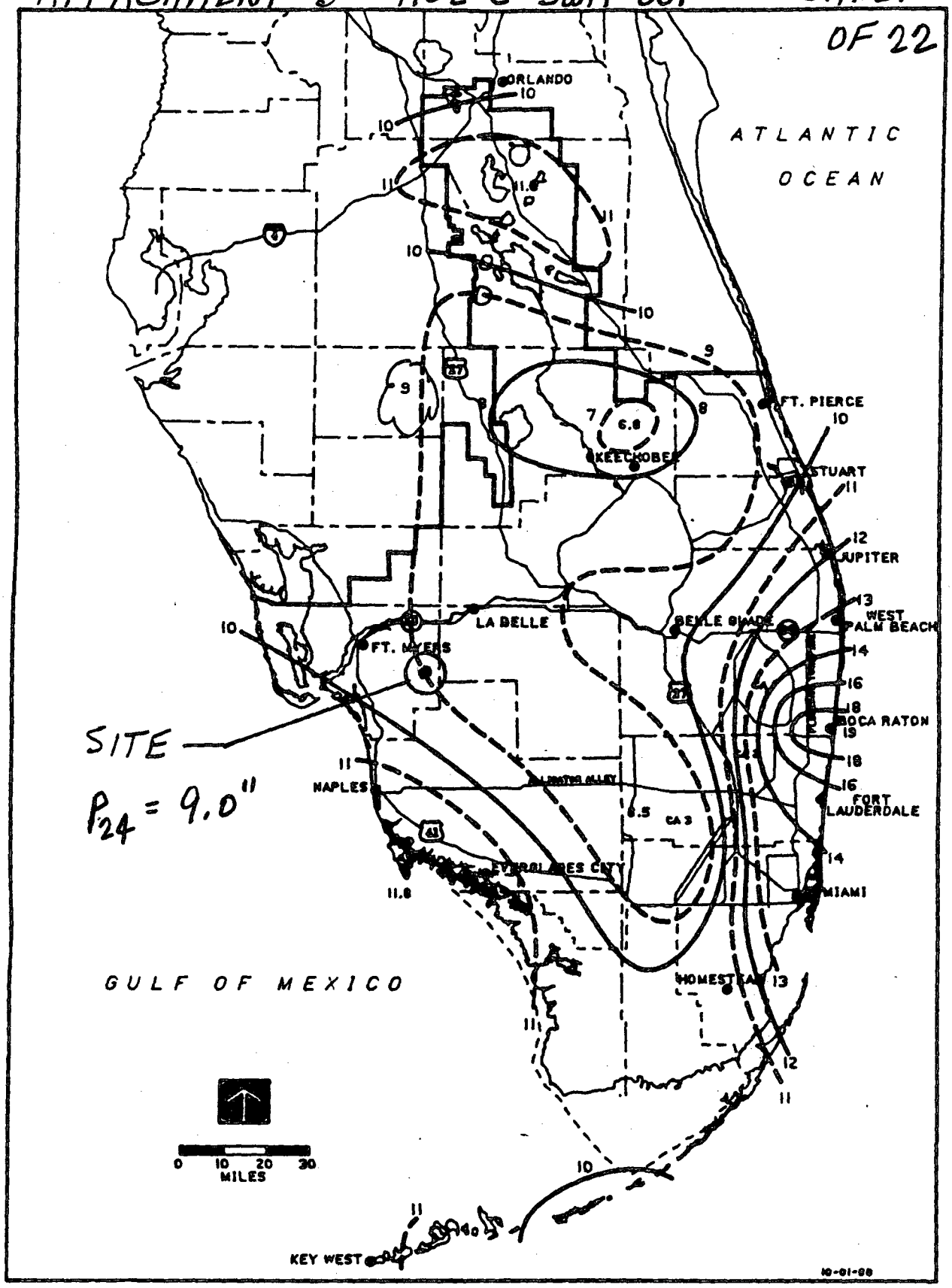
ATTACHMENT 4 7102-C-SWM-001 SH. 20 OF 22



(FROM SFWMD "PERMIT INFORMATION MANUAL" VOL. IV, 6/87)

1-DAY RAINFALL: 25 YEAR RETURN PERIOD

Figure C-I-5



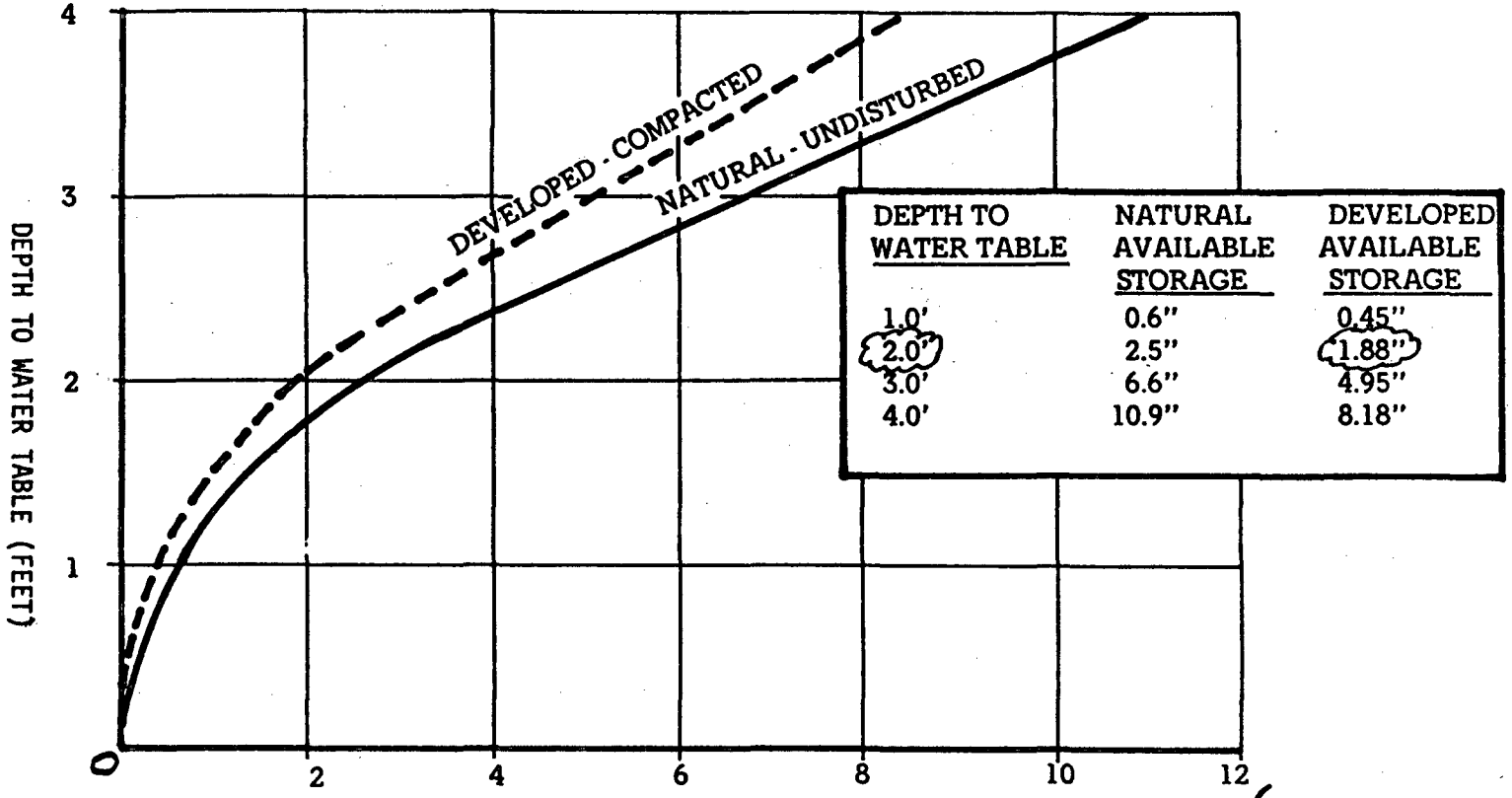
1 - DAY RAINFALL : 100 YEAR RETURN PERIOD

C-I-7

Figure C-I-6

(FROM SFWMD "PERMIT INFORMATION MANUAL", VOL. IV, 6/87)

7102-C-SWM-001 ATTACHMENT 6 SH. 22 OF 22



DEPTH TO WATER TABLE	NATURAL AVAILABLE STORAGE	DEVELOPED AVAILABLE STORAGE
1.0'	0.6"	0.45"
2.0'	2.5"	1.88"
3.0'	6.6"	4.95"
4.0'	10.9"	8.18"

(FROM SFWMD "PERMIT INFORMATION MANUAL" VOL. IV, JUNE 1987 ED.)

CUMULATIVE SOIL MOISTURE STORAGE

Figure C-III-1

ATTACHMENT A - BASIN 1

⚠ 8/19/92

7102-C-SWM-001

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 31.6 acres
Ground Storage.....: 1.2 inches
Termination Discharge.....: 1.83 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 10 years
Rainfall Duration.....: 1 -day
24-hr Rainfall.....: 6 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	2.60	0.16
3	23.00	7.60	0.29
4	24.00	22.60	0.37
5	24.10	24.65	0.38
6	25.00	47.60	8.46

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.27	0.00	0.1	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.82	0.19	3.1	0.5	0.5	0.0	0.0	0.0	21.51
10.00	1.28	0.48	5.9	1.3	1.3	0.0	0.1	0.0	21.68
11.00	1.61	0.73	9.5	1.9	1.9	0.0	0.1	0.1	21.82
11.50	1.91	0.98	15.6	2.6	2.5	0.0	0.1	0.1	21.95
11.75	2.93	1.86	112.2	4.9	4.9	0.0	0.2	0.2	22.22
12.00	3.94	2.79	119.1	7.3	7.3	0.0	0.3	0.2	22.70
12.50	4.37	3.20	26.4	8.4	8.4	0.0	0.3	0.3	23.03
13.00	4.60	3.42	13.8	9.0	9.0	0.1	0.3	0.3	23.08
14.00	4.91	3.71	8.4	9.8	9.7	0.1	0.3	0.3	23.13
16.00	5.28	4.07	5.5	10.7	10.6	0.1	0.3	0.3	23.20
20.00	5.71	4.49	3.3	11.8	11.6	0.2	0.3	0.3	23.26
24.00	6.00	4.77	2.2	12.6	12.2	0.3	0.3	0.3	23.31

Maximum Stage = 23.31 feet
Maximum Discharge = 0.31 cfs

Δ 8/19/92

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 31.6 acres
Ground Storage.....: 1.2 inches
Termination Discharge.....: 1.83 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 25 years
Rainfall Duration.....: 3 -day
24-hr Rainfall.....: 7.2 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	2.60	0.16
3	23.00	7.60	0.29
4	24.00	22.60	0.37
5	24.10	24.65	0.38
6	25.00	47.60	8.46

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.18	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.35	0.01	0.2	0.0	0.0	0.0	0.0	0.0	21.41
12.00	0.53	0.05	0.5	0.1	0.1	0.0	0.0	0.0	21.43
16.00	0.70	0.13	0.7	0.3	0.3	0.0	0.0	0.0	21.47
20.00	0.88	0.22	0.8	0.6	0.6	0.0	0.0	0.0	21.53
24.00	1.05	0.33	0.9	0.9	0.8	0.0	0.1	0.0	21.59
28.00	1.31	0.50	1.5	1.3	1.3	0.1	0.1	0.1	21.69
32.00	1.56	0.69	1.6	1.8	1.7	0.1	0.1	0.1	21.80
36.00	1.82	0.90	1.7	2.4	2.2	0.1	0.1	0.1	21.91
40.00	2.07	1.11	1.7	2.9	2.7	0.2	0.2	0.2	22.03
44.00	2.33	1.33	1.8	3.5	3.3	0.2	0.2	0.2	22.13
48.00	2.58	1.55	1.8	4.1	3.8	0.3	0.2	0.2	22.24
52.00	2.91	1.84	2.9	4.8	4.5	0.4	0.2	0.2	22.37
56.00	3.57	2.45	6.4	6.4	6.0	0.4	0.2	0.2	22.67
58.00	4.12	2.96	9.5	7.8	7.3	0.5	0.3	0.3	22.93
59.00	4.52	3.34	14.0	8.8	8.3	0.5	0.3	0.3	23.04
59.50	4.88	3.69	21.9	9.7	9.2	0.5	0.3	0.3	23.09
59.75	6.09	4.86	149.2	12.8	12.3	0.5	0.3	0.3	23.21
60.00	7.31	6.04	150.8	15.9	15.4	0.5	0.3	0.3	23.42
60.50	7.83	6.56	32.9	17.3	16.7	0.5	0.3	0.3	23.59
61.00	8.11	6.83	17.1	18.0	17.4	0.5	0.3	0.3	23.64
62.00	8.47	7.19	10.4	18.9	18.3	0.6	0.3	0.3	23.71
64.00	8.92	7.63	6.8	20.1	19.4	0.6	0.4	0.3	23.79
68.00	9.44	8.14	4.1	21.4	20.7	0.8	0.4	0.4	23.87
72.00	9.78	8.48	2.7	22.3	21.5	0.9	0.4	0.4	23.92

Maximum Stage = 23.92 feet
Maximum Discharge = 0.36 cfs

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY BASIN 1
Engineer's Name.....: C. D'ANGELO
Project Area.....: 31.6 acres
Ground Storage.....: 1.2 inches
Termination Discharge.....: 1.83 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 25 years
Rainfall Duration.....: 5 -day ← (TO SHOW TIME PROGRESSION)
24-hr Rainfall.....: 7.2 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	2.60	0.16
3	23.00	7.60	0.29
4	24.00	22.60	0.37
5	24.10	24.65	0.38
6	25.00	47.60	8.46

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.18	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.35	0.01	0.2	0.0	0.0	0.0	0.0	0.0	21.41
12.00	0.53	0.05	0.5	0.1	0.1	0.0	0.0	0.0	21.43
16.00	0.70	0.13	0.7	0.3	0.3	0.0	0.0	0.0	21.47
20.00	0.88	0.22	0.8	0.6	0.6	0.0	0.0	0.0	21.53
24.00	1.05	0.33	0.9	0.9	0.8	0.0	0.1	0.0	21.59
28.00	1.31	0.50	1.5	1.3	1.3	0.1	0.1	0.1	21.69
32.00	1.56	0.69	1.6	1.8	1.7	0.1	0.1	0.1	21.80
36.00	1.82	0.90	1.7	2.4	2.2	0.1	0.1	0.1	21.91
40.00	2.07	1.11	1.7	2.9	2.7	0.2	0.2	0.2	22.03
44.00	2.33	1.33	1.8	3.5	3.3	0.2	0.2	0.2	22.13
48.00	2.58	1.55	1.8	4.1	3.8	0.3	0.2	0.2	22.24
52.00	2.91	1.84	2.9	4.8	4.5	0.4	0.2	0.2	22.37
56.00	3.57	2.45	6.4	6.4	6.0	0.4	0.2	0.2	22.67
58.00	4.12	2.96	9.5	7.8	7.3	0.5	0.3	0.3	22.93
59.00	4.52	3.34	14.0	8.8	8.3	0.5	0.3	0.3	23.04
59.50	4.88	3.69	21.9	9.7	9.2	0.5	0.3	0.3	23.09
59.75	6.09	4.86	149.2	12.8	12.3	0.5	0.3	0.3	23.21
60.00	7.31	6.04	150.8	15.9	15.4	0.5	0.3	0.3	23.42
60.50	7.83	6.56	32.9	17.3	16.7	0.5	0.3	0.3	23.59
61.00	8.11	6.83	17.1	18.0	17.4	0.5	0.3	0.3	23.64
62.00	8.47	7.19	10.4	18.9	18.3	0.6	0.3	0.3	23.71
64.00	8.92	7.63	6.8	20.1	19.4	0.6	0.4	0.3	23.79
68.00	9.44	8.14	4.1	21.4	20.7	0.8	0.4	0.4	23.87
72.00	9.78	8.48	2.7	22.3	21.5	0.9	0.4	0.4	23.92
80.00	10.06	8.75	1.1	23.0	21.9	1.1	0.4	0.4	23.95
88.00	10.33	9.01	1.1	23.7	22.4	1.4	0.4	0.4	23.98
96.00	10.60	9.28	1.1	24.4	22.8	1.6	0.4	0.4	24.01

104.00	10.83	9.51	0.9	25.0	23.2	1.8	0.4	0.4	24.03
112.00	11.06	9.74	0.9	25.6	23.6	2.1	0.4	0.4	24.05
120.00	11.29	9.97	0.9	26.2	23.9	2.3	0.4	0.4	24.06

Maximum Stage = 24.06 feet
Maximum Discharge = 0.38 cfs

△ 8/19/92

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 31.6 acres
Ground Storage.....: 1.2 inches
Termination Discharge.....: 1.83 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 100 years
Rainfall Duration.....: 3 -day
24-hr Rainfall.....: 9 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	2.60	0.16
3	23.00	7.60	0.29
4	24.00	22.60	0.37
5	24.10	24.65	0.38
6	25.00	47.60	8.46

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.22	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.44	0.03	0.4	0.1	0.1	0.0	0.0	0.0	21.42
12.00	0.66	0.11	0.8	0.3	0.3	0.0	0.0	0.0	21.46
16.00	0.88	0.22	1.0	0.6	0.6	0.0	0.0	0.0	21.53
20.00	1.10	0.36	1.1	0.9	0.9	0.0	0.1	0.0	21.61
24.00	1.31	0.51	1.3	1.3	1.3	0.0	0.1	0.1	21.69
28.00	1.63	0.75	2.0	2.0	1.9	0.1	0.1	0.1	21.83
32.00	1.95	1.01	2.1	2.7	2.5	0.1	0.2	0.1	21.98
36.00	2.27	1.28	2.2	3.4	3.2	0.2	0.2	0.2	22.11
40.00	2.59	1.56	2.3	4.1	3.9	0.2	0.2	0.2	22.25
44.00	2.91	1.84	2.3	4.9	4.5	0.3	0.2	0.2	22.38
48.00	3.23	2.13	2.3	5.6	5.2	0.4	0.2	0.2	22.52
52.00	3.64	2.51	3.7	6.6	6.1	0.5	0.3	0.2	22.70
56.00	4.46	3.29	8.2	8.7	8.1	0.5	0.3	0.3	23.03
58.00	5.15	3.94	12.1	10.4	9.8	0.6	0.3	0.3	23.14
59.00	5.65	4.43	17.7	11.7	11.0	0.6	0.3	0.3	23.22
59.50	6.10	4.87	27.8	12.8	12.2	0.6	0.3	0.3	23.29
59.75	7.62	6.35	188.7	16.7	16.1	0.6	0.3	0.3	23.43
60.00	9.14	7.84	190.1	20.6	20.0	0.6	0.3	0.3	23.70
60.50	9.79	8.49	41.3	22.3	21.7	0.7	0.4	0.4	23.91
61.00	10.13	8.82	21.5	23.2	22.6	0.7	0.4	0.4	23.98
62.00	10.59	9.28	13.0	24.4	23.7	0.7	0.4	0.4	24.05
64.00	11.15	9.83	8.5	25.9	25.1	0.8	0.5	0.4	24.11
68.00	11.80	10.47	5.1	27.6	26.5	1.0	1.0	0.8	24.17
72.00	12.23	10.90	3.4	28.7	27.3	1.4	1.3	1.2	24.20

Maximum Stage = 24.20 feet
Maximum Discharge = 1.30 cfs

ATTACHMENT B - BASIN 2

7102-C-SWM-001

⚠ 8/19/92

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 14.8 acres
Ground Storage.....: 1.3 inches
Termination Discharge.....: .00001 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 10 years
Rainfall Duration.....: 1 -day
24-hr Rainfall.....: 6 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	1.40	0.00
3	23.00	3.70	0.00
4	24.00	10.40	0.00
5	25.00	21.70	0.00

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.27	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.82	0.17	1.3	0.2	0.2	0.0	0.0	0.0	21.48
10.00	1.28	0.45	2.7	0.6	0.6	0.0	0.0	0.0	21.62
11.00	1.61	0.69	4.3	0.9	0.9	0.0	0.0	0.0	21.75
11.50	1.91	0.93	7.1	1.1	1.1	0.0	0.0	0.0	21.86
11.75	2.93	1.79	51.6	2.2	2.2	0.0	0.0	0.0	22.12
12.00	3.94	2.72	55.2	3.3	3.3	0.0	0.0	0.0	22.60
12.50	4.37	3.13	12.3	3.9	3.9	0.0	0.0	0.0	23.00
13.00	4.60	3.34	6.4	4.1	4.1	0.0	0.0	0.0	23.05
14.00	4.91	3.63	3.9	4.5	4.5	0.0	0.0	0.0	23.11
16.00	5.28	3.99	2.6	4.9	4.9	0.0	0.0	0.0	23.18
20.00	5.71	4.40	1.6	5.4	5.4	0.0	0.0	0.0	23.26
24.00	6.00 ✓	4.68	1.0	5.8 ✓	5.8 ✓	0.0	0.0	0.0	23.31

Maximum Stage = 23.31 feet
Maximum Discharge = 0.00 cfs

7102-C-SWM-00

⚠ 8/19/92

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 14.8 acres
Ground Storage.....: 1.3 inches
Termination Discharge.....: .00001 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 25 years
Rainfall Duration.....: 3 -day
24-hr Rainfall.....: 7.2 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	1.40	0.00
3	23.00	3.70	0.00
4	24.00	10.40	0.00
5	25.00	21.70	0.00

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.18	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.35	0.01	0.1	0.0	0.0	0.0	0.0	0.0	21.40
12.00	0.53	0.05	0.2	0.1	0.1	0.0	0.0	0.0	21.42
16.00	0.70	0.11	0.3	0.1	0.1	0.0	0.0	0.0	21.46
20.00	0.88	0.20	0.4	0.2	0.2	0.0	0.0	0.0	21.50
24.00	1.05	0.30	0.4	0.4	0.4	0.0	0.0	0.0	21.56
28.00	1.31	0.47	0.7	0.6	0.6	0.0	0.0	0.0	21.64
32.00	1.56	0.65	0.7	0.8	0.8	0.0	0.0	0.0	21.74
36.00	1.82	0.85	0.8	1.0	1.0	0.0	0.0	0.0	21.85
40.00	2.07	1.06	0.8	1.3	1.3	0.0	0.0	0.0	21.95
44.00	2.33	1.27	0.8	1.6	1.6	0.0	0.0	0.0	22.07
48.00	2.58	1.49	0.8	1.8	1.8	0.0	0.0	0.0	22.19
52.00	2.91	1.78	1.3	2.2	2.2	0.0	0.0	0.0	22.34
56.00	3.57	2.38	3.0	2.9	2.9	0.0	0.0	0.0	22.65
58.00	4.12	2.89	4.4	3.6	3.6	0.0	0.0	0.0	22.92
59.00	4.52	3.27	6.5	4.0	4.0	0.0	0.0	0.0	23.04
59.50	4.88	3.61	10.2	4.4	4.4	0.0	0.0	0.0	23.10
59.75	6.09	4.77	69.5	5.9	5.9	0.0	0.0	0.0	23.22
60.00	7.31	5.95	70.4	7.3	7.3	0.0	0.0	0.0	23.43
60.50	7.83	6.46	15.3	8.0	8.0	0.0	0.0	0.0	23.61
61.00	8.11	6.73	8.0	8.3	8.3	0.0	0.0	0.0	23.67
62.00	8.47	7.09	4.8	8.7	8.7	0.0	0.0	0.0	23.75
64.00	8.92	7.53	3.2	9.3	9.3	0.0	0.0	0.0	23.83
68.00	9.44	8.04	1.9	9.9	9.9	0.0	0.0	0.0	23.92
72.00	9.78	8.38	1.3	10.3	10.3	0.0	0.0	0.0	23.99

Maximum Stage = 23.99 feet
Maximum Discharge = 0.00 cfs

7102-C-SWM-00

△ 8/19/92

Program Name.....: SCS¶ -- (05/08/84)

Project Name.....: LEE COUNTY FACILITY
Engineer's Name.....: C. D'ANGELO
Project Area.....: 14.8 acres
Ground Storage.....: 1.3 inches
Termination Discharge.....: .00001 cfs
Distribution Type.....: SFWMD
Return Frequency.....: 100 years
Rainfall Duration.....: 3 -day
24-hr Rainfall.....: 9 inches
Reporting Sequence.....: Standardized

Point No.	Stage (ft)	Storage (af)	Discharge (cfs)
1	21.40	0.00	0.00
2	22.00	1.40	0.00
3	23.00	3.70	0.00
4	24.00	10.40	0.00
5	25.00	21.70	0.00

					- - - - - R E S E R V O I R - - - - -				
Time (hr)	Rain fall (in)	Accum. Runoff (in)	Basin Dischge (cfs)	Accum. Inflow (af)	Volume (af)	Accum. Outflow (af)	Instant Dischge (cfs)	Average Dischge (cfs)	Stage (ft)
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
4.00	0.22	0.00	0.0	0.0	0.0	0.0	0.0	0.0	21.40
8.00	0.44	0.02	0.2	0.0	0.0	0.0	0.0	0.0	21.41
12.00	0.66	0.09	0.3	0.1	0.1	0.0	0.0	0.0	21.45
16.00	0.88	0.20	0.4	0.2	0.2	0.0	0.0	0.0	21.50
20.00	1.10	0.33	0.5	0.4	0.4	0.0	0.0	0.0	21.57
24.00	1.31	0.47	0.6	0.6	0.6	0.0	0.0	0.0	21.65
28.00	1.63	0.71	0.9	0.9	0.9	0.0	0.0	0.0	21.77
32.00	1.95	0.96	1.0	1.2	1.2	0.0	0.0	0.0	21.90
36.00	2.27	1.22	1.0	1.5	1.5	0.0	0.0	0.0	22.04
40.00	2.59	1.50	1.0	1.8	1.8	0.0	0.0	0.0	22.19
44.00	2.91	1.78	1.1	2.2	2.2	0.0	0.0	0.0	22.34
48.00	3.23	2.07	1.1	2.5	2.5	0.0	0.0	0.0	22.49
52.00	3.64	2.44	1.7	3.0	3.0	0.0	0.0	0.0	22.69
56.00	4.46	3.21	3.8	4.0	4.0	0.0	0.0	0.0	23.03
58.00	5.15	3.86	5.6	4.8	4.8	0.0	0.0	0.0	23.15
59.00	5.65	4.34	8.3	5.4	5.4	0.0	0.0	0.0	23.23
59.50	6.10	4.78	13.0	5.9	5.9	0.0	0.0	0.0	23.31
59.75	7.62	6.25	88.1	7.7	7.7	0.0	0.0	0.0	23.46
60.00	9.14	7.74	88.8	9.5	9.5	0.0	0.0	0.0	23.74
60.50	9.79	8.39	19.3	10.3	10.3	0.0	0.0	0.0	23.96
61.00	10.13	8.73	10.1	10.8	10.8	0.0	0.0	0.0	24.02
62.00	10.59	9.18	6.1	11.3	11.3	0.0	0.0	0.0	24.08
64.00	11.15	9.73	4.0	12.0	12.0	0.0	0.0	0.0	24.14
68.00	11.80	10.37	2.4	12.8	12.8	0.0	0.0	0.0	24.21
72.00	12.23	10.80	1.6	13.3	13.3	0.0	0.0	0.0	24.26

Maximum Stage = 24.26 feet
Maximum Discharge = 0.00 cfs

ATTACHMENT C - STAGE DISCHARGE TABLE

P. 1 OF 1

7102-C-SWM-001

⚠ 8/20/92

WEIR LENGTH	3 FT.
WEIR ELEVATION	24.1 FT. NGVD
WEIR COEFFICIENT	3.13
TYPE OF BLEEDER SLOT	CIRCLE
SLOT INVERT ELEV.	21.4 FT. NGVD
ORIFICE DIAMETER	.25 FT.

PIPE DATA

DIAMETER	2 FT.
LENGTH	70 FT.
N-VALUE	.012

	WEIR FLOW IN CFS				
STAGE	WEIR	BLEEDER	TOTAL	PIPE FLOW	FLOW
21.40	0.00	0.00	0.00	.00	.00
22.00	0.00	0.16	0.16	13.05	.16
23.00	0.00	0.29	0.29	21.31	.29
24.00	0.00	0.37	0.37	27.17	.37
24.10	0.00	0.38	0.38	27.68	.38
25.00	8.02	0.44	8.46	31.97	8.46100

ATTACHMENT D P. 1 OF 1

MALCOLM PIRNIE

FACSIMILE TRANSMITTAL

⚠1 ADDED TO THIS CALCULATION 8/25/92

7102-C-SWM-001

MALCOLM PIRNIE, INC.
3230 West Commercial Blvd, Ste. 300
Ft. Lauderdale, FL 33309
TEL: (305) 731-7110
FAX: (305) 731-7116

TO: Mr. Bob Terramoccia

OF: Ogden Martin Systems, Inc.

FAX NO.: (201) 882-4169

RE:

FROM: Don Markley

DATE: 8-18-92

TIME: 11:50 a.m.

JOB NUMBER: 1971-01-1130

NUMBER OF PAGES: *(including this sheet)* 1

RETURN ORIGINALS TO SENDER: *(circle one)* Yes X No

MESSAGE:

Dear Mr. Terramoccia:

This fascimile transmittal shall serve as written verification that El. 21.4' N.G.V.D. will be the control elevation stated in our portion of the surface water management plan submitted to the South Florida Water Management District.

NOTE: INDEPENDENT FAX WAS SENT TO LANE WARE BY MPI

CC: P. YOUNG
S. NETRABILE
[redacted]

If you do not receive all pages or if portions are illegible please call (305) 731-7110 for retransmission

Lee COUNTY

BOARD OF COUNTY COMMISSIONERS

P.O. Box 398
Fort Myers, Florida 33902-0398
(813) 335-2111

(813) 338-3100
Writer's Direct Dial Number

John E. Manning
District One

Douglas R. St. Cerny
District Two

Ray Judah
District Three

Vicki Lopez-Wolfe
District Four

Donald Slisher
District Five

Julio Avael
County Administrator

James G. Yaeger
County Attorney

Robert E. Splitt
County Hearing Examiner

November 10, 1992
SL-814-92

Mr. Phillip Edwards
Director of District Management
Florida Dept. of Environmental Regulation
2295 Victoria Ave., Suite 364
Fort Myers, Florida 33901

Re: Lee County Solid Waste Energy Recovery Facility
Power Plant Site Certification - DER Case No. PA 90-30

Subject: NOTICE OF COMMENCEMENT OF CONSTRUCTION

Dear Mr. Edwards:

On behalf of Lee County, our consulting engineer Malcolm Pirnie, Inc., notified the South Florida Water Management District on October 19, 1992 of the County's intent to issue a Notice-to-Proceed for the construction of the Lee County Solid Waste Energy Recovery Facility. Your office was included on the distribution list for this letter.

In accordance with Conditions of Certification, Section XIII, paragraph C.1, the County is hereby providing the South District Office with "Notice of Commencement of Construction . . ." for the Lee County Solid Waste Energy Recovery Facility. Officially, Lee County issued Notice-to-Proceed to Ogden Martin Systems of Lee, Inc. on October 28, 1992. Clearing and grubbing activities began on the Facility site on October 29, 1992.

If you should have any questions or require additional information, please do not hesitate to contact my office.

Sincerely,

DEPARTMENT OF SOLID WASTE MANAGEMENT

Lindsey J. Sampson
for,
Larry A. Johnson, P.E.
Director

LAJ:amp

RECEIVED
NOV 10 1992
D.E.R. SOUTH DISTRICT

cc: Hamilton S. Oven Jr., DER Tallahassee
Richard P. Donelan, Esq., DER Tallahassee
Phillip A. Barbaccia, DER Ft. Myers
Peter Young, Ogden Martin Systems of Lee, Inc.
Jeff Kowal, Ogden Martin Systems of Lee, Inc.
Don Markley, Malcolm Pirnie, Inc.
David S. Dee, Esq., Carlton, Fields, Ward, et al
J. Avael, County Administrator
K. Hawes, Deputy County Administrator
David Owen, Assistant County Attorney
Lindsey Sampson, SWMGT. Project Engineer

South Florida Water Management District

3301 Gun Club Road • P.O. Box 24680 • West Palm Beach, FL 33416-4680 • (407) 686-8800 • FL WATS 1-800-432-2045

RECEIVED
OCT 26 1992
D E R
SOUTH FLORIDA DISTRICT

LAN 04-02

October 20, 1992

Mr. Hamilton S. Oven, Jr., P.E.
Administrator, Office of Siting Coordination
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Oven:

Subject: Lee County Solid Waste Resource Recovery Facility (Phase I)
Limited Authorization to Commence Construction

District staff have reviewed the information submitted by Ogden Martin Systems of Lee, Inc. (OMSL) on August 28, 1992 and October 16, 1992; Malcolm Pirnie, Inc. (MP) on September 1 and September 8, 1992 and October 16 and October 20, 1992; United Engineers and Contractors (UEC) on September 28, 1992; and the Lee County Attorney's Office on October 2, 19 and 20, 1992, in response to the Conditions of Certification that pertain to matters that require South Florida Water Management District (SFWMD) approval prior to the commencement of construction.

The following submittals/activities have been reviewed by SFWMD staff and found to be in compliance with the applicable Conditions of Certification (COC):

(1) Submittal made by OMDS on August 28, 1992, and updated on September 28, 1992 by UEC and on October 16, 1992 by OMDS, for approval of the area within the facility site boundary, including the proposed storm water management system and dewatering operations;

(2) Submittal made by MP on September 1, 1992, and updated on October 16, 1992, for approval of the Ground and Surface Water Monitoring Plans;

(3) Submittal made by MP on September 8, 1992, and updated on October 16 and 20, 1992, for approval of the proposed surface water management system, wetland mitigation, monitoring, maintenance plan, and dewatering operations for the remainder of the project site outside of the facility site boundary, including the proposed improvements to the C.R. 82A/Buckingham Road and S.R. 82 drainage systems to be utilized by this facility, but excluding the proposed electrical and utility transmission lines north of the facility site.

Governing Board:
Allan Milledge, Chairman - Miami
Valerie Boyd, Vice Chairman - Naples
Ken Adams - West Palm Beach
James E. Nall - Fort Lauderdale
Annie Betancourt - Miami
Franklin B. Mann - Fort Myers
Leah G. Schad - West Palm Beach
Frank Williamson, Jr. - Okeechobee
Eugene K. Pettis - Fort Lauderdale
Tilford C. Creel, Executive Director
Thomas K. MacVicar, Deputy Executive Director

(4) Submittal made by the Lee County Attorney's Office on October 2, 19 and 20 for approval of the proposed Conservation Easement for the Mitigation/ Preservation Areas and the proposed stormwater outfall from the project site to C.R. 82A/Buckingham Road.

Therefore, issuance of this letter constitutes authorization to commence construction and/or initiation of the specific activities enumerated above that are associated with the Lee County Solid Waste Resource Recovery Facility. This authorization to commence construction presumes that all construction and maintenance activities will be performed in compliance with:

(1) the construction plans and specifications, as contained in the detailed engineering drawings, supporting documents, letters of agreement, and other supporting documentation submitted by OMDS, MP, UEC, and Lee County on the above-noted dates; and

(2) all of the conditions in the Certification Order that are applicable to the Lee County Solid Waste Resource Recovery Facility including, in particular, those conditions that address activities during and after the construction of the resource recovery facility.

In addition, within 30 days of today's date, Lee County or its consultants shall provide the SFWMD with the following: (1) an executed copy of the Conservation Easement for the wetland mitigation/preservation areas; and (2) an updated version of the Mitigation, Monitoring and Maintenance Plan which incorporates the revisions enumerated in the above-noted letters. Please note that this Plan may be subject to further modification once the wetland impacts and construction plans associated with the electrical and utility transmission lines are finalized.

This letter shall not be construed as a waiver by the SFWMD of any of the requirements specified in any of the Certification Conditions contained in the Certification Order.

The failure of Lee County to provide the executed copy of the conservation easement, as enumerated above, or to comply with any other applicable Conditions of Certification shall result in the withdrawal of the limited authorization to commence construction set forth in this letter.

Construction authorization for future phases of the Lee County Resource Recovery Facility (i.e., construction of and withdrawals from the backup well system and construction of the electrical and utility transmission lines) is subject to the satisfaction of the applicable Conditions of Certification for those portions of the project.

Further inquiries regarding this matter should be directed to Susan Coughanour of this Department at (407) 687-6920.

Sincerely,

Steve Lamb
Director
Regulation Department

SL/cap

c: Richard P. Donelan, DER-Tallahassee
Philip Barbaccia, DER-Fort Myers
Linda McCarthy, DER-West Palm Beach
Lindsey Sampson, Lee County Solid Waste Division
Larry Johnson, Lee County Solid Waste Division
Jim Yaegar, Lee County Attorney
Walter Stephens, Lee County Division of Water Resources
George Crawford, Lee County DOT
David Dee, Carlton, Fields, Ward, et al.
Peter Young, Ogden Martin Systems of Lee, Inc.
Dan Markley, Malcolm Pirnie
Lane Ware, United Engineers and Contractors
Wayne Daltry, Southwest Florida Regional Planning Council
Ken Plante, Department of Natural Resources
James V. Antista, Game & Freshwater Fish Commission
Steve Pfeifer, Department of Community Affairs

OVERSIZED DRAWING(S) REMOVED

(SEE OCULUS UNDER SAME INDEXING INFORMATION)