

44795
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Dept. Of Environmental Protection

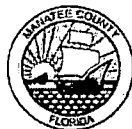
NOV 05 2009

Southwest District

**Biennial Water Quality Monitoring Plan Evaluation
First Half 2007 through First Half 2009
Manatee County Solid Waste Division
Lena Road Class I Landfill
SWD-41-44795
Permit No: 39884-010-SO/01**

November 2009

Prepared For:



Utilities Department
Solid Waste Division/Landfill
3333 Lena Road
Bradenton, Florida 34211

DUP

Prepared By:



482 South Keller Road
Orlando, Florida 32810

PBS&J Project #100008517

TABLE 1-2
WATER ELEVATION MONITORING NETWORK
LENA ROAD LANDFILL

Well Identifier	Top-of-Casing Elevation (Ft-NGVD)	Total Depth (Ft-TOC)	Screen Interval Elevation (Ft-NGVD)
Surficial Aquifer (Outside of Slurry Wall)			
GW-1	38.68	19.42	19.76-34.76
GW-2	40.92	19.41	22.01-37.01
GW-3	39.40	19.56	20.34-35.34
GW-4	40.53	19.63	21.4-36.4
GW-5	39.90	19.66	20.74-35.74
GW-6	38.95	19.54	19.91-34.91
GW-7	39.49	20.54	19.45-34.45
GW-8	39.75	20.32	19.93-34.93
GW-9	39.65	20.56	19.59-34.59
GW-10	38.34	20.15	18.82-33.82
GW-11	38.26	21.61	13.76-28.76
GW-12	42.09	20.27	22.32-37.32
GW-13	44.79	20.22	25.07-40.07
GW-14	39.63	20.15	19.98-34.98
GW-15	42.33	20.00	22.83-37.83
GW-16	44.41	20.15	24.76-39.76
GW-17	42.19	20.80	21.89-36.89
BGW-1	47.57	20.30	27.77-42.77
Surficial Aquifer (Inside of Slurry Wall)			
PZ-1	42.68	25.5	14.5-24.5
PZ-2	42.32	27.84	11.6-21.6
PZ-3	40.36	31.29	6.1-16.1
PZ-4	40.78	31.14	6.6-16.8
PZ-5	40.73	31.7	6.0-16.0
PZ-6	40.74	31.88	5.7-15.7
PZ-7	40.60	31.75	5.9-15.9
PZ-8	40.21	22.79	15.0-25.0
PZ-9	39.97	24.53	13.4-23.4
PZ-10	39.86	24.53	12.7-22.7
PZ-11	40.52	31.71	5.7-15.7
PZ-12	43.28	24.14	16.8-26.8
PZ-13	44.78	26.17	17.1-27.1
PZ-14	45.09	20.25	23.1-33.1
PZ-15	45.57	19.7	23.4-33.4
PZ-16	44.67	20	23.5-33.5
PZ-17	44.28	20.37	22.9-32.9

Lake Staff Gauges	
Lake	Elevation (Ft-NGVD)
South 1	37.50
South 2	46.40
East Lake	46.50



MON WELL DETAILS FILE

*John
your copy
for files*

January 23, 2001

1024.0008(12)

Mr. Kim B. Ford , P. E.
Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

D.E.P.
JAN 24 2001
Southwest District Tampa

Re: **Manatee County SERWTP Expansion**
Leachate Collection System
GMS ID No. 4041C02025
Permit No. 39884-003-SC, Issued 4-27-2000

LEACHATE ROAD LF

Dear Mr. Ford :

Enclosed please find the executed Florida Department of Environmental Protection Form 62-522.900(3), which provides the Monitor Well Reports for the abandonment of existing monitoring wells No. PZ-15B and PZ-16. These two (2) monitor wells were removed in total and the casing area backfilled with clean sand materials. This work was completed by the on site General Contractor, Westra Construction Corporation.

As a follow-up to our letter dated January 4, 2001, please find enclosed the following listed items:

1. LLDPE Liner peel / shear testing reports per ASTM D4437, performed by Professional Services, Incorporated (PSI).
2. Air channel testing results as furnished by the liner installer, MWM South, Incorporated.

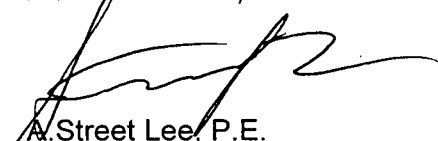
Monitor Well Completion Report For New Monitor Wells No. PZ-14A and PZ-15C are being mailed directly to the Department per PSI. The PSI mailed material will include the abandoned Monitor Well No. PZ-14.

We trust you find this material in order, and if there are any questions, please feel free to call me.

Mr. Kim B. Ford, P.E.
January 23, 2001
Page 2

Sincerely,

McKim & Creed, P.A.



A. Street Lee, P.E.
Senior Project Manager

Enclosures:

cc: Tim Hochuli, w/encl.
Don Kaser, w/encl.
Joe Resendes, w/encl.
Main File, w/encl.

DEP Form # 62-522.900(3)
Form Title <u>MONITOR WELL COMPLETION REPORT</u>
Effective Date _____
DEP Application No. _____ (Filed in _____)

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

D.E.P.

JAN 24 2001

Southwest District Tampa

MONITOR WELL COMPLETION REPORT

DATE: January 12, 2001

INSTALLATION NAME: _____

DEP PERMIT NUMBER: 39884-003-SC GMS NUMBER: 4041C02025

WELL NUMBER: PZ-15B WELL NAME: _____

DESIGNATION: Background _____ Immediate _____ Compliance _____

LATITUDE/LONGITUDE: N 27° 28' 06.97" W 82° 27' 10.86"

AQUIFER MONITORED: _____

INSTALLATION METHOD: _____

INSTALLED BY: _____

TOTAL DEPTH: _____ DEPTH OF SCREEN: _____ (bls)

SCREEN LENGTH: _____ SCREEN SLOT SIZE: _____ SCREEN TYPE: _____

CASING DIAMETER: _____ CASING TYPE: _____

LENGTH OF CASING: _____ FILTER PACK MATERIAL: _____

TOP OF CASING ELEVATION (MSL): 37.33

GROUND SURFACE ELEVATION (MSL): _____

COMPLETION DATE: _____

DESCRIBE WELL DEVELOPMENT: WELL ABANDONED

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): _____

DATE AND TIME MEASURED: _____

REMARKS: (soils information, stratigraphy, etc.): Well PZ 15-B was removed in total and the casing area backfilled with clean sand. Work was completed by Westra Construction Corporation of Palmetto Florida

REPORT PREPARED BY: A. Street Lee, PE, McKim & Creed, P.A. (727) 442-7196
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DEP Form # 62-522.900(3)
Form Title <u>MONITOR WELL COMPLETION REPORT</u>
Effective Date _____
DEP Application No. _____ (Filled in by DEP)

MONITOR WELL COMPLETION REPORT

DATE: January 12, 2001

INSTALLATION NAME: _____

DEP PERMIT NUMBER: 39884-003-SC GMS NUMBER: 4041C02025

WELL NUMBER: PZ-16 WELL NAME: _____

DESIGNATION: Background _____ Immediate _____ Compliance _____

LATITUDE/LONGITUDE: N 27° 28' 09.95" W 82° 27' 6.40"

AQUIFER MONITORED: _____

INSTALLATION METHOD: _____

INSTALLED BY: _____

TOTAL DEPTH: _____ DEPTH OF SCREEN: _____ (bls)

SCREEN LENGTH: _____ SCREEN SLOT SIZE: _____ SCREEN TYPE: _____

CASING DIAMETER: _____ CASING TYPE: _____

LENGTH OF CASING: _____ FILTER PACK MATERIAL: _____

TOP OF CASING ELEVATION (MSL): 34.55

GROUND SURFACE ELEVATION (MSL): _____

COMPLETION DATE: _____

DESCRIBE WELL DEVELOPMENT: WELL ABANDONED

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): _____

DATE AND TIME MEASURED: _____

REMARKS: (soils information, stratigraphy, etc.) Well PZ 16 was removed in total and the casing area backfilled with clean sand. Work was completed by Westra Construction Corporation of Palmetto Florida.

REPORT PREPARED BY: A. Street Lee, PE, McKim & Creed, P.A. (727) 442-7196
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

TABLE 1-2

WATER ELEVATION MONITORING NETWORK
LENA ROAD LANDFILL

Location Identifier	Ground Surface Elevation (Ft-NGVD)	Top-of-Casing Elevation (Ft-NGVD)	Bottom-of-Casing Elevation (Ft-NGVD)	Screened Interval Elevation (Ft-NGVD)	Screened Length
Surficial Aquifer (Outside Slurry Wall)					
LRII-1	34.97	37.97	16.85	16.85-26.85	9.5
LRII-2	33.38	36.53	13.65	13.65-23.65	9.5
LRII-3	30.47	33.46	10.86	10.86-20.86	9.5
LRII-4	30.95	33.86	11.35	11.35-21.35	9.5
LRII-5	33.55	36.74	13.97	13.97-23.97	9.5
MW-1	40.85	42.63	25.89	25.89-35.89	
MW-2	40.25	41.13	24.95	24.95-34.95	
MW-3	39.44	39.94	23.12	23.12-33.12	
MW-5	36.88	39.88	18.67	18.67-28.67	9.5
MW-6	38.19	39.29	16.59	16.59-17.59 ←	9.5
CW-4	35.13	37.48	22.55	22.55-32.55	
CW-5A	39.50	41.18	23.33	23.33-33.33	
GC-1A	28.35	31.75	16.52	16.52-26.52	10
GC-2	35.15	38.15	19.73	19.73-29.73	9.5
GC-3	31.92	35.02	11.74	11.74-12.74 ←	9.5
GC-4	30.15	33.90	11.50	11.50-12.50 ←	9.5
GC-5	33.46	36.46	14.91	14.91-24.91	9.5
GC-6	36.00	39.02	17.67	17.67-27.67	9.5
SMR-1	33.35	36.60	15.25	15.25-25.25	9.5
Artesian (Deen) Aquifer					
SMR-2	33.62	36.22	-116.78	-116.78-(-66.78)	50
SA-2	35.90	37.97	-93.28	-93.49-(-43.28)	
SA-3	32.46	35.12	-160.17	-160.17-(-110.17)	
SA-4	28.11	31.21	-112.57	-112.57-(-72.57)	50
SA-5	35.70	37.87	-115.15	-115.15-(-65.15)	50
SA-6	34.23	36.53	-116.51	-116.51-(-66.51)	50
SA-7	37.43	39.83	-113.14	-113.14-(-63.14)	50
SA-8	31.69	34.44	-118.94	-118.94-(-68.94) ←	50

Abbreviations: Ft-NGVD = Feet above the National Geodetic Vertical Datum.

Consultant Response No. 6

- A map with the location of the deep wells is provided in Appendix C, Figure 2, of this report.
- PSI has evaluated the data concerning the deep wells at the Lena Road Landfill and interpret the direction of groundwater flow to be to the north-northwest. There is a general trend for the high point to be in the vicinity of deep monitoring well SA-5, and for the low points to be in the area of deep monitoring wells SA-4, SA-7, and SA-8. The data is limited to the six (6) similarly constructed wells and is meant to give a rough estimate of groundwater flow direction. This data does correlate well with the regional trend of groundwater flow published by Southwest Florida Water Management District. Groundwater contour maps for the deep monitoring wells are provided in Appendix C, Figures 8-15 of this report.

The screen depths and lengths of SA-2 and SA-3 vary distinctly from the other deep wells and are not used as data points in the determination of groundwater flow direction. The following table lists the screen elevations for all of the deep wells:

Deep Monitoring Well	Top of Screen Elevation, Ft., NGVD	Bottom of Screen Elevation, Ft., NGVD
SMR-2	-63.9 <i>50'-14"</i>	-113.9
SA-2	-15.0 <i>120'</i>	-115.0
SA-3	-17.9 <i>110'</i>	-127.9
SA-4	-72.5	-112.5
SA-5	-65.1	-115.1
SA-6	-67.0	-117.0
SA-8	-68.9 <i>50'</i>	-118.9

- The vertical hydraulic gradient for the Lena Road Landfill was calculated using data over the following six (6) pairs of wells:

The field parameters on the previous table were evaluated at the well sampling point. If the laboratory value or field value were not available, it is indicated by a "-" in the appropriate column. Values below the laboratory detection limits are generally listed with a less than sign preceding the laboratory detection limit. The data was reviewed for general trend analysis and fluctuation from average or typical values concerning semi-annual changes in groundwater quality, comparison of shallow/deep zone wells, comparison of upgradient/downgradient wells, and correlation between related parameters. A compilation of the data for Half 1, 1996 through Half 2, 1997 for each monitor well is provided in Tables 1 - 27, Appendix C of this report.

6.2 Shallow Zone Monitoring Well Analysis

The monitoring wells at the Lena Road Landfill are grouped in two major categories in relation to their total depth. These categories are shallow and deep monitoring wells, or, wells that tap the surficial aquifer or the artesian aquifer, respectively. The data analysis from each of these well categories is used to evaluate the effectiveness of the landfill design and the relative extent of the potential for groundwater contamination. For the purposes of this annual evaluation the shallow wells are defined as ranging in depth from 10 - 25 feet below the surface. A listing of the shallow wells and their total depths are provided below:

TOTAL DEPTH OF SHALLOW ZONE MONITORING WELLS (FEET)			
Monitoring Well	Depth	Monitoring Well	Depth
MW-1	14.53	LRII-4	22.50
MW-2	13.97	LRII-5	22.78
MW-3	13.97	GC-1A	23.76
MW-5	21.42	GC-2	18.03
MW-6	20.72	GC-3	22.58
CW-4	17.91	GC-4	22.18
CW-5A	11.92	GC-5	22.02
LRII-1	21.12	GC-6	22.40
LRII-2	22.83	SMR-I	22.88
LRII-3	22.61		

6.2.1 Shallow Monitoring Well Analytical Trends

The measurements for antimony barium, beryllium, cadmium, chlorides, chromium, cobalt, copper, lead, mercury, nitrates, nickel, selenium, silver, sodium, thallium, vanadium and zinc were below maximum contamination levels (MCLs). The concentration of arsenic exceeded the MCL on the three measurement dates at GC-2

SITE LOCATION: LENA ROAD LANDFILL

PROJECT NO: 378-31067

DATE BEGAN: 8-19-94

DRILLER: Robert Shuey

GROUND SURFACE ELEV.: 31 feet

DRILLING METHOD: 4.25" I.D. Hollow Stem Auger

CONTRACTOR: PSI

BORING-NO: GC-1A

DATE FINISHED: 8-19-94

SECTION: 6

TOWNSHIP: 35 S

RANGE: 18 E

PAGE 1 OF 1

GEOLOGIST: R. Dunn

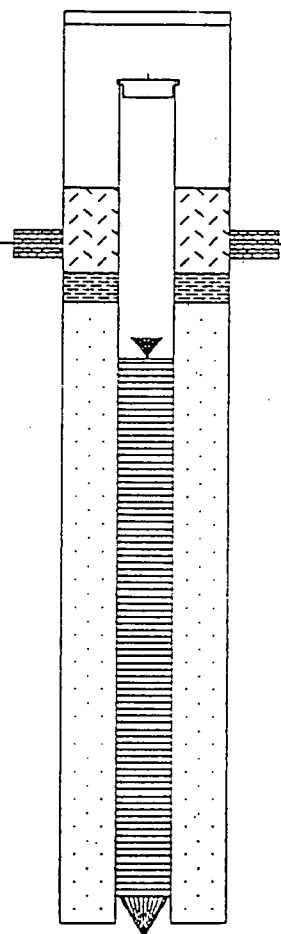
CHECKED BY: S.S.P.

GWL DEPTH: 2.0'

DRILL EQUIP: CME-75

GWL-DATE/TIME: 8-19-94

WATER TABLE	DEPTH (FT)	SAMPLE TYPE AND NO.	ASTM (N)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (ppm)		WELL CONSTRUCTION					
						FID	PIO	MONITOR WELL NO.:	BORE-HOLE DIAMETER:	SURFACE CASING:	SCREEN LENGTH:	SEAL TYPE:	DEVELOPMENT TIME:
	5.00							GC-1A	8-INCH	2-INCH PVC	9.5 FT (10.01' SLOTS)	BENTONITE	30-MIN.
	0.00				SAND: grey to dark grey, fine grained.								
					SILTY SAND: tan to orange brown, fine grained.								
	-5.00				SILTY SAND: grey, fine grained, slight clay content.								
	-10.00												
	-15.00				BOTTOM OF BORING AT 12.0 FT.								



SITE LOCATION: LENA ROAD LANDFILL

PROJECT NO: 378-3I067

BORING NO: CW-05

PAGE 1 OF 1

DATE BEGAN: 8-19-94

DATE FINISHED: 8-19-94

GEOLOGIST: R. Durn

DRILLER: Robert Shoey

SECTION: 6

CHECKED BY: S.S.P.

GROUND SURFACE, ELEV.: 42 feet

TOWNSHIP: 35 S

GWL DEPTH: 9.0'

DRILLING METHOD: 4.25" I.D. Hollow Stem Auger

RANGE: 19 E

DRILL EQUIP: CME-75

CONTRACTOR: PSI

GWL-DATE/TIME: 8-19-94

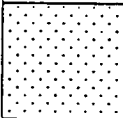
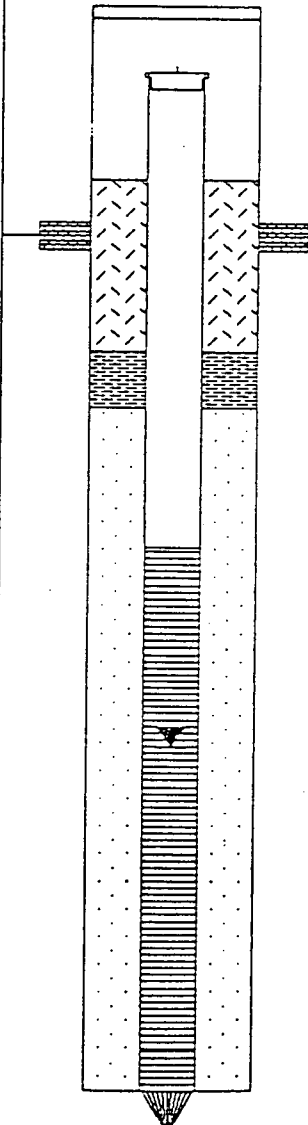
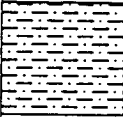
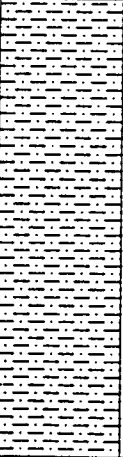
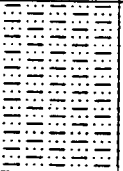
WATER TABLE	DEPTH (FT)	SAMPLE TYPE AND NO.	ASTM (IN)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (ppm)		WELL CONSTRUCTION
						FID	PID	
	5.00							MONITOR WELL NO.: <u>CW-05</u> BOREHOLE DIAMETER: <u>8-INCH</u> SURFACE CASING: <u>2-INCH PVC</u> SCREEN LENGTH: <u>10 FT (0.01' S.G.T.)</u> SEAL TYPE: <u>BENTONITE</u> DEVELOPMENT TIME: <u>30-MIN.</u>
	0.00				SAND: grey to dark grey, fine grained.			
					SILTY SAND: tan to orange brown, fine grained.			
	-5.00				SILTY SAND: grey, fine grained, slight clay content.			
	-10.00				CLAYEY SAND: grey to greenish grey, cohesive; phosphate fragments.			
	-15.00				BOTTOM OF BORING AT 15.0 FT.			

Table 1
MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: LRII-1 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-15-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 18.5 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/ 8.5 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/ 9.5 (feet)

SCREEN INTERVAL: 8.5 to 18.0 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 6.5 to 18.5 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 3.5 to 6.5 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 3.5 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 38.02

GROUND SURFACE ELEVATION (feet, NGVD): 34.9

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 32" / 82° 26' 48"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

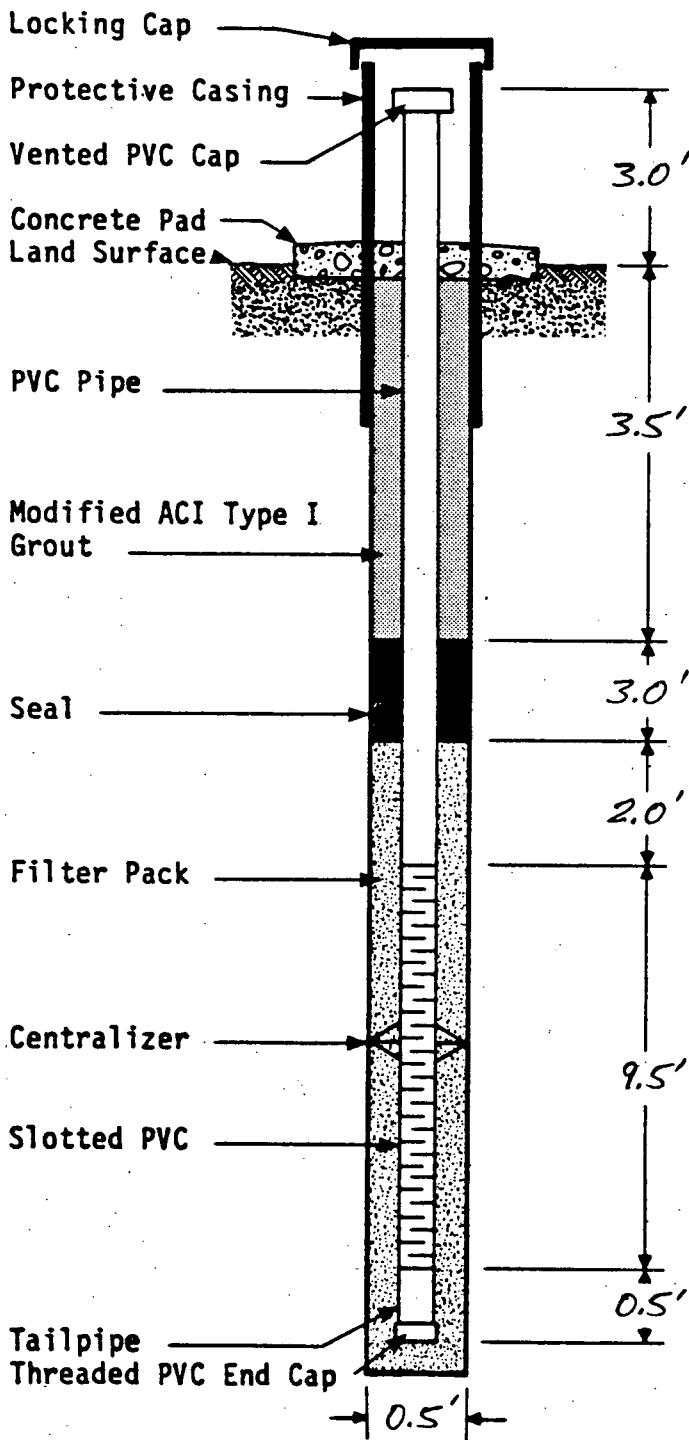
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: LR II-1
 Date Installed: 10-15-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFI SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 8.5 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 18.5 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 88-595
SA-S AT THIS SITE

Water Level Readings:
 Date: 11/30/88
 Depth BTOC: 4.62' Depth BLS: 1.62'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 2
MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____ GMS NO.: _____

WELL NO.: _____ WELL NAME: LR11-2 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-14-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 8.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 8.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.53

GROUND SURFACE ELEVATION (feet, NGVD): 33.2

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 44" / 82° 26' 48"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

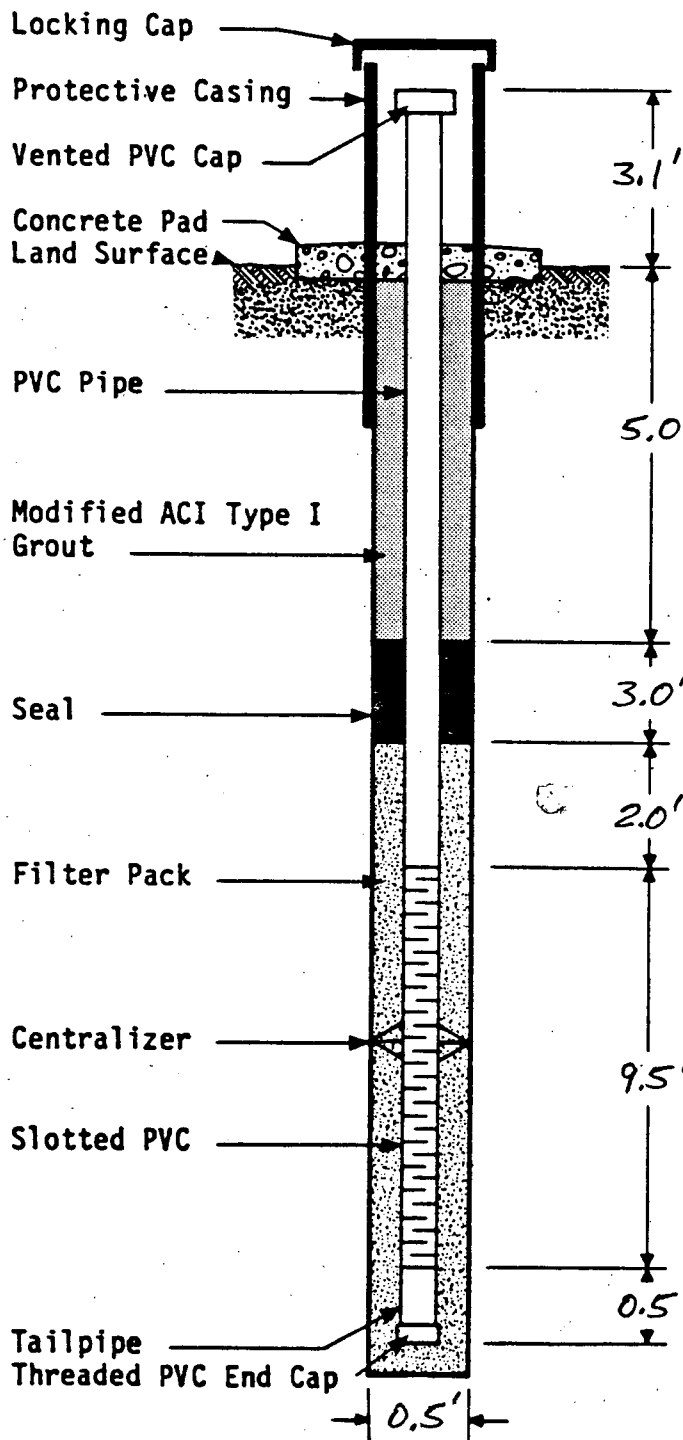
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: LR II-2
 Date Installed: 10-14-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 88-589
SA-6 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 5.83' Depth BLS: 2.73'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 3

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: LRII-3 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-23-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10.0 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 19.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 33.51

GROUND SURFACE ELEVATION (feet, NGVD): 30.4

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 50" / 82° 26' 36"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

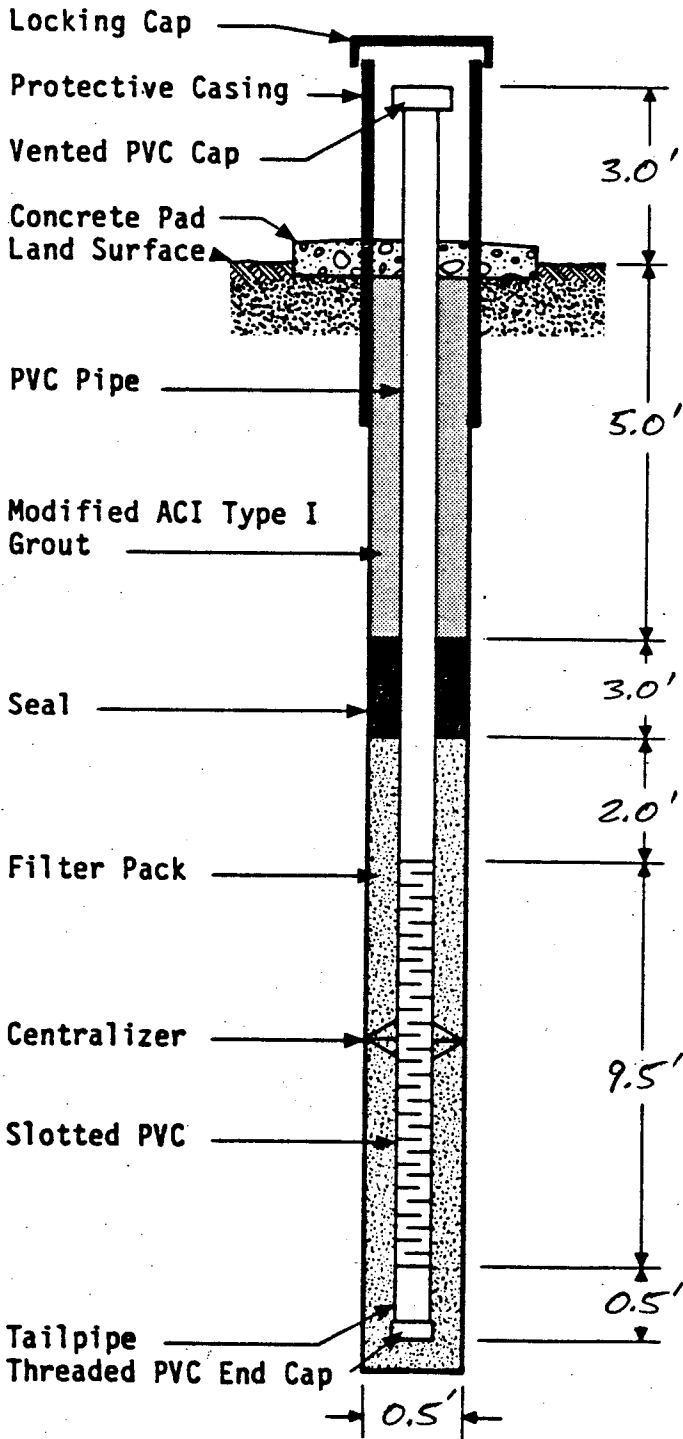
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE.

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: LR II-3
 Date Installed: 10-23-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type)
4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ
SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø
0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s))

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT # 88-590
SA-7 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 5.54' Depth BLS: 2.54'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 4

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: LR11-4 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-23-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10.0 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 8.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 33.90

GROUND SURFACE ELEVATION (feet, NGVD): 30.9

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 50" / 82° 26' 28"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

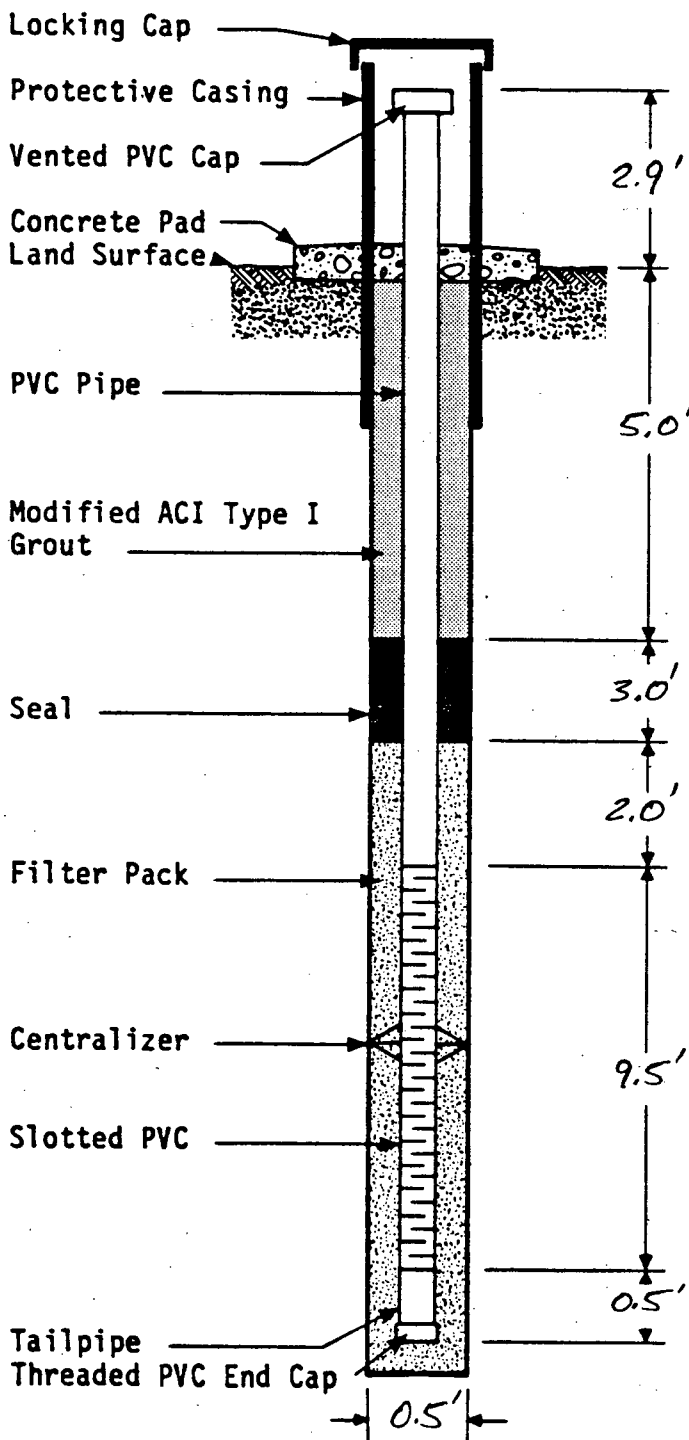
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: LR II-4
 Date Installed: 10-23-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2'x2'x4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT # 88-591
SA-8 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 5.29' Depth BLS: 2.39'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 5

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: LRH-5 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-23-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10.0 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 8.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.78

GROUND SURFACE ELEVATION (feet, NGVD): 33.5

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 41" / 82° 26' 21"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

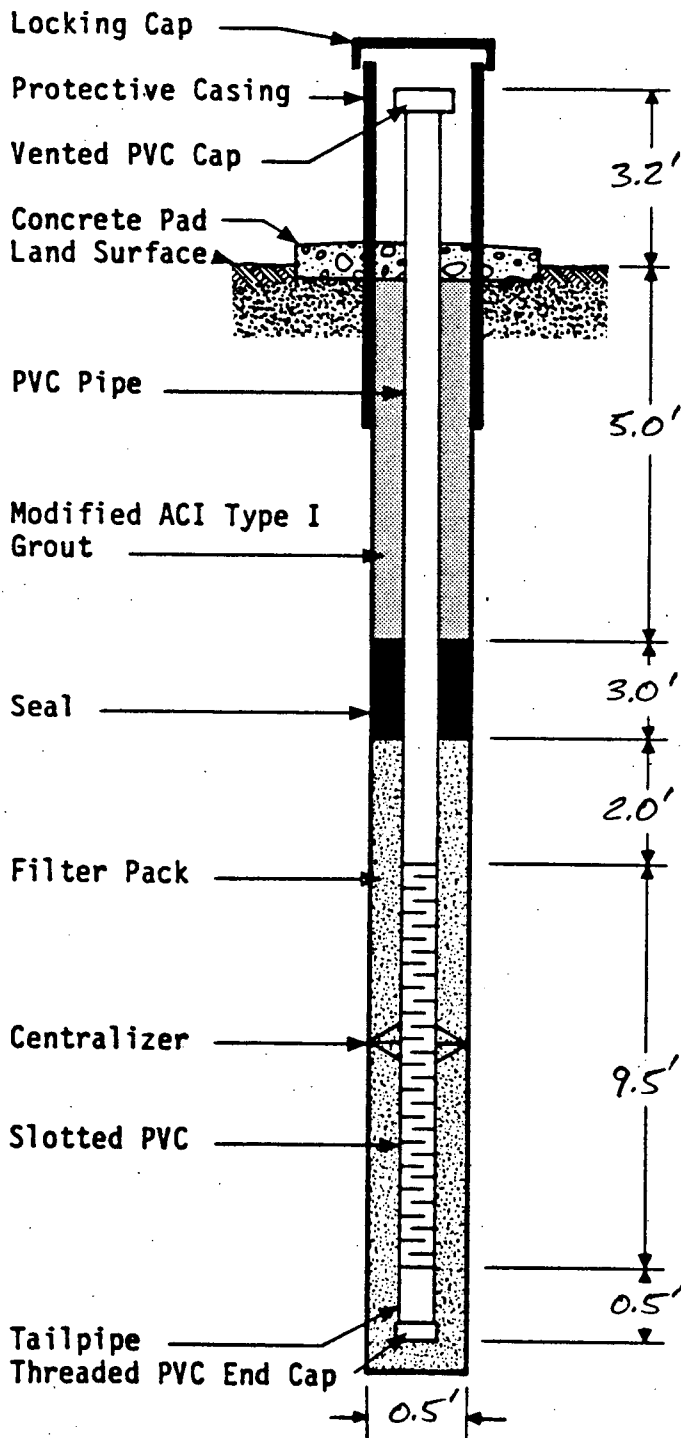
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: LR II-5
 Date Installed: 10-23-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT # 88-592

Water Level Readings:
 Date: 12-14-88
 Depth BTOC: 5.92' Depth BLS: 2.72'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 6

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: GC-1 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-25-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 8.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 31.36

GROUND SURFACE ELEVATION (feet, NGVD): 27.1

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 15" / 82° 27' 13"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

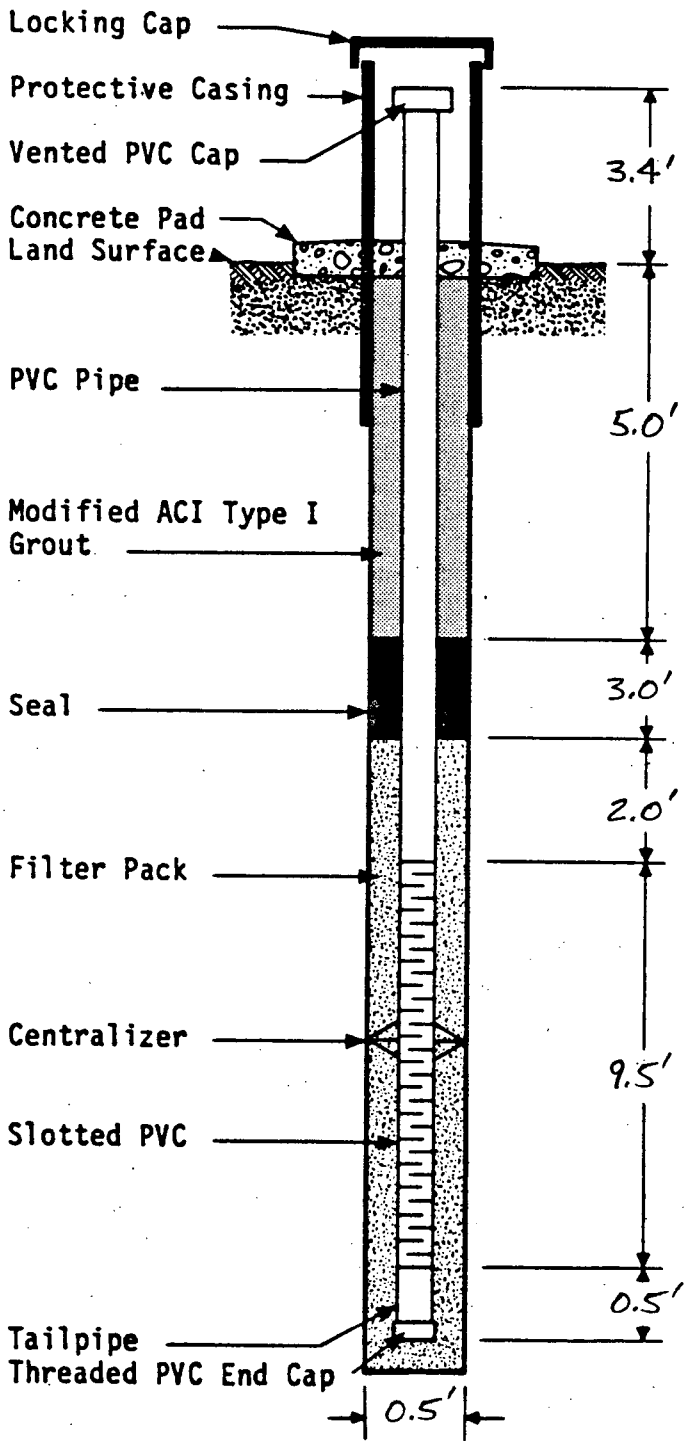
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-1
 Date Installed: 10-25-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT #88-599
SA-4 AT THIS SITE

Water Level Readings:
 Date: 12-14-88
 Depth BTOC: 4.46' Depth BLS: 1.06'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 7

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____

WELL NAME: GC-2

WELL TYPE: C

DRILLING METHOD: Hollow Stem

DATE INSTALLED: 10-21-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5

(feet) TOTAL DEPTH: 15.5

(feet, bls)

CASING TYPE: TFJ SCH 40 PVC

CASING DIAMETER/LENGTH: 2 inch/5.5 (feet)

SCREEN TYPE: TFJ SCH 40 PVC

SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5

(feet)

SCREEN INTERVAL: 5.5

to 15.0

(feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand

INTERVAL: 3.5 to 15.5 (feet, bls)

SEALANT TYPE: Clayey Fine Sand

INTERVAL: 1.5 to 3.5

(feet, bls)

GROUT TYPE: Modified ACI Type I

INTERVAL: 0 to 1.5

(feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 38.23

GROUND SURFACE ELEVATION (feet, NGVD): 35.2

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 25" / 82° 26' 56"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

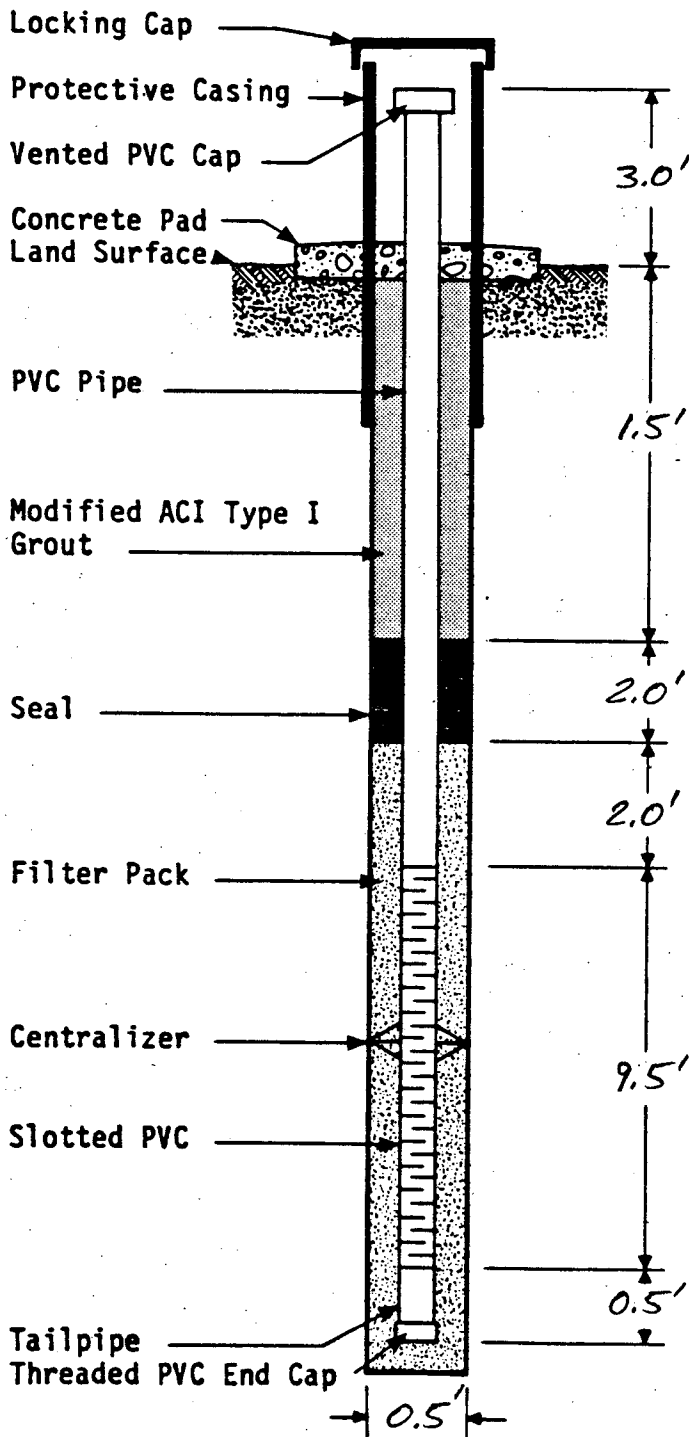
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-2
 Date Installed: 10-21-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 5.5 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 15.5 ft (BLS)

No. Bags of Cement: 2
 No. Bags of Filter Pack: 14
 Amount of Seal: _____

Remarks: PERMIT # 88-596
SA-2 AT THIS SITE

Water Level Readings:
 Date: 12-14-88
 Depth BTOC: 4.17' Depth BLS: 1.17'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 8

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: GC-3 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-20-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 8.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 8.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet,bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 35.08

GROUND SURFACE ELEVATION (feet, NGVD): 32.0

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 25" / 82° 27' 02"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

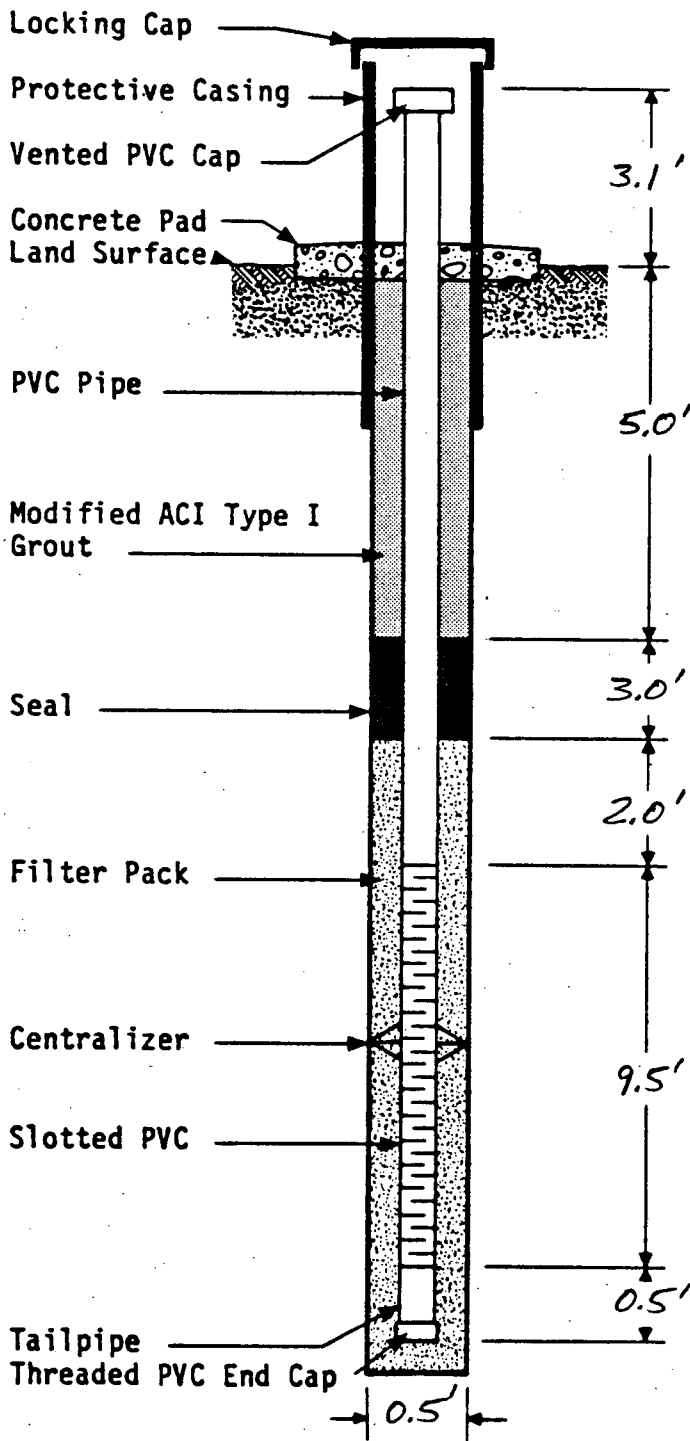
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-3
 Date Installed: 10-20-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT #88-597
SA-3 AT THIS SITE

Water Level Readings:
 Date: 12-14-88
 Depth BTOC: 4.58' Depth BLS: 1.48'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 9

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: 3005A151181 WELL NAME: GC-4 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-20-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 19.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/9.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 9.0 to 18.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 7.0 to 19.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 5.0 to 7.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 5.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 33.98

GROUND SURFACE ELEVATION (feet, NGVD): 30.3

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 23" / 82° 27' 14"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

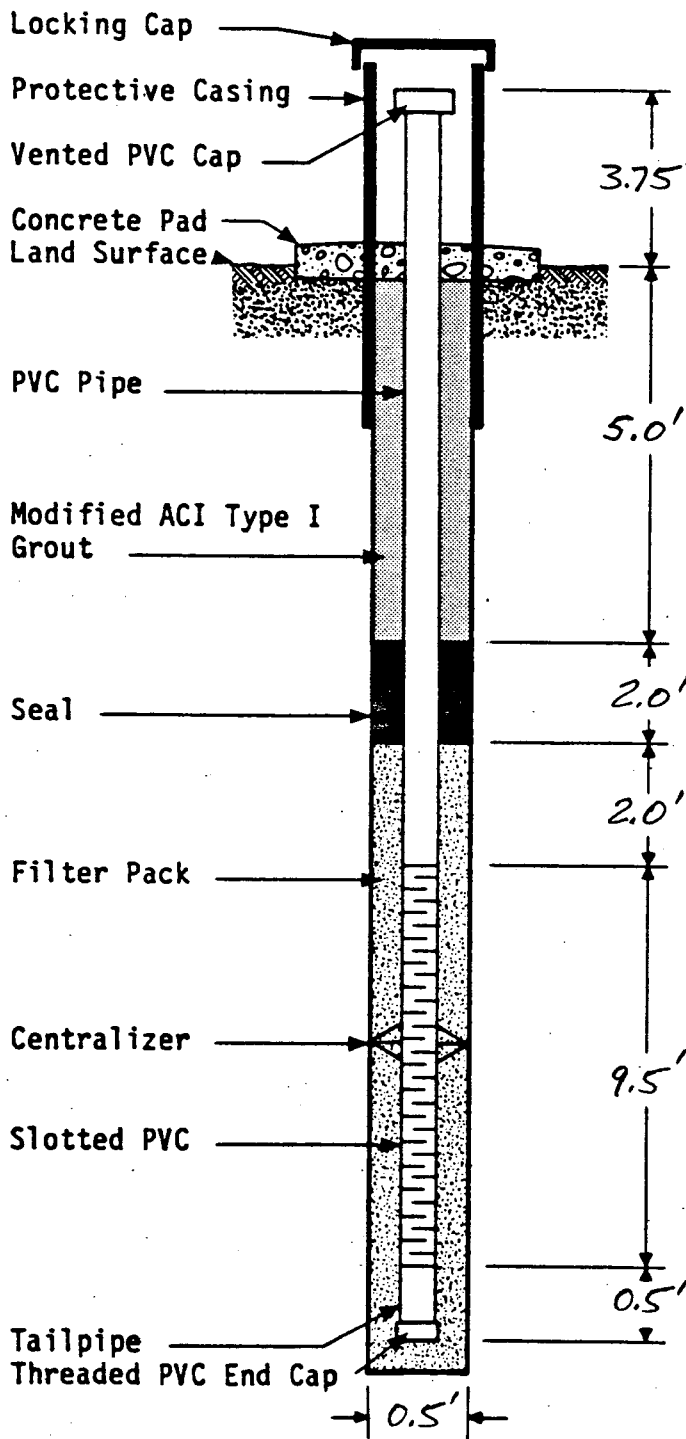
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-4
 Date Installed: 10-20-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type)
4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø T F J
SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø
0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s))

Total Length of PVC Pipe: 9.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 19.0 ft (BLS)

No. Bags of Cement: 2
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 88-598

Water Level Readings:
 Date: 12/14/88
 Depth BTOC: 5.58' Depth BLS: 1.83'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 10

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: GC-5 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-22-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 18.5 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/ 8.5 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/ 9.5 (feet)

SCREEN INTERVAL: 8.5 to 18.0 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 6.5 to 18.5 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 3.5 to 6.5 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 3.5 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.52

GROUND SURFACE ELEVATION (feet, NGVD): 32.5

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 05" / 82° 27' 09"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

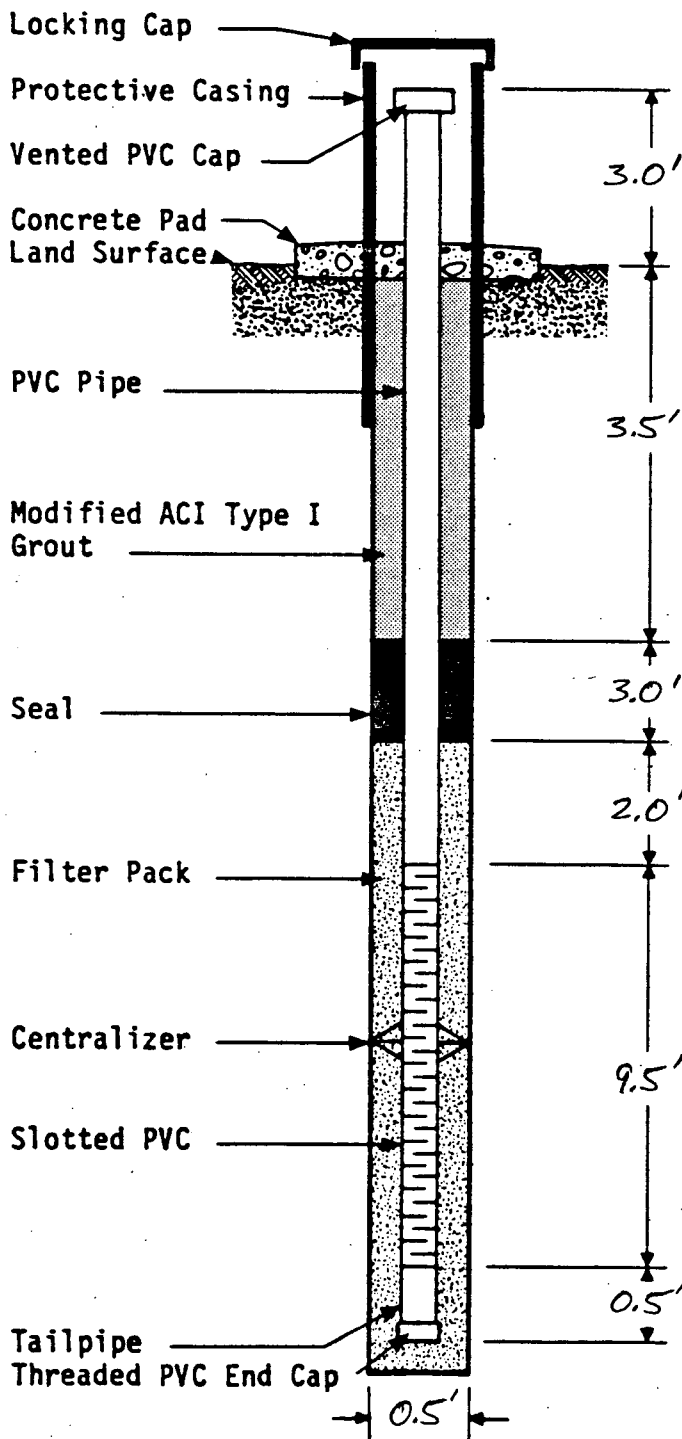
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC - TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-5
 Date Installed: 10-22-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø T&J SCHEDULE 40 PVC
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 8.5 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 18.5 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT # 88-600

Water Level Readings:
 Date: 12-15-88
 Depth BTOC: 7.83' Depth BLS: 4.83'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 11

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: GC-6 WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-21-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 19.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/ 9.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/ 9.5 (feet)

SCREEN INTERVAL: 9.0 to 18.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 7.0 to 19.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 4.0 to 7.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 4.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 39.10

GROUND SURFACE ELEVATION (feet, NGVD): 35.2

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 05" / 82° 26' 53"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

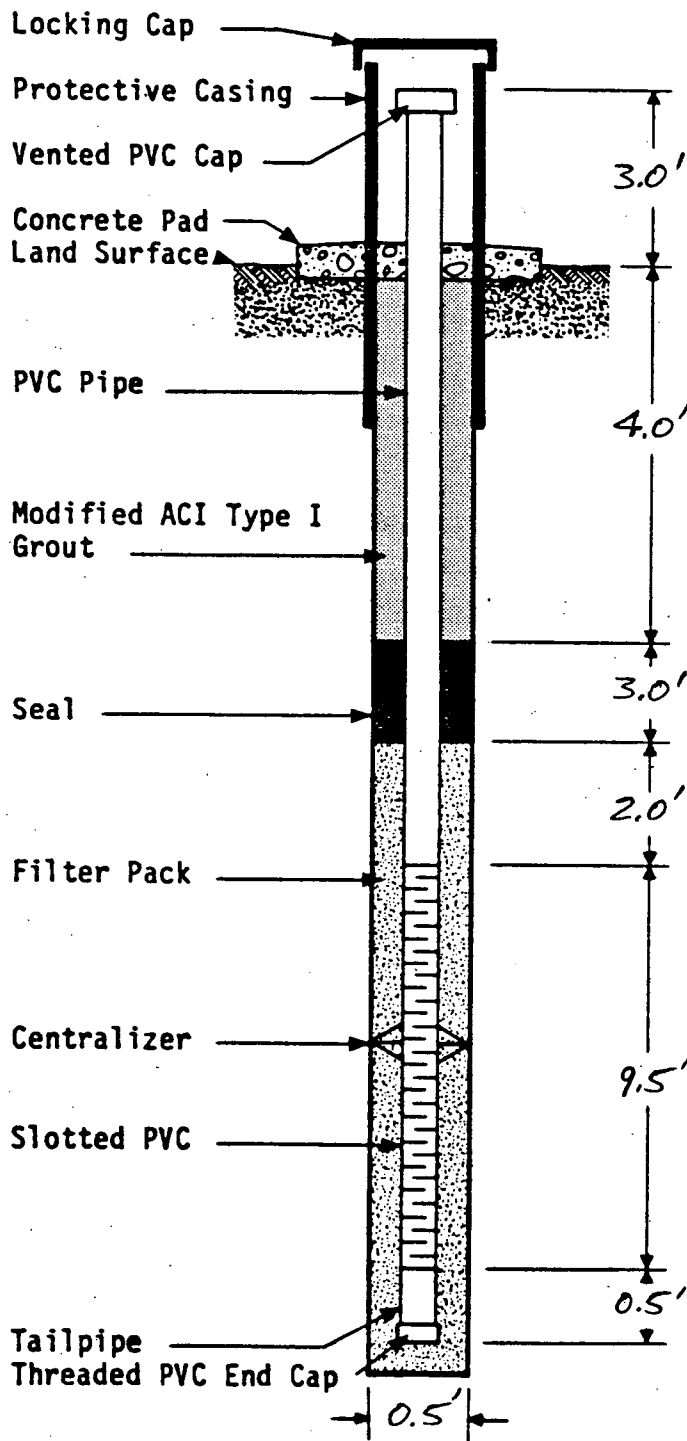
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: GC-6
 Date Installed: 10-21-88
 Crew Supervisor: STEVE FISHER
 Well Location: GUN CLUB (STAGE III)

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø TET SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 9.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 19.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 16
 Amount of Seal: _____

Remarks: PERMIT # 88-601

Water Level Readings:
 Date: 12-15-88
 Depth BTOC: 7.96' Depth BLS: 4.96'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 12

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: MW-5(New) WELL TYPE: C

RILLING METHOD: Hollow Stem DATE INSTALLED: 10-22-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 18.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/8.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 8.0 to 17.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 6.0 to 18.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 4.0 to 6.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 4.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 39.91

GROUND SURFACE ELEVATION (feet, NGVD): 37.1

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 06" / 82° 26' 48"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

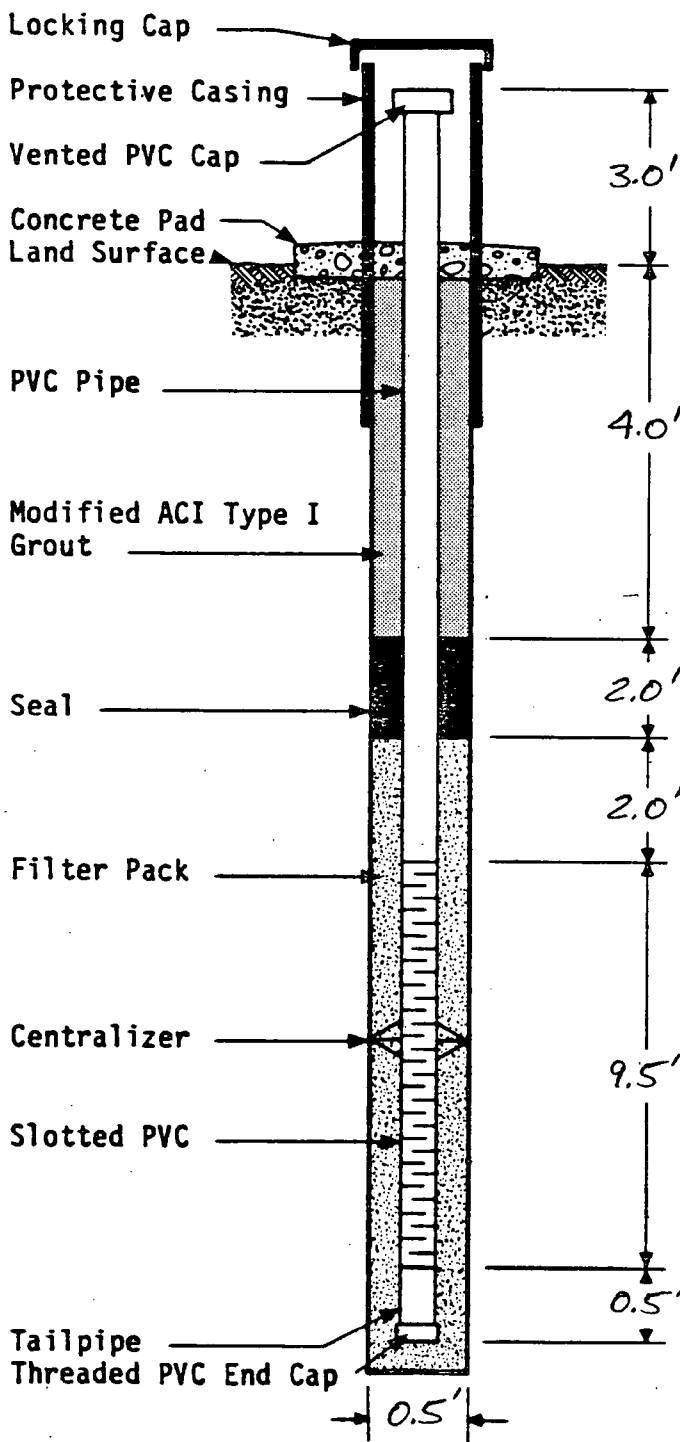
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: MW-5 (NEW)
 Date Installed: 10-22-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE I

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 8.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 18.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 88-602

Water Level Readings:
 Date: 12-15-88
 Depth BTOC: 9.17' Depth BLS: 6.17'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 13

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: MW-6 (New) WELL TYPE: C

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-17-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 18.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/ 8.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/ 9.5 (feet)

SCREEN INTERVAL: 8.0 to 17.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 6.0 to 18.0 (feet, bls)

SEALANT TYPE Clayey Fine Sand INTERVAL: 4.0 to 6.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 4.0 (feet,bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 39.32

GROUND SURFACE ELEVATION (feet, NGVD): 36.1

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 21" / 82° 26' 21"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

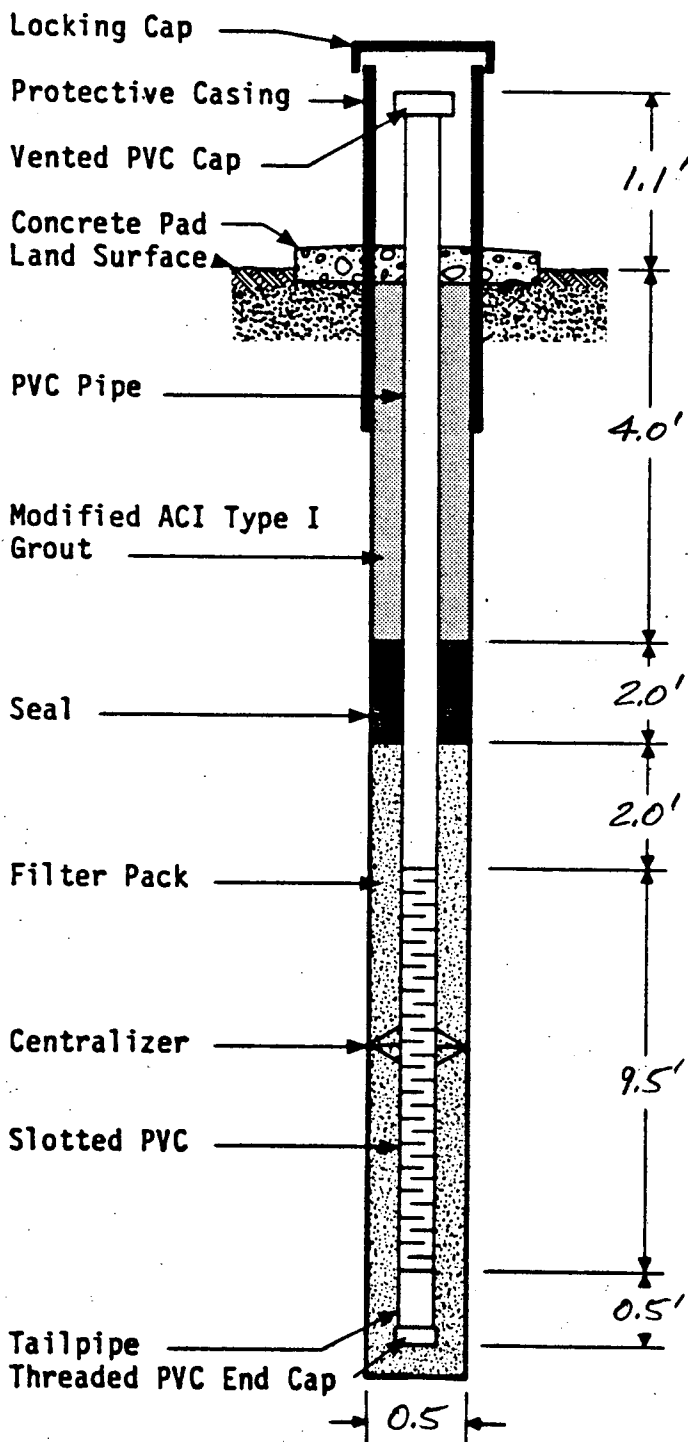
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: MW-6 (NEW)
 Date Installed: 10-17-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE I

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFJ SCHEDULE 40
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 8.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 18.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 594

Water Level Readings:
 Date: 11/30/88
 Depth BTOC: 5.54' Depth BLS: 4.44'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 15

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SMR-2 WELL TYPE: B

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 11-3-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100 to 150 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.10

GROUND SURFACE ELEVATION (feet, NGVD): 33.4

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 37" / 82° 26' 03"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

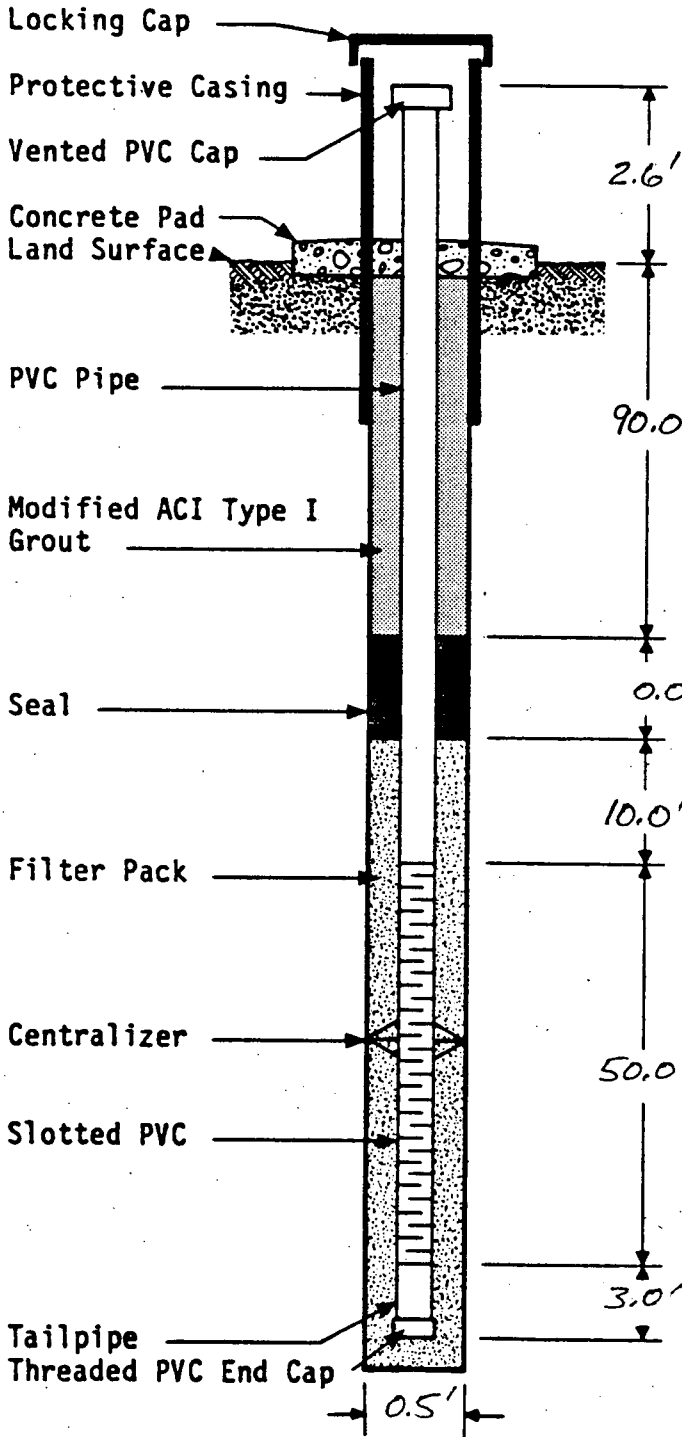
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SMB-2
 Date Installed: 11-3-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø TFS SCHEDULE 40
 Seal: (type) GROUT
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 18
 No. Bags of Filter Pack: 26
 Amount of Seal: _____

Remarks: PERMIT # 88-606
SMB-1 AT THIS SITE

Water Level Readings:
 Date: 11-30-88
 Depth BTOC: 20.83' Depth BLS: 18.23'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 16

MONITORING WELL
COMPLETION REPORT

DATE: March 10, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SA-4 WELL TYPE: C

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 11-5-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH-40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100 to 150 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 31.28

GROUND SURFACE ELEVATION (feet, NGVD): 27.5

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 15" / 82° 27' 13"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

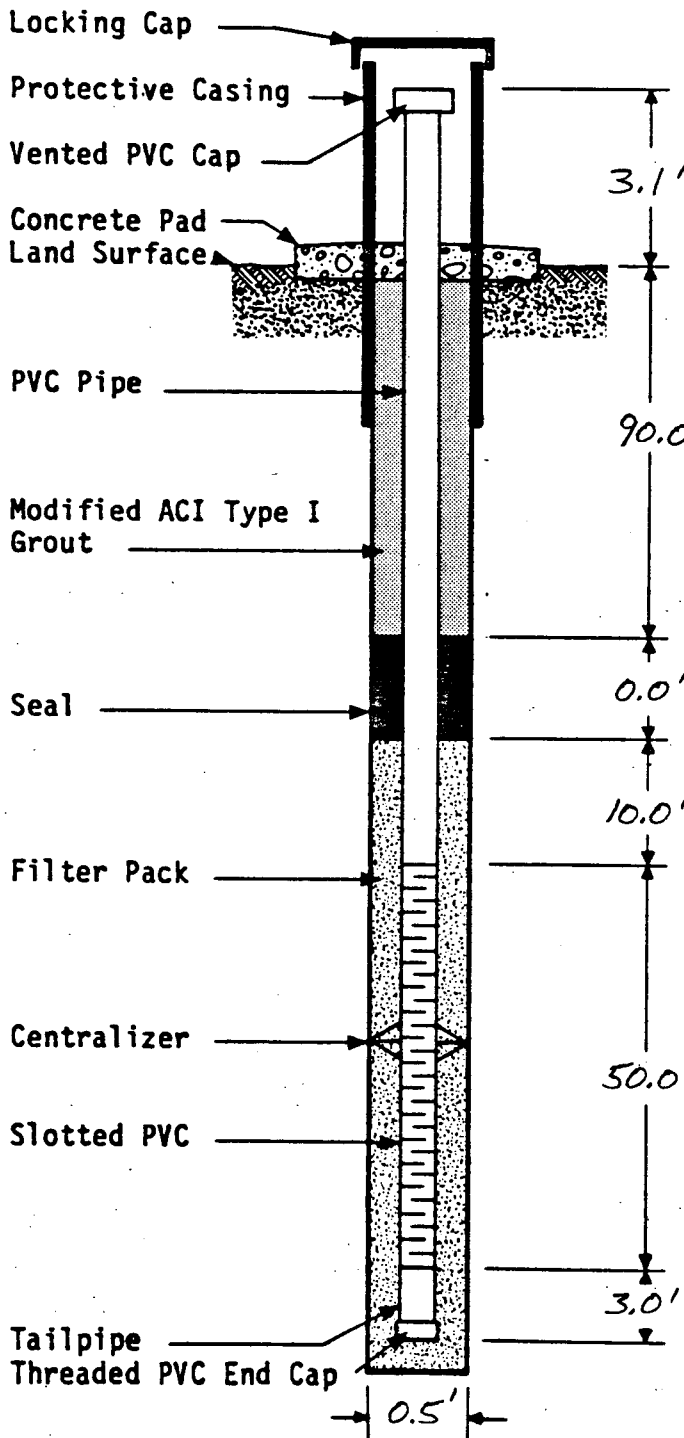
BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

*open interval
through greenish
gray clay w/ PO₄*

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SA-4
 Date Installed: 11-5-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE III

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' X 2' X 4"
 PVC Pipe: (size & type) 2" Ø TFI SCHEDULE 40
 Seal: (type) GROUT
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 18
 No. Bags of Filter Pack: 26
 Amount of Seal: _____

Remarks: PERMIT # 88-607
GC-1 AT THIS SITE

Water Level Readings:
 Date: 12-14-88
 Depth BTOC: 18.25' Depth BLS: 15.15'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 14

MONITORING WELL
COMPLETION REPORT

DATE: March 8, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____ GMS NO.: _____

WELL NO.: _____ WELL NAME: SMR-1 WELL TYPE: B

DRILLING METHOD: Hollow Stem DATE INSTALLED: 10-6-88

BY: Steve Fisher

AQUIFER MONITORED: Surficial

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 20.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/10.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/9.5 (feet)

SCREEN INTERVAL: 10 to 19.5 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 9.0 to 20.0 (feet, bls)

SEALANT TYPE: Clayey Fine Sand INTERVAL: 7.0 to 9.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 7.0 (feet,bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.48

GROUND SURFACE ELEVATION (feet, NGVD): 33.4

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 37" / 82° 26' 03"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

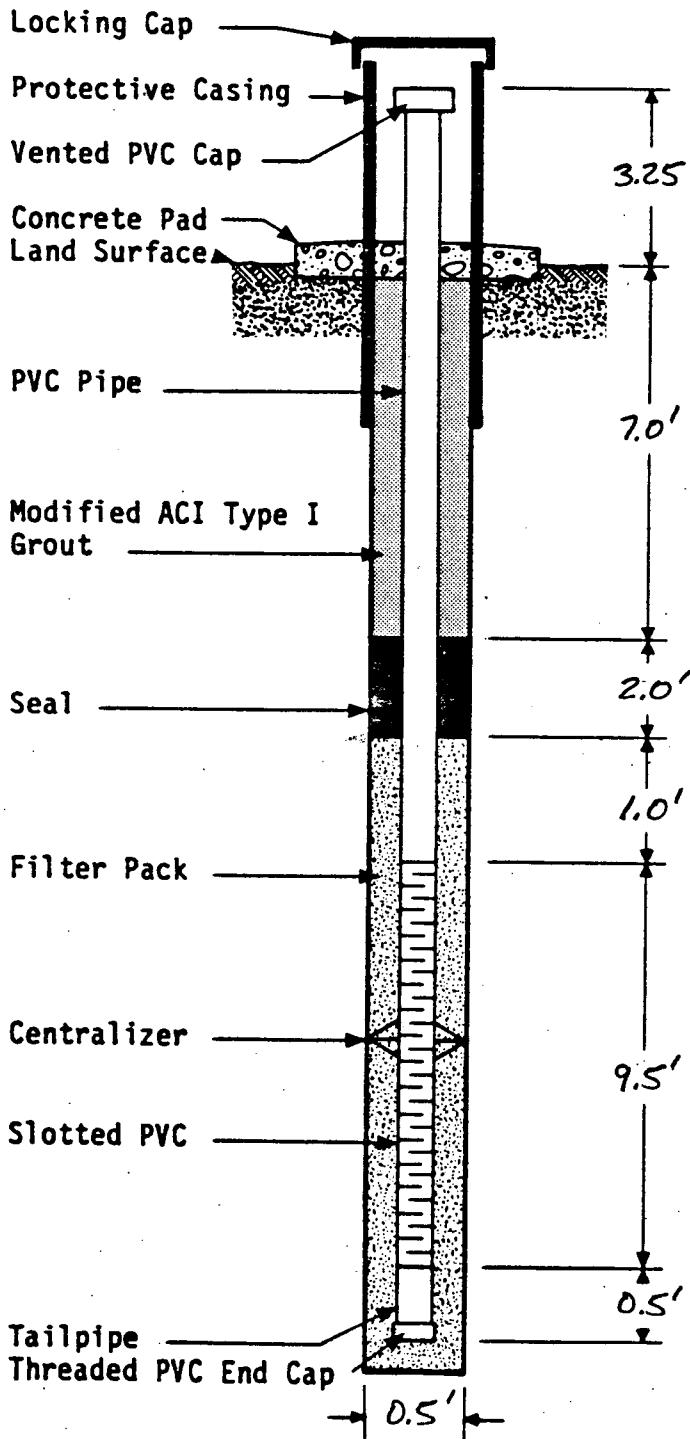
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SMR-1
 Date Installed: 10-6-88
 Crew Supervisor: STEVE FISHER
 Well Location: STAGE II

Protective Casing: (size & type)
4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40 PVC
 Seal: (type) CLAYEY FINE SAND
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 PVC SCREEN
 Centralizers: (number & location(s))

Total Length of PVC Pipe: 10.0 ft (BLS)
 Total Length of Slotted PVC: 9.5 ft (BLS)
 Total Length of Tailpipe: 0.5 ft
 Total Depth of Well: 20.0 ft (BLS)

No. Bags of Cement: 3
 No. Bags of Filter Pack: 15
 Amount of Seal: _____

Remarks: PERMIT # 88-593
WELL AT SMR-2

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 6.25' Depth BLS: 3.00'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 17

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SA-5 WELL TYPE: C

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 10-19-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100.0 to 150.0 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 37.92

GROUND SURFACE ELEVATION (feet, NGVD): 34.9

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 32" / 82° 26' 48"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

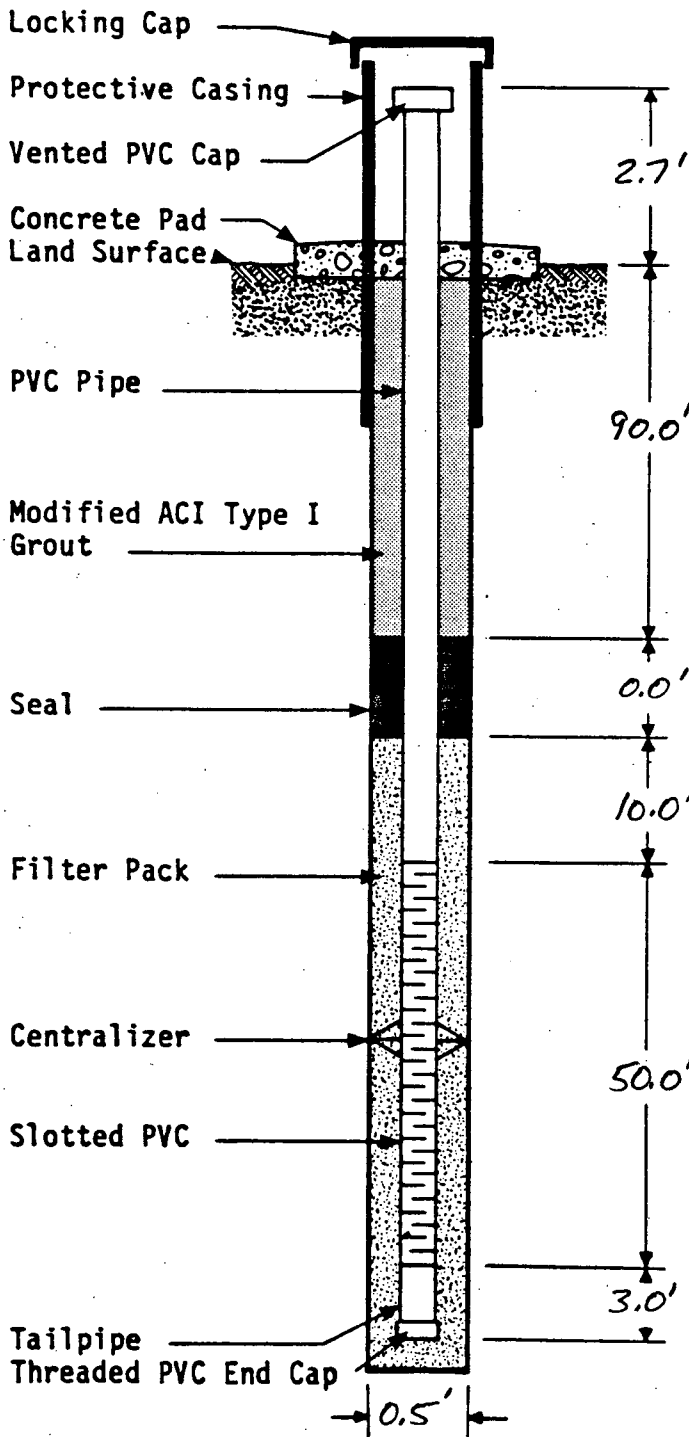
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SA-5
 Date Installed: 10-19-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2'x2'x4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) GROUT
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 18
 No. Bags of Filter Pack: 25
 Amount of Seal: _____

Remarks: PERMIT # 608
LRII-1 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 22.25' Depth BLS: 19.55'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 18

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SA-6 WELL TYPE: C

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 10-25-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100 to 150 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 36.04

GROUND SURFACE ELEVATION (feet, NGVD): 33.0

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 44" / 82° 26' 48"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

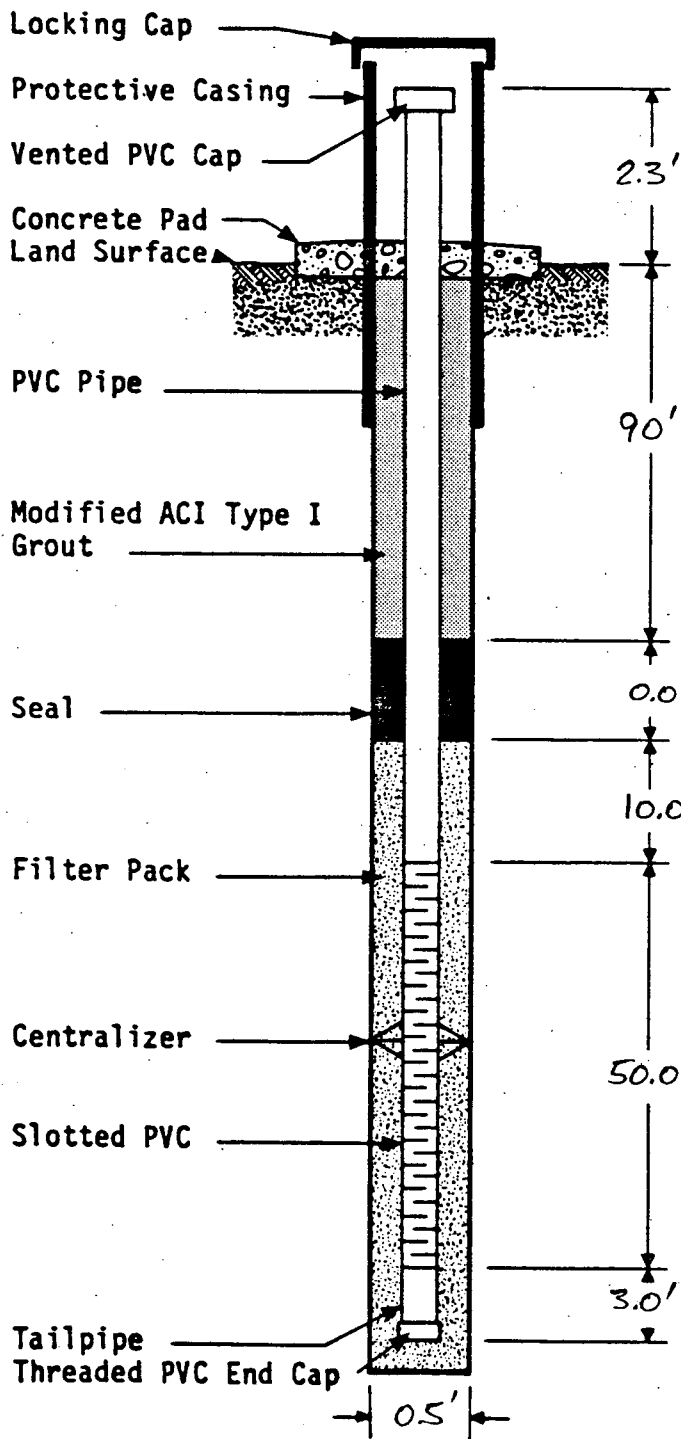
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SA-6
 Date Installed: 10-25-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) Grout
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 18
 No. Bags of Filter Pack: 30
 Amount of Seal: _____

Remarks: PERMIT # 88-603
LR II-2 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 20.96' Depth BLS: 18.66'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 19

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SA-7 WELL TYPE: C

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 10-28-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100 to 150 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 33.27

GROUND SURFACE ELEVATION (feet, NGVD): 30.3

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 50" / 82° 26' 36"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

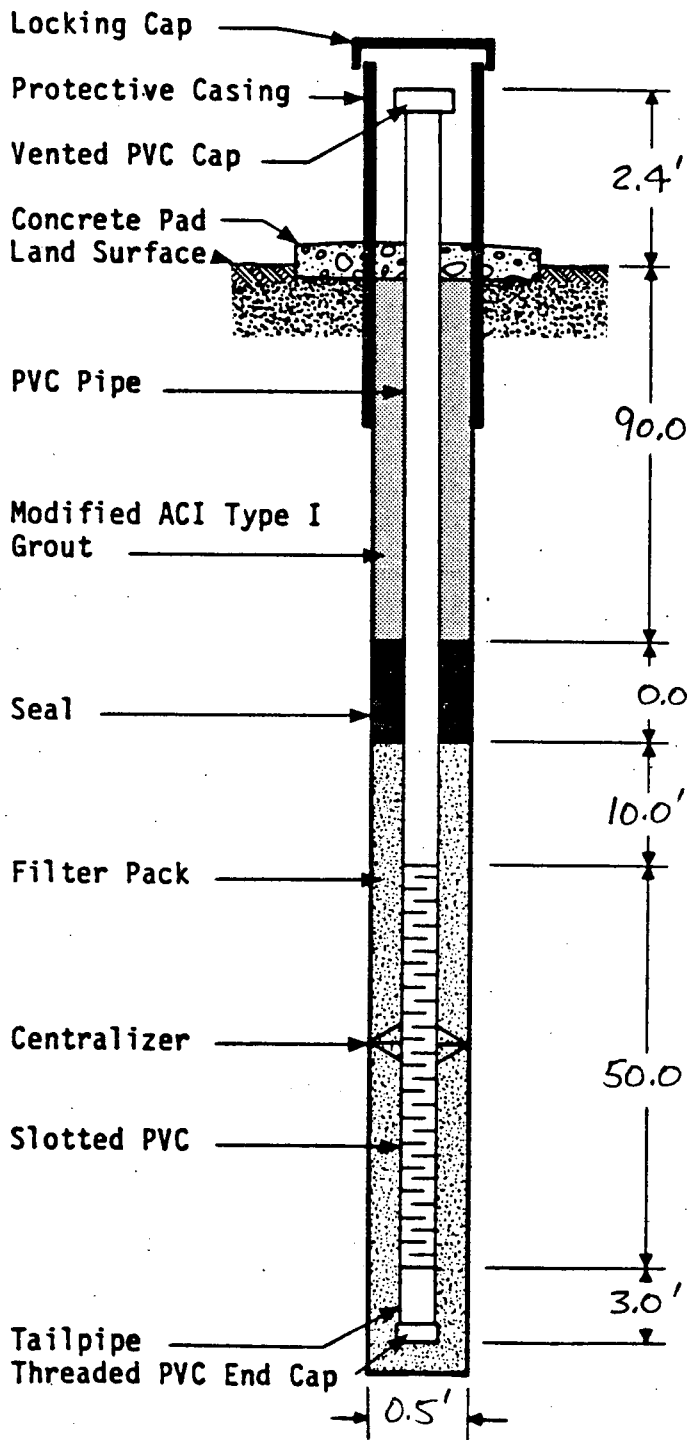
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SA-7
 Date Installed: 10-28-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFI SCHEDULE 40
 Seal: (type) GROUT
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 17
 No. Bags of Filter Pack: 27
 Amount of Seal: _____

Remarks: PERMIT # 88-604
LR II-3 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 21.17' Depth BLS: 18.77'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

Table 20

MONITORING WELL
COMPLETION REPORT

DATE: March 9, 1989

FACILITY NAME: Lena Road Landfill

DER PERMIT NUMBER: _____

GMS NO.: _____

WELL NO.: _____ WELL NAME: SA-8 WELL TYPE: C

DRILLING METHOD: Hydraulic Rotary DATE INSTALLED: 11-1-88

BY: John May

AQUIFER MONITORED: Artesian

HOLE DIAMETER: 0.5 (feet) TOTAL DEPTH: 153.0 (feet, bls)

CASING TYPE: TFJ SCH 40 PVC CASING DIAMETER/LENGTH: 2 inch/100.0 (feet)

SCREEN TYPE: TFJ SCH 40 PVC SCREEN SLOT SIZE/LENGTH: 0.01 inch/50.0 (feet)

SCREEN INTERVAL: 100 to 150 (feet, bls)

FILTER PACK TYPE/SIZE: 20-30 Silica Sand INTERVAL: 90.0 to 153.0 (feet, bls)

SEALANT TYPE: Grout INTERVAL: 90.0 to 90.0 (feet, bls)

GROUT TYPE: Modified ACI Type I INTERVAL: 0 to 90.0 (feet, bls)

MEASURING POINT LOCATION AND ELEVATION (feet NGVD): TOC / 34.48

GROUND SURFACE ELEVATION (feet, NGVD): 31.1

LATITUDE AND LONGITUDE OF THE WELL: 27° 28' 50" / 82° 26' 28"

DESCRIBE WELL DEVELOPMENT: Centrifugal pump

NAME OF PERSON PREPARING REPORT: Diane Bloomberg/Herb Stangland

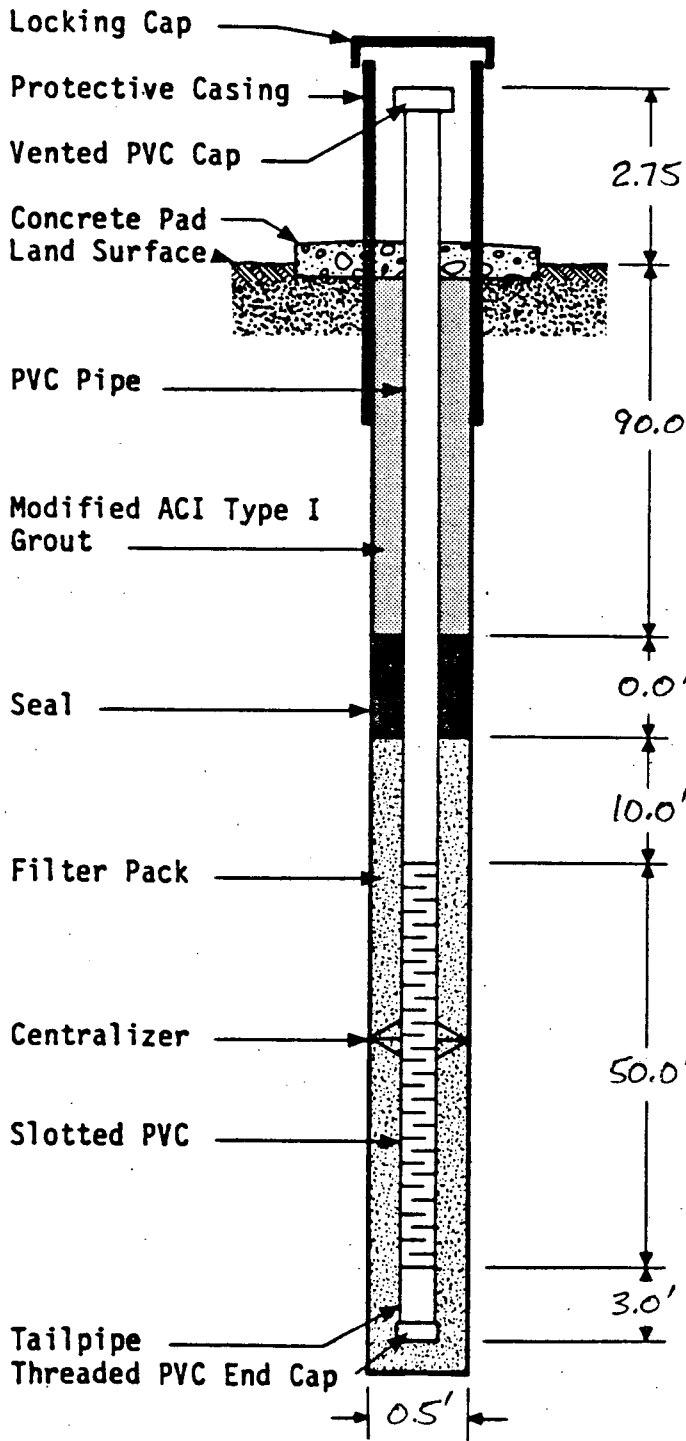
ATTACH AS-BUILT MW CONSTRUCTION DIAGRAM AND LITHOLOGIC LOG.

BLS = BELOW LAND SURFACE

WELL TYPE: B = BACKGROUND I = INTERMEDIATE C = COMPLIANCE

TOC = TOP OF CASING

MONITOR WELL INSTALLATION RECORD



File No.: 86-115
 Project: LENA ROAD LANDFILL
 Client: MANATEE CO. SOLID WASTE DEPT.

Well No.: SA-8
 Date Installed: 11-1-88
 Crew Supervisor: JOHN MAY
 Well Location: STAGE II

Protective Casing: (size & type) 4" Ø STEEL
 Concrete Pad: (size) 2' x 2' x 4"
 PVC Pipe: (size & type) 2" Ø TFFJ SCHEDULE 40
 Seal: (type) GROUT
 Filter Pack: (type) 20/30 SILICA SAND
 Slotted PVC: (size & type) 2" Ø 0.01" SLOTTED SCHEDULE 40 SCREEN
 Centralizers: (number & location(s)) _____

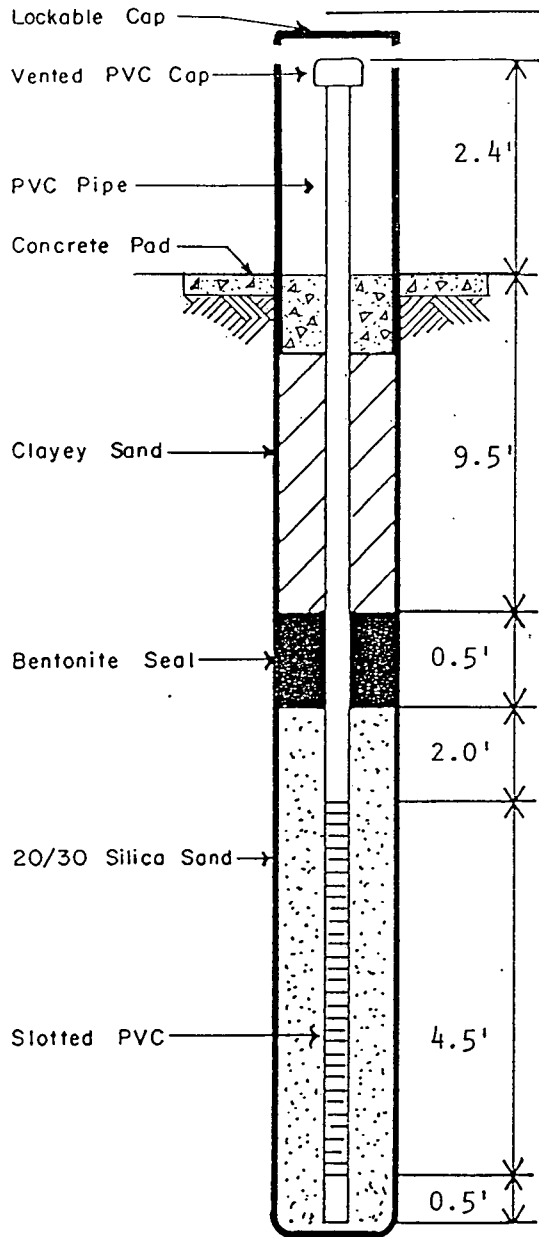
Total Length of PVC Pipe: 100.0 ft (BLS)
 Total Length of Slotted PVC: 50.0 ft (BLS)
 Total Length of Tailpipe: 3.0 ft
 Total Depth of Well: 153.0 ft (BLS)

No. Bags of Cement: 21
 No. Bags of Filter Pack: 26
 Amount of Seal: _____

Remarks: PERMIT # 88-605
LRII-4 AT THIS SITE

Water Level Readings:
 Date: 12-1-88
 Depth BTOC: 21.00' Depth BLS: 18.25'
 Date: _____
 Depth BTOC: _____ Depth BLS: _____

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
0	BROWN FINE SAND & REFUSE
5	BROWN FINE SAND
10	BROWN FINE SAND WITH SILT
15	BROWN FINE SAND
17.5	DARK BROWN FINE SAND WITH SILT
20	BROWN FINE SAND
22.5	BROWN SILTY FINE SAND WITH PHOSPHATE & GRAVEL
25	GRAY CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	12.25'	

NO. PZ-1
 PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL
 BORING DIA. 6" PVC DIA. 2"
 DATE INSTALLED 11/26/90
 LOCATION SEE FIGURE 1

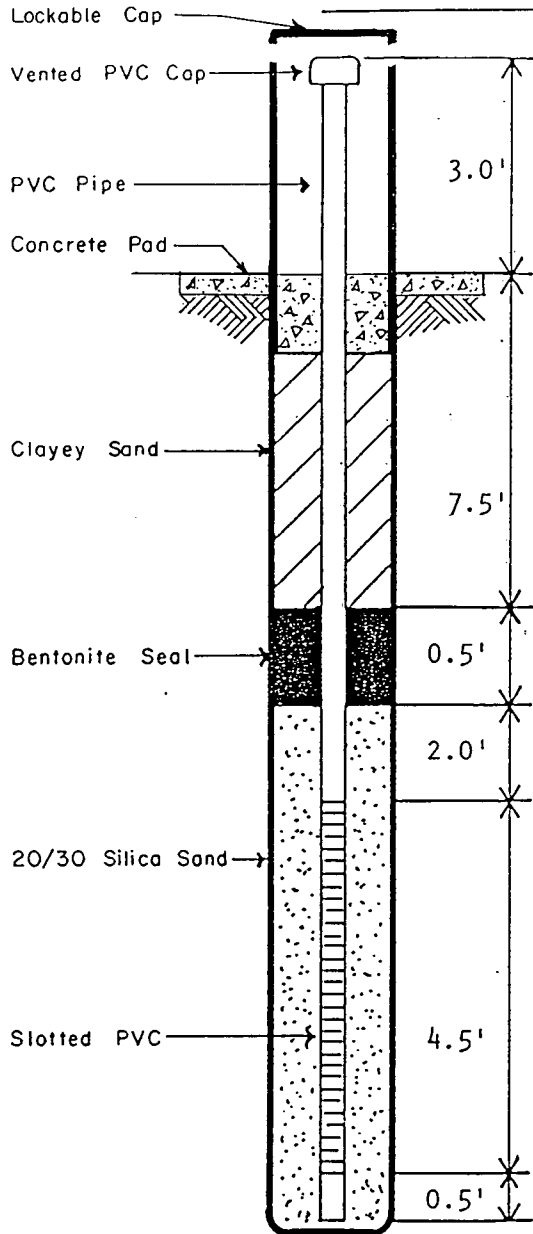
Ardaman & Associates, Inc.
 Consulting Engineers in Soil Mechanics,
 Foundations, and Material Testing

LENA ROAD LANDFILL
 FILE No. 90-8073

DRAWN BY: sunrise	CHECKED BY:	DATE:
FILE NO.	APPROVED BY:	

John H. Thiel

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
0	DARK GRAY FINE SAND WITH SILT
5	BROWN FINE SAND
10	DARK BROWN FINE SAND WITH SILT
15	BROWN FINE SAND
20	DARK BROWN FINE SAND WITH SILT
25	GRAY CLAYEY FINE SAND WITH PHOSPHATE
30	GRAY CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	12.50'	

NO. PZ-2

PROTECTIVE CASING SIZE & TYPE 4"x4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 11/27/90

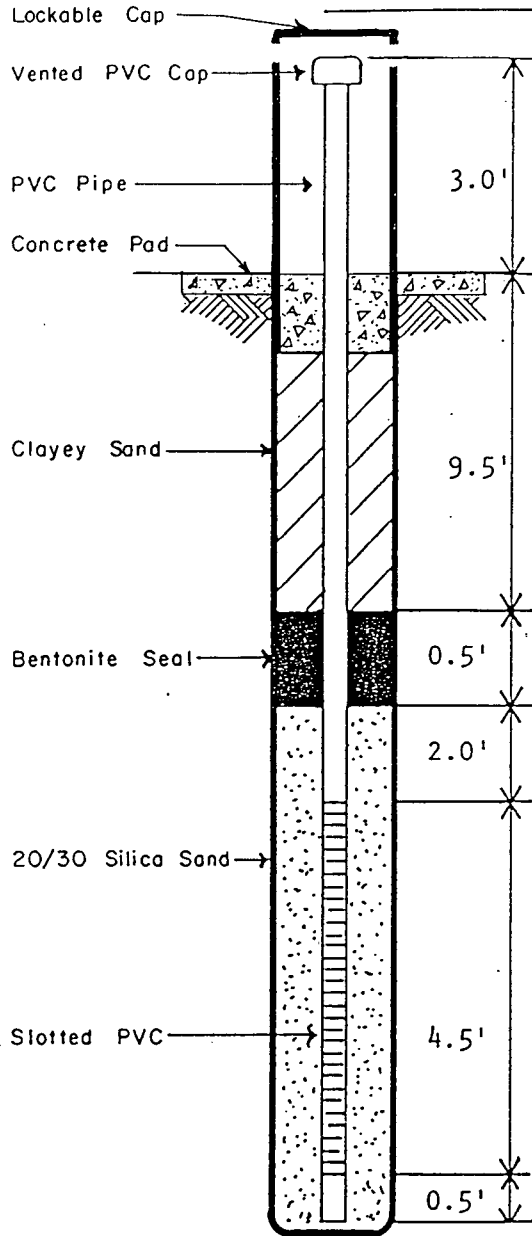
LOCATION SEE FIGURE 1

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LENA ROAD LANDFILL
 FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY:	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	BROWN FINE SAND DARK GRAY FINE SAND WITH SILT
	GRAY FINE SAND
10	BROWN SILTY FINE SAND
15	BROWN FINE SAND
	GRAY CLAYEY FINE SAND WITH PHOSPHATE
20	GRAY CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	15.33'	

NO. PZ-3

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 11/27/90

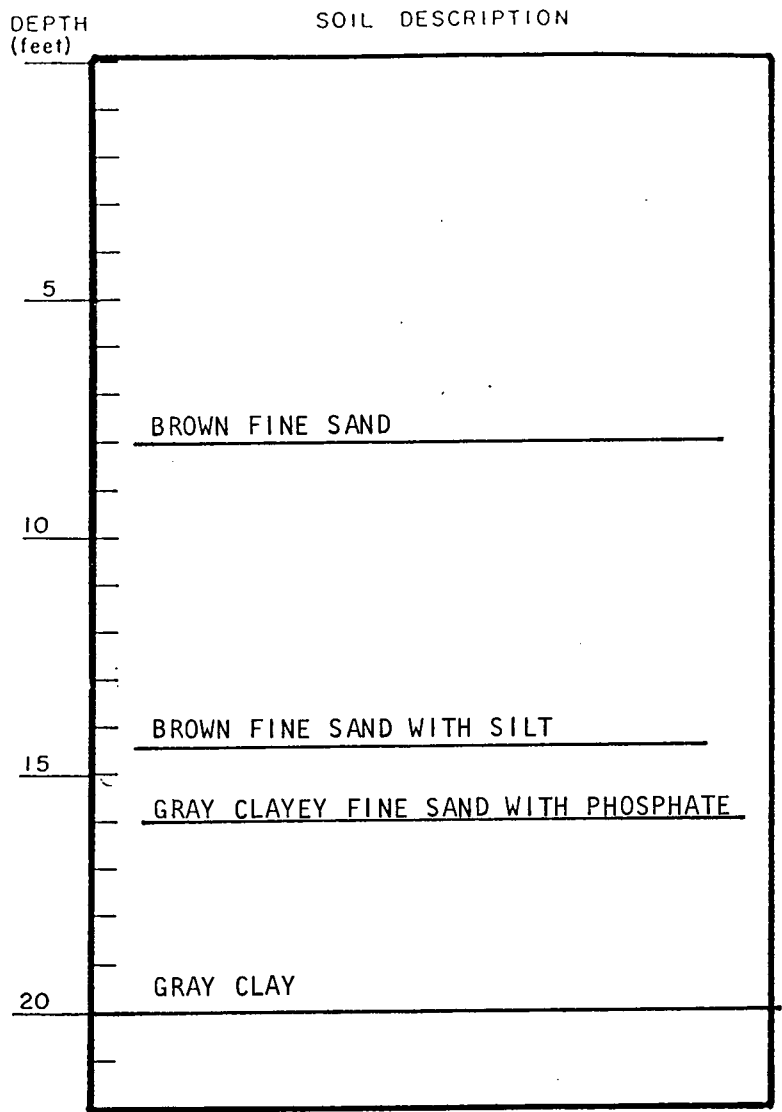
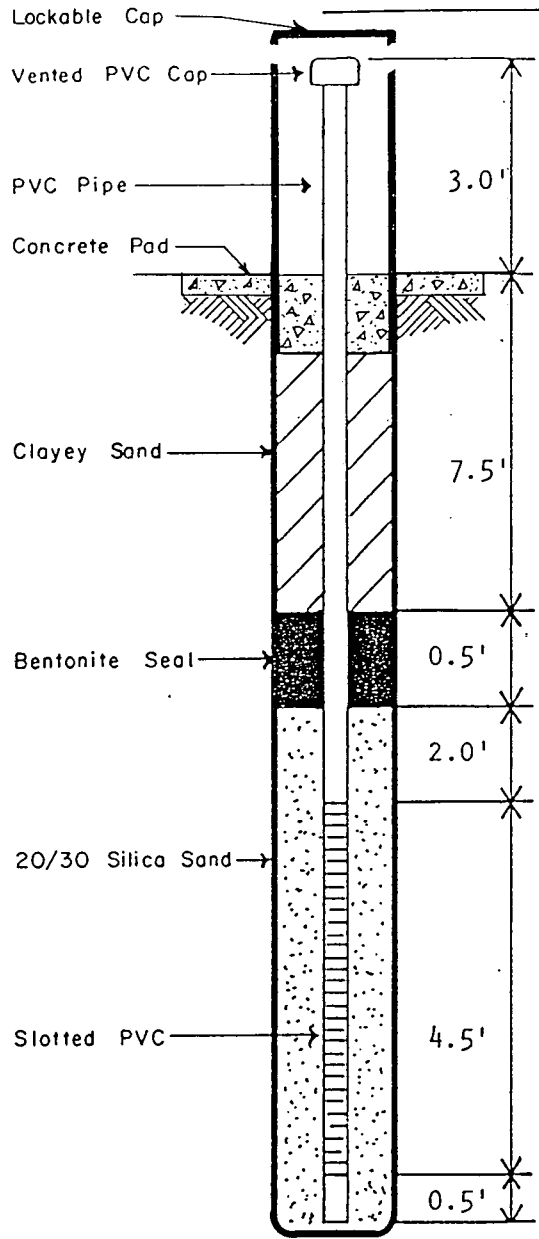
LOCATION SEE FIGURE 1

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Consulting Engineers in Soil Mechanics,
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LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY: <i>[Signature]</i>	

PIEZOMETER INSTALLATION RECORD



WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	15.08'	

NO. PZ-4

PROTECTIVE CASING SIZE & TYPE 4"x4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 11/28/90

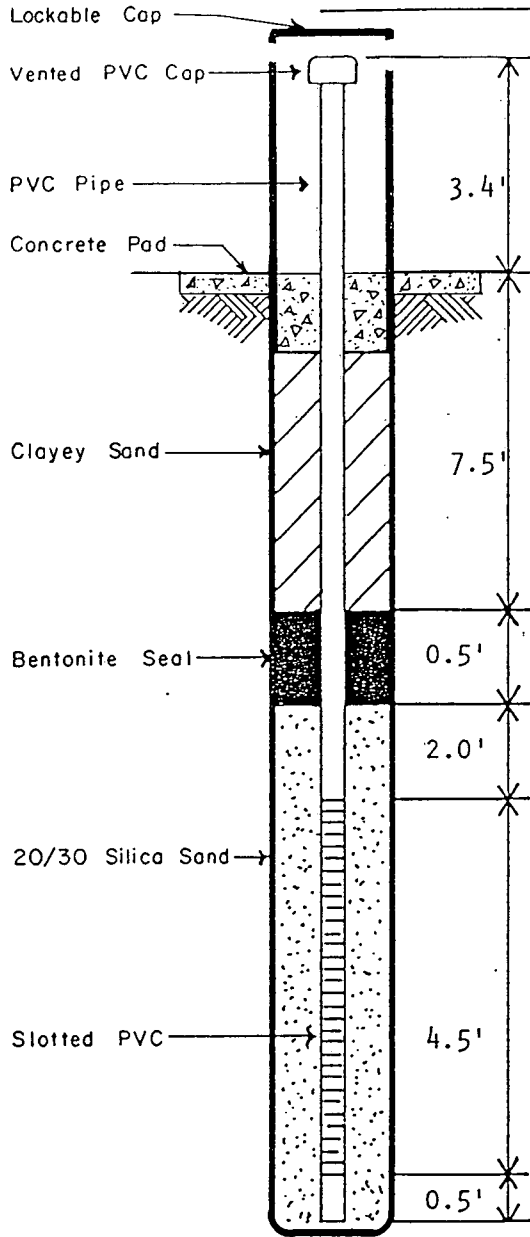
LOCATION SEE FIGURE 1

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LENA ROAD LANDFILL
 FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY:	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	BROWN FINE SAND & REFUSE
10	BROWN FINE SAND
15	GRAY FINE SAND
20	GRAY FINE SAND WITH CLAY
25	GRAY CLAY
30	ROCK

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	13.42'	

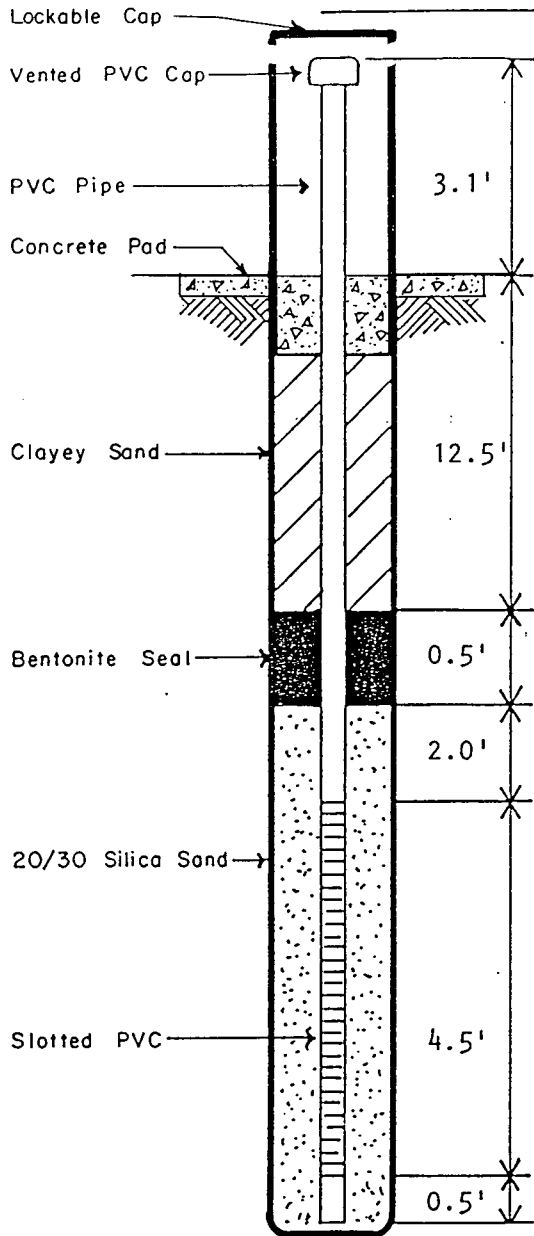
NO. PZ-5
 PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL
 BORING DIA. 6" PVC DIA. 2"
 DATE INSTALLED 11/28/90
 LOCATION SEE FIGURE 1

Ardaman & Associates, Inc.
 Consulting Engineers in Soil Mechanics,
 Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY:	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	BROWN FINE SAND & REFUSE
10	BROWN FINE SAND
	GRAY FINE SAND
15	BROWN FINE SAND
20	GRAY CLAYEY FINE SAND WITH PHOSPHATE

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	13.08'	

NO. PZ-6
 PROTECTIVE CASING SIZE & TYPE 4"x4" STEEL
 BORING DIA. 6" PVC DIA. 2"
 DATE INSTALLED 11/29/90
 LOCATION SEE FIGURE 1

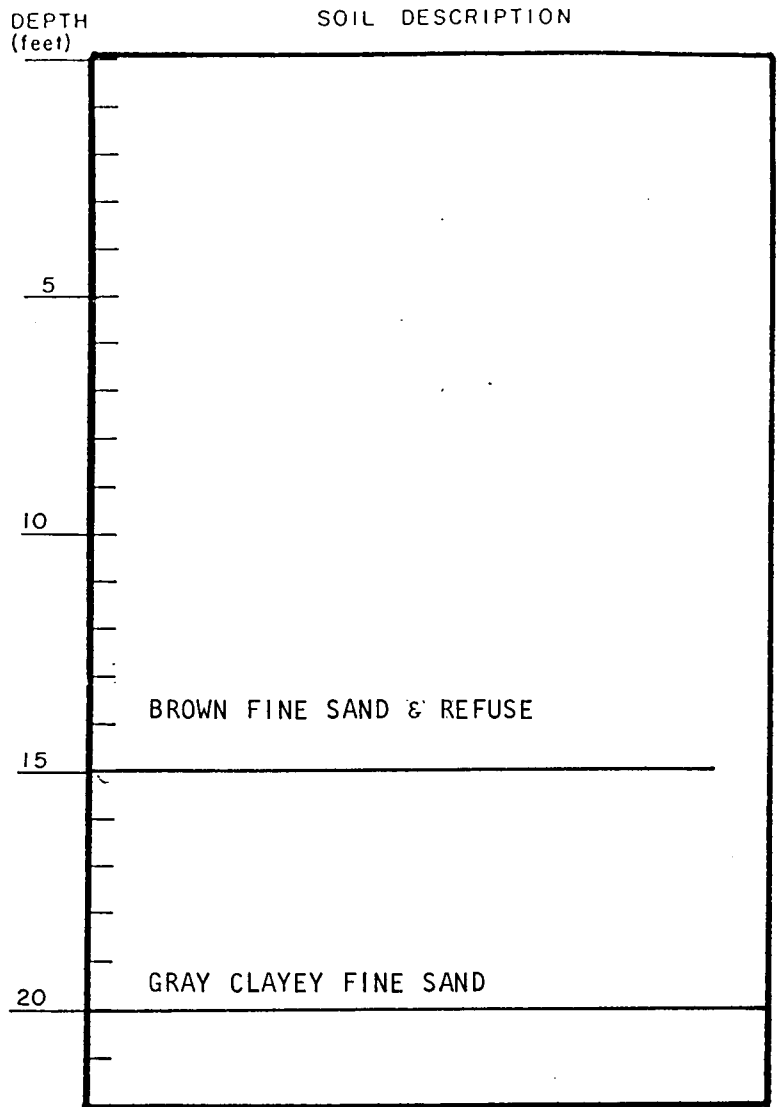
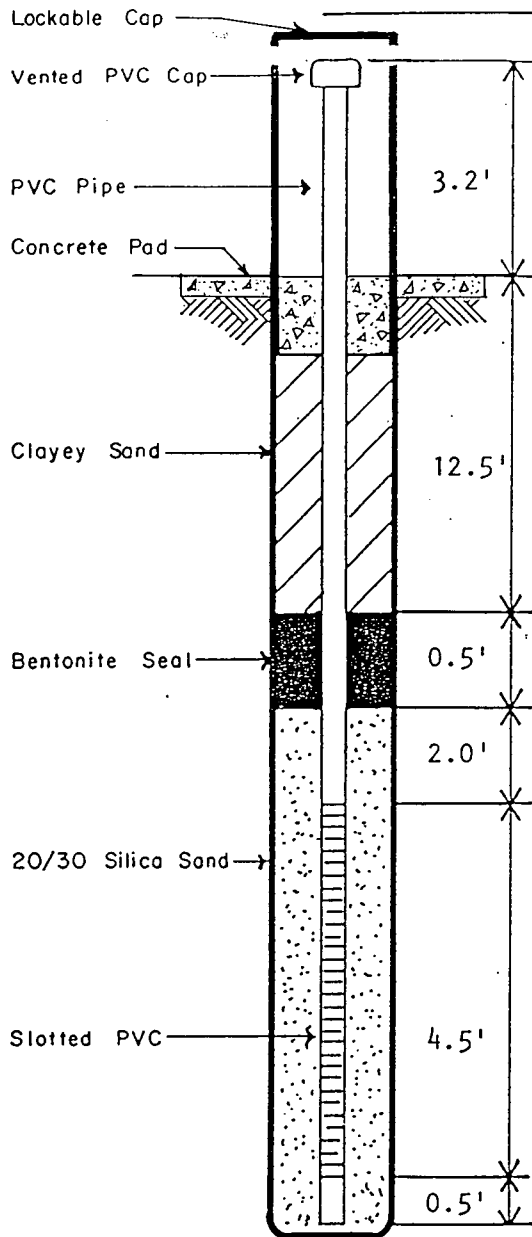
Ardaman & Associates, Inc.

Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY: <i>[Signature]</i>	

PIEZOMETER INSTALLATION RECORD



WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/10/90	10.83'	

NO. PZ-7

PROTECTIVE CASING SIZE & TYPE 4"x4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 11/29/90

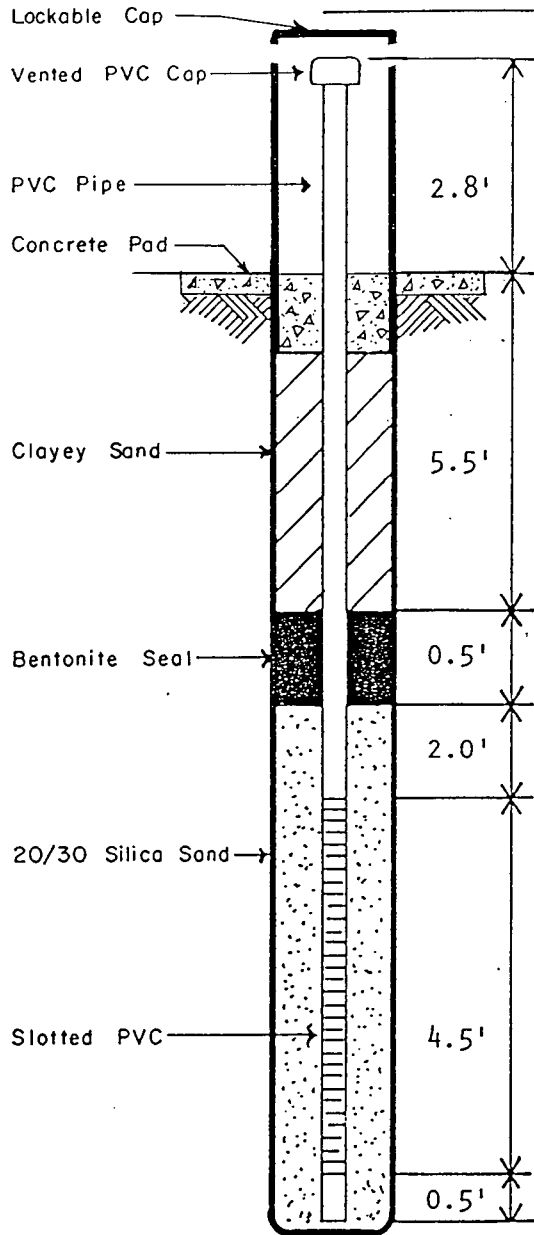
LOCATION SEE FIGURE 1

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Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY: _____	DATE: _____
FILE NO. _____	APPROVED BY: <i>John H. Paul</i>	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
	GRAY FINE SAND
	DARK BROWN FINE SAND WITH SILT
5	BROWN FINE SAND
10	BROWN SILTY FINE SAND
	BROWN FINE SAND
15	GRAY CLAYEY FINE SAND WITH PHOSPHATE ROCK
20	

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	9.38'	

NO. PZ-12

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 12/3/90

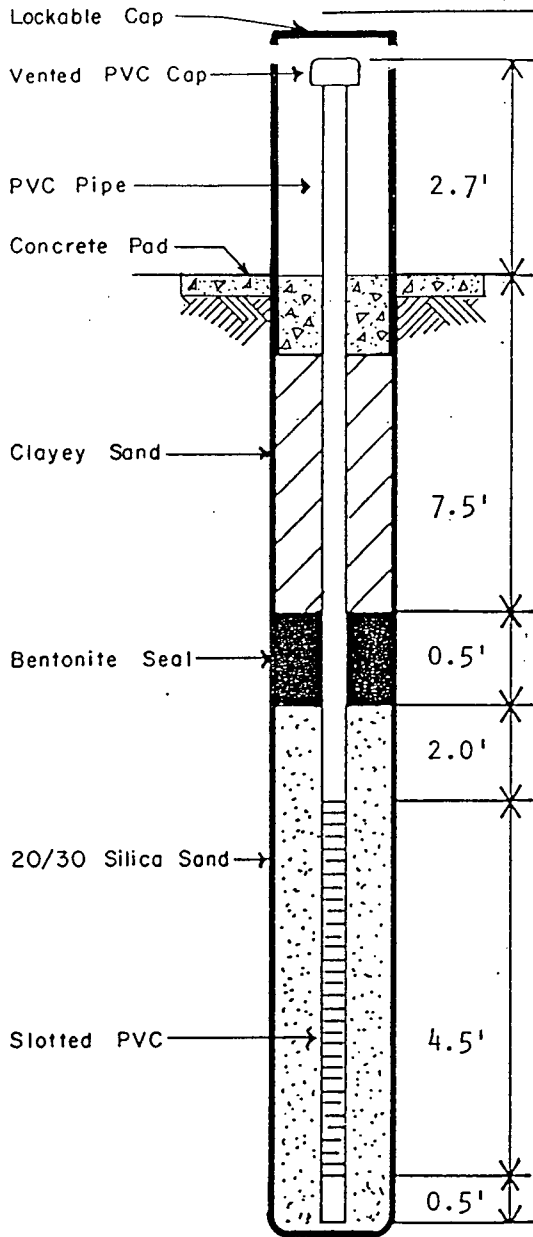
LOCATION SEE FIGURE 1

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Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

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FILE NO.	APPROVED BY: <i>[Signature]</i>	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
	GRAY FINE SAND
	DARK BROWN FINE SAND WITH SILT
5	BROWN FINE SAND
	GRAY SILTY FINE SAND
10	GRAY SILTY FINE SAND WITH PHOSPHATE
15	GRAY CLAYEY FINE SAND
	TAN CLAY
20	GREEN CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	7.50'	

NO. PZ-13

PROTECTIVE CASING SIZE & TYPE 4"x4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 12/3/90

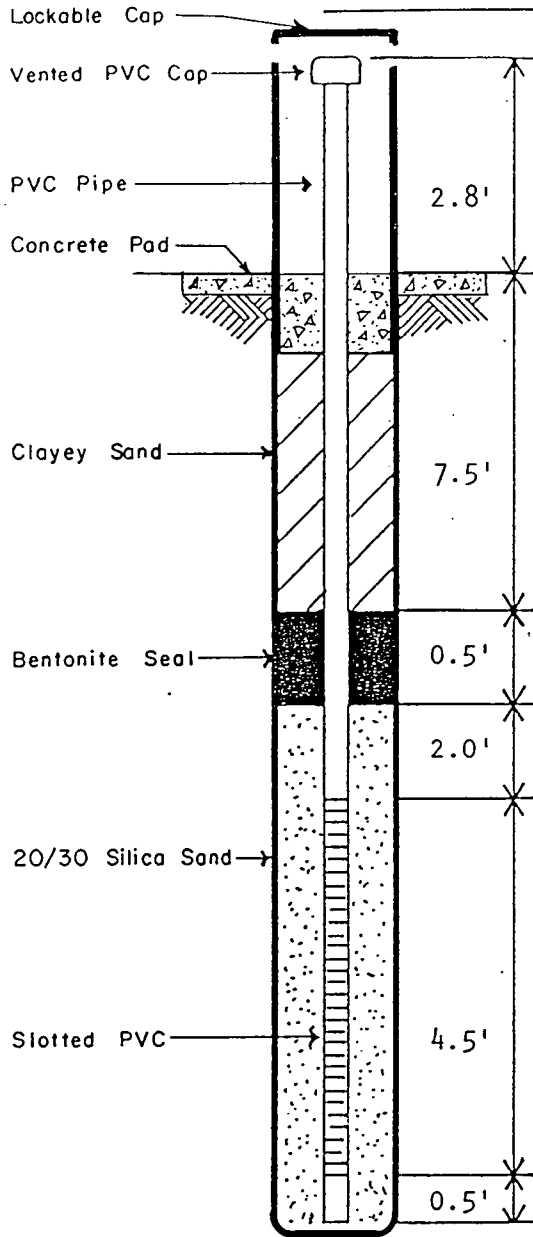
LOCATION SEE FIGURE 1

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Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: sunrise CHECKED BY: _____ DATE: _____
FILE NO. APPROVED BY: *[Signature]*

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
	GRAY FINE SAND DARK BROWN FINE SAND WITH SILT
5	BROWN FINE SAND
	GRAY SILTY FINE SAND
10	GRAY FINE SAND WITH CLAY
	GRAY CLAYEY FINE SAND WITH PHOSPHATE
15	TAN CLAYEY FINE SAND
20	GRAY FINE SAND

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	6.92'	

NO. PZ-14

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 12/3/90

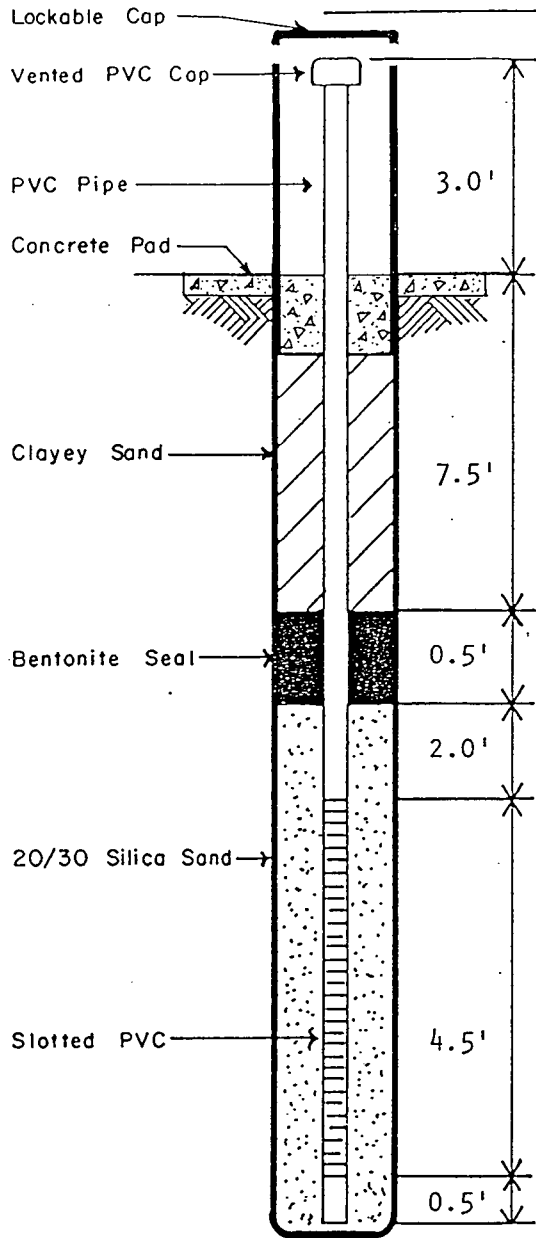
LOCATION SEE FIGURE 1

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LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: sunrise	CHECKED BY:	DATE:
FILE NO.	APPROVED BY: <i>John H. Paul</i>	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	BROWN FINE SAND
10	GRAY SILTY FINE SAND
15	GRAY CLAYEY FINE SAND WITH PHOSPHATE
20	TAN CLAY
20	GRAY FINE SAND

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	5.75'	

NO. PZ-15

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 12/4/90

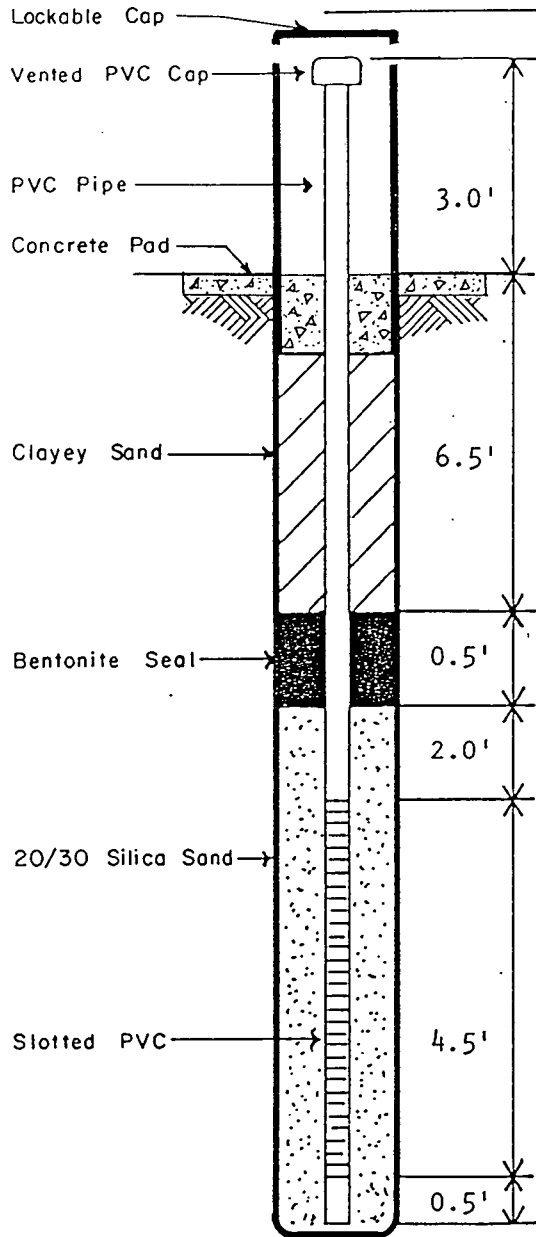
LOCATION SEE FIGURE 1

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Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>surf</u>	CHECKED BY: <u>[Signature]</u>	DATE: <u> </u>
FILE NO. <u> </u>	APPROVED BY: <u>[Signature]</u>	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	BROWN FINE SAND & REFUSE
10	GRAY FINE SAND WITH CLAY
15	GRAY CLAYEY FINE SAND WITH PHOSPHATE TAN SANDY CLAY WITH PHOSPHATE
20	TAN CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	6.79'	

NO. PZ-16

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

DATE INSTALLED 12/4/90

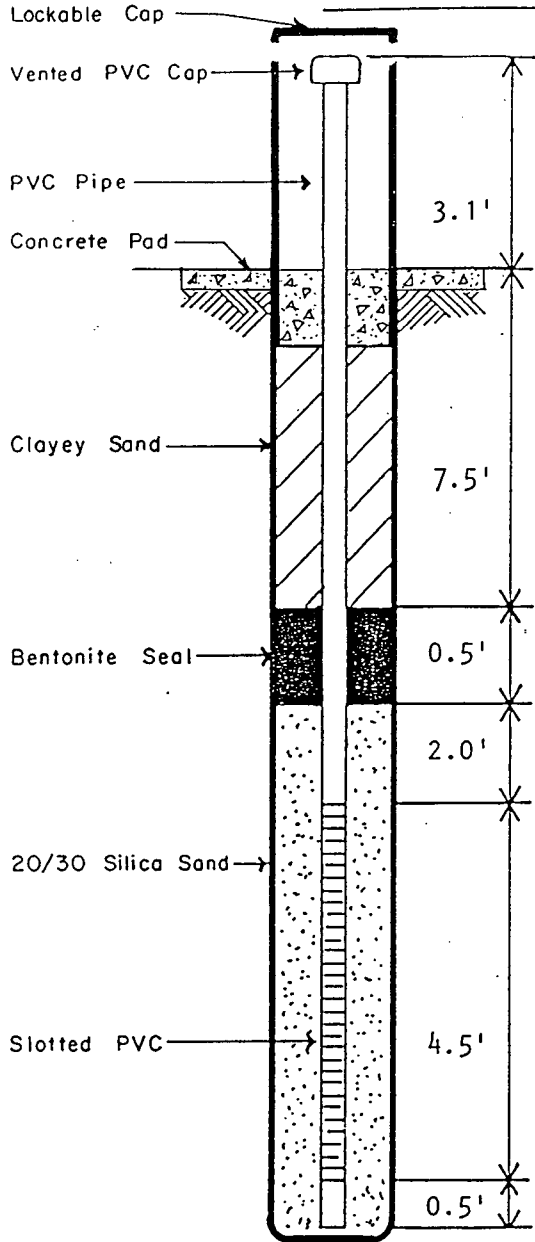
LOCATION SEE FIGURE 1

Ardaman & Associates, Inc.
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 Foundations, and Material Testing

LENA ROAD LANDFILL
 FILE No. 90-8073

DRAWN BY: <u>sunrise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY: <i>July 11, 1991</i>	

PIEZOMETER INSTALLATION RECORD



DEPTH (feet)	SOIL DESCRIPTION
5	GRAY/BROWN FINE SAND & REFUSE
	GRAY FINE SAND
10	BROWN FINE SAND
15	TAN CLAYEY FINE SAND WITH PHOSPHATE
20	TAN CLAY

WATER LEVEL READINGS		
DATE	BELOW TOP	ELEVATION
12/13/90	12.00'	

NO. PZ-17

PROTECTIVE CASING SIZE & TYPE 4" x 4" STEEL

BORING DIA. 6" PVC DIA. 2"

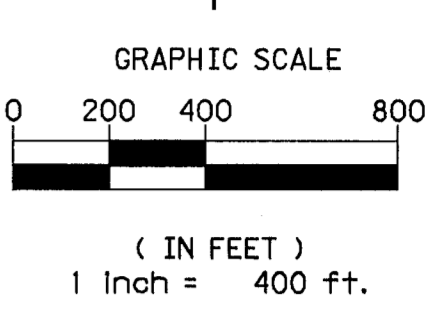
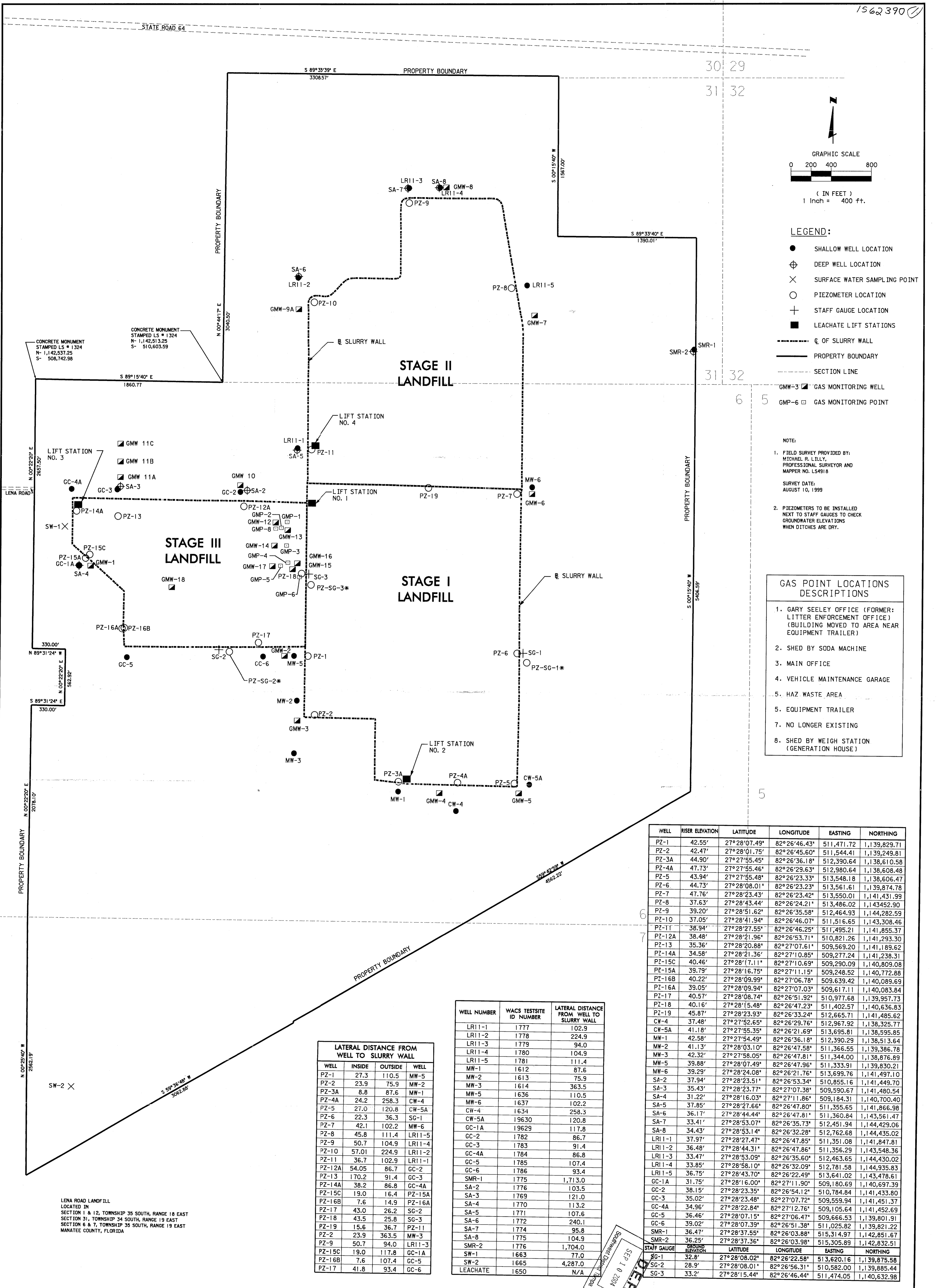
DATE INSTALLED 12/4/90

LOCATION SEE FIGURE 1

Ardaman & Associates, Inc.
Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

LENA ROAD LANDFILL
FILE No. 90-8073

DRAWN BY: <u>sun/ise</u>	CHECKED BY:	DATE:
FILE NO.	APPROVED BY: <i>John H. Paul</i>	



LEGEND:

- SHALLOW WELL LOCATION
- ⊕ DEEP WELL LOCATION
- × SURFACE WATER SAMPLING POINT
- PIEZOMETER LOCATION
- +
- LEACHATE LIFT STATIONS
- Q OF SLURRY WALL
- PROPERTY BOUNDARY
- SECTION LINE
- GMW-3 █ GAS MONITORING WELL
- GMP-6 □ GAS MONITORING POINT

NOTE:

1. FIELD SURVEY PROVIDED BY: MICHAEL R. LILLY, PROFESSIONAL SURVEYOR AND MAPPER NO. LS4918 SURVEY DATE: AUGUST 10, 1999
2. PIEZOMETERS TO BE INSTALLED NEXT TO STAFF GAUGES TO CHECK GROUNDWATER ELEVATIONS WHEN DITCHES ARE DRY.

GAS POINT LOCATIONS DESCRIPTIONS

1. GARY SEELEY OFFICE (FORMER LITTER ENFORCEMENT OFFICE) (BUILDING MOVED TO AREA NEAR EQUIPMENT TRAILER)
2. SHED BY SODA MACHINE
3. MAIN OFFICE
4. VEHICLE MAINTENANCE GARAGE
5. HAZ WASTE AREA
6. EQUIPMENT TRAILER
7. NO LONGER EXISTING
8. SHED BY WEIGH STATION (GENERATION HOUSE)

LENA ROAD LANDFILL
 LOCATED IN SECTION 1 & 12, TOWNSHIP 35 SOUTH, RANGE 18 EAST SECTION 31, TOWNSHIP 34 SOUTH, RANGE 19 EAST SECTION 6 & 7, TOWNSHIP 35 SOUTH, RANGE 19 EAST MANATEE COUNTY, FLORIDA

LATERAL DISTANCE FROM WELLS TO SLURRY WALL

WELL	INSIDE	OUTSIDE	WELL
PZ-1	27.3	110.5	MW-5
PZ-2	23.9	75.9	MW-2
PZ-3A	8.8	87.6	MW-1
PZ-4A	24.2	258.3	CW-4
PZ-5	27.0	120.8	CW-5A
PZ-6	22.3	36.3	SG-1
PZ-7	42.1	102.2	MW-6
PZ-8	45.8	111.4	LR11-5
PZ-9	50.7	104.9	LR11-4
PZ-10	57.01	224.9	LR11-2
PZ-11	36.7	102.9	LR11-1
PZ-12A	54.05	86.7	GC-2
PZ-13	170.2	91.4	GC-3
PZ-14A	38.2	86.8	GC-4A
PZ-15C	19.0	16.4	PZ-15A
PZ-16B	7.6	14.9	PZ-16A
PZ-17	43.0	26.2	SG-2
PZ-18	43.5	25.8	SG-3
PZ-19	15.6	36.7	PZ-11
PZ-2	23.9	363.5	MW-3
PZ-9	50.7	94.0	LR11-3
PZ-15C	19.0	117.8	GC-1A
PZ-16B	7.6	107.4	GC-5
PZ-17	41.8	93.4	GC-6

WELL NUMBER	WACS TESTSITE ID NUMBER	LATERAL DISTANCE FROM WELL TO SLURRY WALL
LR11-1	1777	102.9
LR11-2	1778	224.9
LR11-3	1779	94.0
LR11-4	1780	104.9
LR11-5	1781	111.4
MW-1	1612	87.6
MW-2	1613	75.9
MW-3	1614	363.5
MW-5	1636	110.5
MW-6	1637	102.2
CW-4	1634	258.3
CW-5A	19630	120.8
GC-1A	19629	117.8
GC-2	1782	86.7
GC-3	1783	91.4
GC-4A	1784	86.8
GC-5	1785	107.4
GC-6	1786	93.4
SMR-1	1775	1,713.0
SA-2	1776	103.5
SA-3	1769	121.0
SA-4	1770	113.2
SA-5	1771	107.6
SA-6	1772	240.1
SA-7	1774	95.8
SA-8	1775	104.9
SMR-2	1776	1,704.0
SW-1	1663	77.0
SW-2	1665	4,287.0
LEACHATE	1650	N/A

WELL	RISER ELEVATION	LATITUDE	LONGITUDE	EASTING	NORTHING
PZ-1	42.55'	27°28'07.49"	82°26'46.43"	511,471.72	1,139,829.71
PZ-2	42.47'	27°28'01.75"	82°26'45.60"	511,544.41	1,139,249.81
PZ-3A	44.90'	27°27'55.45"	82°26'36.18"	512,390.64	1,138,610.58
PZ-4A	47.73'	27°27'55.46"	82°26'29.63"	512,980.64	1,138,608.48
PZ-5	43.94'	27°27'55.48"	82°26'23.33"	513,548.18	1,138,606.47
PZ-6	44.73'	27°28'08.01"	82°26'23.23"	513,561.61	1,139,874.78
PZ-7	47.76'	27°28'23.43"	82°26'23.42"	513,550.01	1,141,431.99
PZ-8	37.63'	27°28'43.44"	82°26'24.21"	513,486.02	1,143,452.90
PZ-9	39.20'	27°28'51.62"	82°26'35.58"	512,464.93	1,144,282.59
PZ-10	37.05'	27°28'41.94"	82°26'46.07"	511,516.65	1,143,308.46
PZ-11	38.94'	27°28'27.55"	82°26'46.25"	511,495.21	1,141,855.37
PZ-12A	38.48'	27°28'21.96"	82°26'53.71"	510,821.26	1,141,293.30
PZ-13	35.36'	27°28'20.88"	82°27'07.61"	509,569.20	1,141,189.62
PZ-14A	34.58'	27°28'21.36"	82°27'10.85"	509,277.24	1,141,238.31
PZ-15C	40.46'	27°28'17.11"	82°27'10.69"	509,290.09	1,140,809.08
PZ-15A	39.79'	27°28'16.75"	82°27'11.15"	509,248.52	1,140,772.88
PZ-16A	40.22'	27°28'09.99"	82°27'06.78"	509,639.42	1,140,089.69
PZ-16B	39.05'	27°28'09.94"	82°27'07.03"	509,617.11	1,140,083.84
PZ-17	40.57'	27°28'08.74"	82°26'51.92"	510,977.68	1,139,957.73
PZ-18	40.16'	27°28'15.48"	82°26'47.23"	511,402.57	1,140,636.83
PZ-19	45.87'	27°28'23.93"	82°26'33.24"	512,665.71	1,141,485.62
CW-4	37.48'	27°27'52.65"	82°26'29.76"	512,967.92	1,138,325.77
CW-5A	41.18'	27°27'55.35"	82°26'21.69"	513,695.81	1,138,595.85
MW-1	42.58'	27°28'04.49"	82°26'36.18"	512,390.29	1,138,513.64
MW-2	41.13'	27°28'03.10"	82°26'47.58"	511,366.55	1,139,386.78
MW-3	42.32'	27°27'58.05"	82°26'47.81"	511,344.00	1,138,876.89
MW-5	39.88'	27°28'07.49"	82°26'47.96"	511,333.91	1,139,830.21
MW-6	39.29'	27°28'24.08"	82°26'21.76"	513,699.76	1,141,497.10
SA-2	37.94'	27°28'23.51"	82°26'53.34"	510,855.16	1,141,449.70
SA-3	35.43'	27°28'23.77"	82°27'07.38"	509,590.67	1,141,480.54
SA-4	31.22'	27°28'16.03"	82°27'11.86"	509,184.31	1,140,700.40
SA-5	37.85'	27°28'27.66"	82°26'47.80"	511,355.65	1,141,866.98
SA-6	36.17'	27°28'44.44"	82°26'47.81"	511,360.84	1,143,561.47
SA-7	33.41'	27°28'53.07"	82°26'35.73"	512,451.94	1,144,429.06
SA-8	34.43'	27°28'53.14"	82°26'32.28"	512,762.68	1,144,435.02
LR11-1	37.97'	27°28'27.47"	82°26'47.85"	511,351.08	1,141,847.81
LR11-2	36.48'	27°28'44.31"	82°26'47.86"	511,356.29	1,143,548.36
LR11-3	33.47'	27°28'53.09"	82°26'35.60"	512,463.65	1,144,430.02
LR11-4	33.85'	27°28'58.10"	82°26'32.09"	512,781.58	1,144,935.83
LR11-5	36.75'	27°28'43.70"	82°26'22.49"	513,641.02	1,143,478.61
GC-1A	31.75'	27°28'16.00"	82°27'11.90"	509,180.69	1,140,697.39
GC-2	38.15'	27°28'23.35"	82°26'54.12"	510,784.84	1,141,433.80
GC-3	35.02'	27°28'23.48"	82°27'07.72"	509,559.94	1,141,451.37
GC-4A	34.96'	27°28'22.84"	82°27'12.76"	509,105.64	1,141,452.69
GC-5	36.46'	27°28'07.15"	82°27'06.47"	509,666.53	1,139,801.91
GC-6	39.02'	27°28'07.39"	82°26'51.38"	511,025.82	1,139,821.22
SMR-1	36.47'	27°28'37.55"	82°26'03.88"	515,314.97	1,142,851.67
SMR-2	36.25'	27°28'37.36"	82°26'03.98"	515,305.89	1,142,832.51
STAFF GAUGE					
SG-1	32.8'	27°28'08.02"	82°26'22.58"	513,620.16	1,139,875.58
SG-2	28.9'	27°28'08.01"	82°26'56.31"	510,582.00	1,139,885.44
SG-3	33.2'	27°28'15.44"	82°26'46.44"	511,474.05	1,140,632.98

**FIGURE M-3
 MANATEE COUNTY LENA ROAD LANDFILL
 MONITORING WELL AND GAS PROBE LOCATION MAP**

PBS&J
 482 South Keller Road
 Orlando, FL 32810-6101
 Tel. (407) 647-7275
 Fax. (407) 647-0624
 www.pbsj.com

PORT BUCKLEY, SCHUH & JERNIGAN, Inc.
 466 P.B.S. & J.
 2001 N.W. 107th Ave., Miami, FL 33173-2807
 P.E.C. Certificate of Authorization No. 24

Professional Engineer
 Michael R. Lilly
 No. 11777
 State of Florida
 Seal of Michael R. Lilly
 August 10, 1999

JULY 20, 2004

JOB NO. 00-000.00
 DRAWN RGC
 DESIGN JLM/RGC
 CHECKED JLM
 Q.C. DED

SHEET /

Table 21

Well Abandonment Program

Well Number	Well Diameter (inches)	Well Depth (feet)	Date Abandoned	Permit Number
Lena Road Landfill				
CW-1	2	25 [±]	10-05-88	88-049
CW-2	2	15 [±]	01-25-89	88-045
MW-4			Destroyed (could not find)	88-044
MW-5 (Old)	2	10 [±]	10-05-88	88-048
MW-6 (Old)	2	20 [±]	10-05-88	88-047
MW-7			Buried in Landfill (could not find)	88-051
MW-8			Buried in Landfill (could not find)	88-052
SA-1	2	120	10-13-88	88-050
Adam's	8	546	Well logged 03-09-89	88-046
State Road 70 Landfill				
MW-1	2	44.8	10-26-88	88-054
MW-2	2	26.7	10-26-88	88-055
MW-3	2	18.2	10-26-88	88-056
MW-4	2	42.5	10-26-88	88-057
MW-5	3	83.8	10-27-88	88-058

FROM:

"COMPLETION REPORT FOR MONITORING
WELLS INSTALLED AT LENA ROAD
LANDFILL, MANATEE CO, FLORIDA"

PREPARED BY ADAMSON & ASSOC

DATED MAR 10, 1989



January 23, 2001

1024.0008(12)

Mr. Kim B. Ford , P. E.
Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

D.E.P.
JAN 24 2001
Southwest District Tampa

**Re: Manatee County SERWTP Expansion
Leachate Collection System
GMS ID No. 4041C02025
Permit No. 39884-003-SC, Issued 4-27-2000**

Dear Mr. Ford :

Enclosed please find the executed Florida Department of Environmental Protection Form 62-522.900(3), which provides the Monitor Well Reports for the abandonment of existing monitoring wells No. PZ-15B and PZ-16. These two (2) monitor wells were removed in total and the casing area backfilled with clean sand materials. This work was completed by the on site General Contractor, Westra Construction Corporation.

As a follow-up to our letter dated January 4, 2001, please find enclosed the following listed items:

1. LLDPE Liner peel / shear testing reports per ASTM D4437, performed by Professional Services, Incorporated (PSI).
2. Air channel testing results as furnished by the liner installer, MWM South, Incorporated.

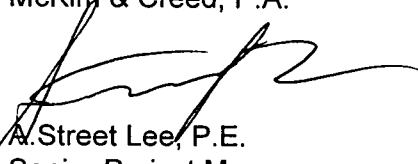
Monitor Well Completion Report For New Monitor Wells No. PZ-14A and PZ-15C are being mailed directly to the Department per PSI. The PSI mailed material will include the abandoned Monitor Well No. PZ-14.

We trust you find this material in order, and if there are any questions, please feel free to call me.

Mr. Kim B. Ford, P.E.
January 23, 2001
Page 2

Sincerely,

McKim & Creed, P.A.



A. Street Lee, P.E.
Senior Project Manager

Enclosures:

cc: Tim Hochuli, w/encl.
Don Kaser, w/encl.
Joe Resendes, w/encl.
Main File, w/encl.

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DEP Form # 62-522.900(3)
Form Title MONITOR WELL COMPLETION REPORT
Effective Date _____
DEP Application No. _____ (Filled in by DEP)

D.E.P.

JAN 24 2001

Southwest District Tampa

MONITOR WELL COMPLETION REPORT

DATE: January 12, 2001

INSTALLATION NAME: _____

DEP PERMIT NUMBER: 39884-003-SC GMS NUMBER: 4041C02025

WELL NUMBER: PZ-15B WELL NAME: _____

DESIGNATION: Background _____ Immediate _____ Compliance _____

LATITUDE/LONGITUDE: N 27° 28' 06.97" W 82° 27' 10.86"

AQUIFER MONITORED: _____

INSTALLATION METHOD: _____

INSTALLED BY: _____

TOTAL DEPTH: _____ DEPTH OF SCREEN: _____ (bls)

SCREEN LENGTH: _____ SCREEN SLOT SIZE: _____ SCREEN TYPE: _____

CASING DIAMETER: _____ CASING TYPE: _____

LENGTH OF CASING: _____ FILTER PACK MATERIAL: _____

TOP OF CASING ELEVATION (MSL): 37.33

GROUND SURFACE ELEVATION (MSL): _____

COMPLETION DATE: _____

DESCRIBE WELL DEVELOPMENT: WELL ABANDONED

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): _____

DATE AND TIME MEASURED: _____

REMARKS: (soils information, stratigraphy, etc.) Well PZ 15-B was removed in total and the casing area backfilled with clean sand. Work was completed by Westra Construction Corporation of Palmetto Florida

REPORT PREPARED BY: A. Street Lee, PE, McKim & Creed, P.A. (727) 442-7196
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DEP Form # <u>62-522.900(3)</u>
Form Title <u>MONITOR WELL COMPLETION REPORT</u>
Effective Date _____
DEP Application No. _____ (Filled in by DEP)

MONITOR WELL COMPLETION REPORT

DATE: January 12, 2001

INSTALLATION NAME: _____

DEP PERMIT NUMBER: 39884-003-SC GMS NUMBER: 4041C02025

WELL NUMBER: PZ-16 WELL NAME: _____

DESIGNATION: Background _____ Immediate _____ Compliance _____

LATITUDE/LONGITUDE: N 27° 28' 09.95" W 82° 27' 6.40"

AQUIFER MONITORED: _____

INSTALLATION METHOD: _____

INSTALLED BY: _____

TOTAL DEPTH: _____ DEPTH OF SCREEN: _____ (bls)
(bls)

SCREEN LENGTH: _____ SCREEN SLOT SIZE: _____ SCREEN TYPE: _____

CASING DIAMETER: _____ CASING TYPE: _____

LENGTH OF CASING: _____ FILTER PACK MATERIAL: _____

TOP OF CASING ELEVATION (MSL): 34.55

GROUND SURFACE ELEVATION (MSL): _____

COMPLETION DATE: _____

DESCRIBE WELL DEVELOPMENT: WELL ABANDONED

POST DEVELOPMENT WATER LEVER ELEVATION (MSL): _____

DATE AND TIME MEASURED: _____

REMARKS: (soils information, stratigraphy, etc.) :Well PZ 16 was removed in total and the casing area backfilled with clean sand. Work was completed by Westra Construction Corporation of Palmetto Florida.

REPORT PREPARED BY: A. Street Lee, PE, McKim & Creed, P.A. (727) 442-7196
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

4/28

Morris, John R.

From: Morris, John R.
Sent: Monday, April 28, 2003 3:05 PM
To: Williams, Christopher A.
Cc: Pelz, Susan; Martin, Lee
Subject: WACS Testsite lat/long coordinates

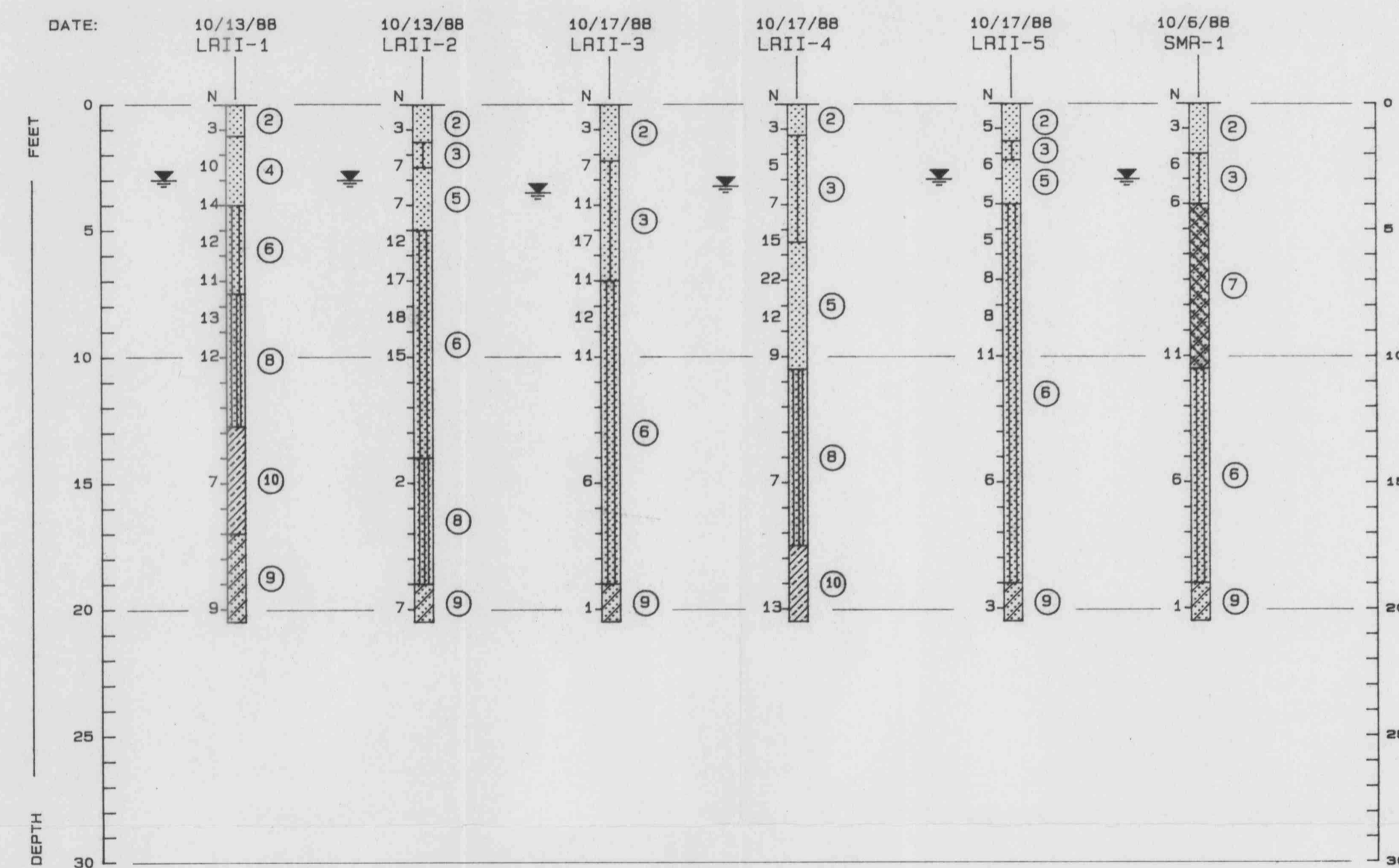
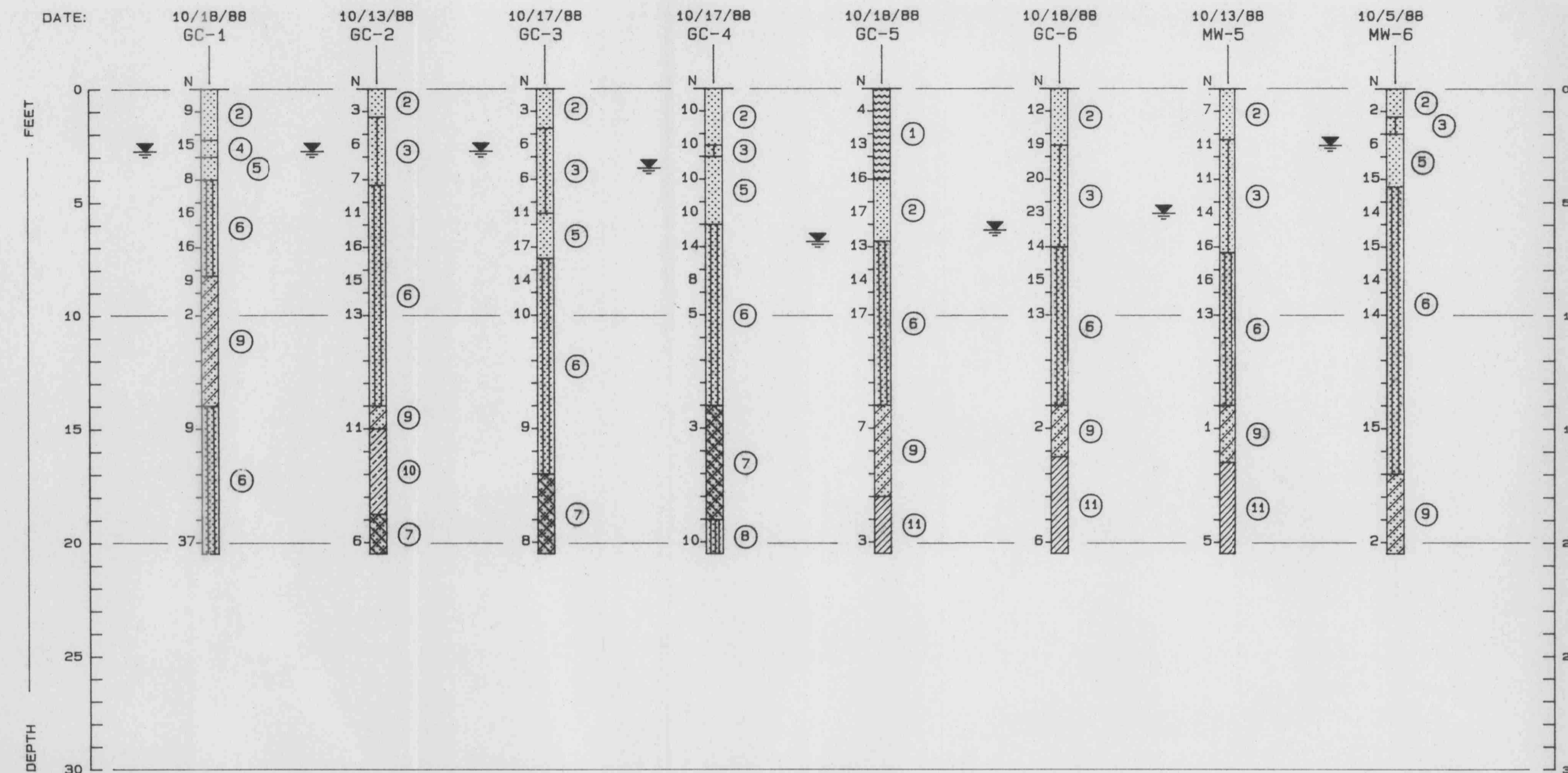
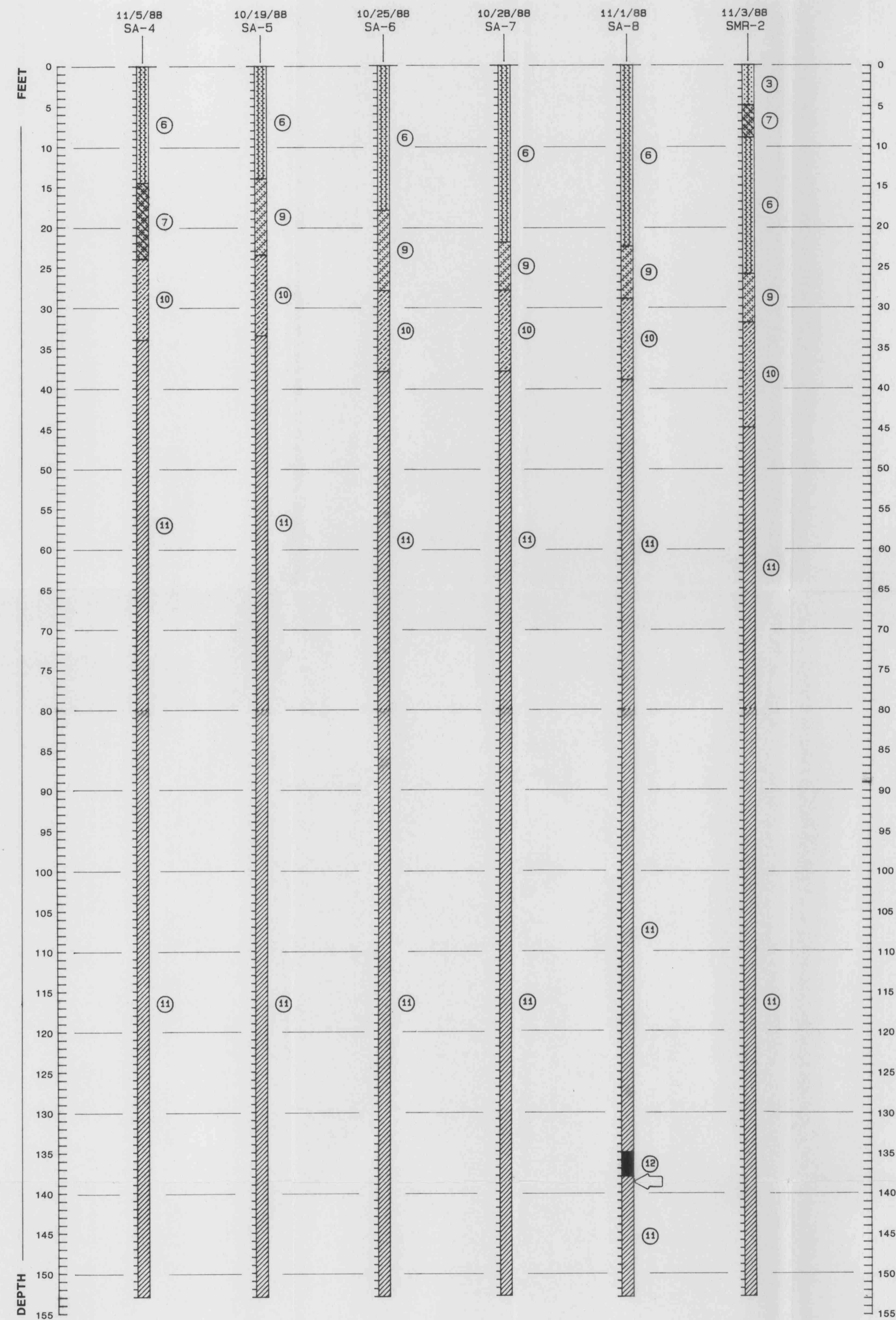
Chris:

I am in the process of compiling the sources of information (field GPS data, survey sheets, or summary tables provided by the permittee) that were used for the lat/long coordinates for the Testsites (gw, sw, and leachate sampling locations) that were input into WACS. It appears that you updated Testsite lat/long coordinates for Citrus Central Landfill (WACS Facility ID No. 39859) on 1/6/03 and for Lena Road Landfill (WACS Facility ID No. 44795) on 1/23/03. I am looking for copies of the source information that you used to update WACS. Would you provide a copy of the submittals you used for the lat/long coordinates at these facilities?

Thanks for your assistance.

John R. Morris, P.G.
Solid Waste Section, Southwest District Office
Telephone: 813-744-6100, ext. 336 (suncom 512-1042, ext. 336)
Facsimile: 813-744-6125
E-mail: john.r.morris@dep.state.fl.us

SOIL BORING PROFILES



- LEGEND**
- ① BROWN FINE SAND (FILL) (SP)
 - ② GRAY FINE SAND (SP)
 - ③ BROWN TO DARK BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM, SM)
 - ④ YELLOWISH BROWN FINE SAND (SP)
 - ⑤ BROWN TO DARK GRAY FINE SAND (SP)
 - ⑥ LIGHT GRAY TO DARK GRAY FINE SAND TO SILTY FINE SAND (SP, SP-SM, SM)
 - ⑦ DARK GRAY CLAYEY FINE SAND (SC)
 - ⑧ GRAY FINE SAND TO SILTY FINE SAND WITH PHOSPHATE (SP, SP-SM, SM)
 - ⑨ GRAY CLAYEY FINE SAND WITH PHOSPHATE (SC)
 - ⑩ GRAY SANDY CLAY WITH PHOSPHATE AND ROCK FRAGMENTS (CL)
 - ⑪ GREENISH GRAY CLAY WITH PHOSPHATE, ROCK FRAGMENTS, SAND AND CONSOLIDATED CLAY LENSES (CH)
 - ⑫ GRAY CHERT
- MW, SMR SURFICIAL AQUIFER MONITOR WELL LOCATION
GC, LRII TEST HOLES
- SA SECONDARY ARTESIAN AQUIFER MONITOR WELL LOCATION TEST HOLES
- N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
- ← LOSS OF DRILLING FLUID
- SP, SP-SM UNIFIED SOIL CLASSIFICATION SYSTEM
- SM, SC, CH
- ▽ GROUNDWATER LEVEL MEASURED ON DATE DRILLED

ENGINEERING CLASSIFICATION

I COHESIONLESS SOILS

DESCRIPTION	BLOW COUNT "N"
VERY LOOSE	0 TO 4
LOOSE	4 TO 10
MEDIUM DENSE	10 TO 30
DENSE	30 TO 50
VERY DENSE	50

II COHESIVE SOILS

DESCRIPTION	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	BLOW COUNT "N"
VERY SOFT	1/4	0 TO 2
SOFT	1/4 TO 1/2	2 TO 4
MEDIUM STIFF	1/2 TO 1	4 TO 8
STIFF	1 TO 2	8 TO 15
VERY STIFF	2 TO 4	15 TO 30
HARD	4	30

WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE SEPARATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR. ABSENCE OF WATER SURFACE DATA ON CERTAIN BORINGS IMPLIES THAT NO GROUNDWATER DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THESE LOCATIONS OR WITHIN THE VERTICAL REACHES OF THESE BORINGS IN THE FUTURE.

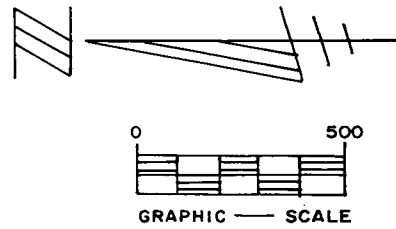
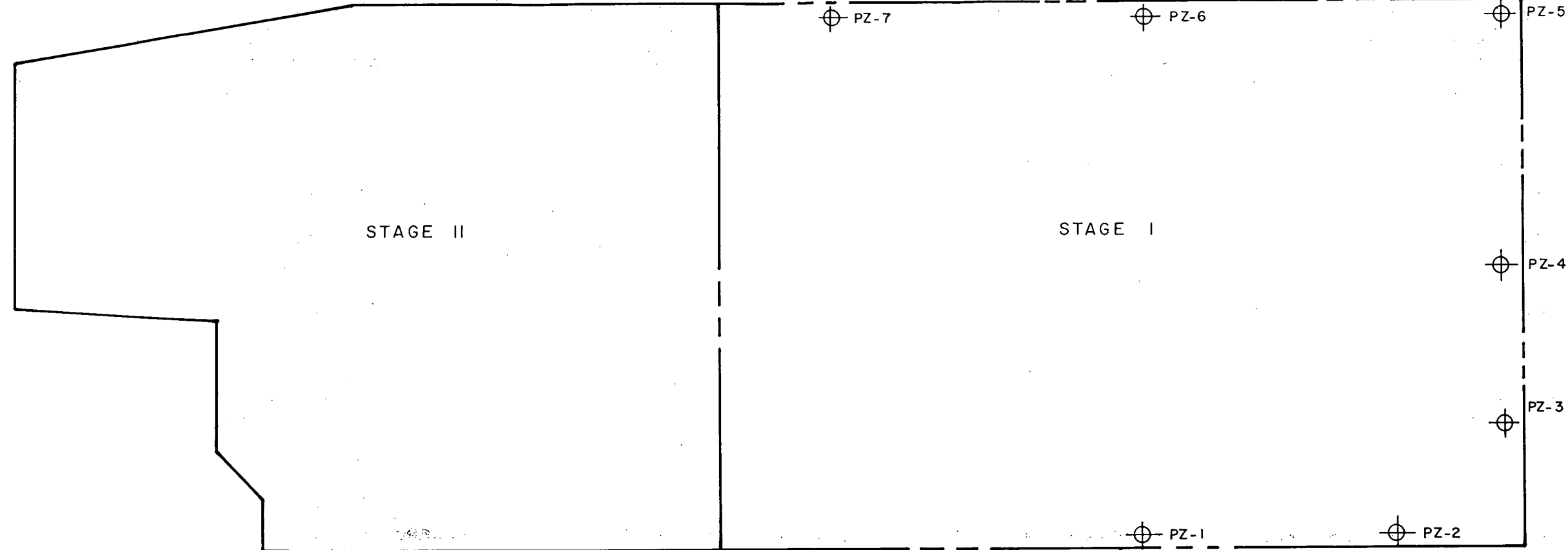
SOIL BORING PROFILES

Ardaman & Associates, Inc.
Consulting Engineers in Soils, Hydrogeology,
Foundations, and Materials Testing

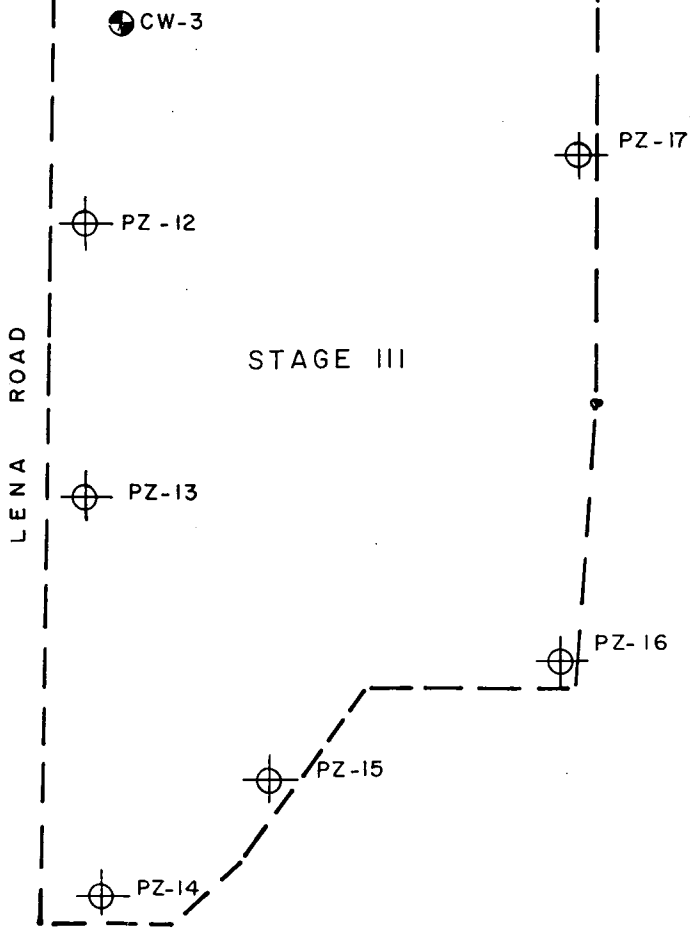
**WELL COMPLETION REPORT
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA**

DRAWN BY: R.B.E. CHECKED BY: JRP DATE: 2/13/89
FILE NO. 86-115 APPROVED BY: H.G. Shawland

FIGURE 2



- EXISTING STAGE I SLURRY WALL
- EXISTING STAGE II SLURRY WALL
- - - EXISTING STAGE III SLURRY WALL
- ⊕ LOCATION OF PIEZOMETER
- LOCATION OF PLUGGED MONITOR WELL



FROM:
 INSTALLATION OF SURFACE AQUIFER
 PIEZOMETERS AT LENA ROAD
 LANDFILL, MANATEE COUNTY, FLORIDA
 PREPARED BY ARDAMAN & ASSOC.
 JANUARY 14, 1991

Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Materials Testing		
TEST LOCATIONS OF LENA RD. LANDFILL MANATEE COUNTY, FLORIDA		
DRAWN BY: KGC FILE NO: 90-8073	CHECKED BY: [Signature] APPROVED BY: [Signature]	DATE: 12/17/90

FIGURE 1