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BOARD OF SUMTER COUNTY COMMISSIONERS

SUMTER COUNTY LANDFILL

GROUNDWATER MONITORING PLAN

C-103

JUNE 14, 1984

SPRINGSTEAD ENGINEERING, INC. *Consulting Engineers - Planners - Surveyors*

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DEFINITION OF THE SOURCE:

The Sumter County Landfill is located South of State Road 470, West of Sumterville, in Section 15, Township 20 South, Range 22 East, Sumter County, Florida.

Land filling is accomplished by the trench fill method of disposal. Trench work began on the Eastern side of the property in October, 1978, and is progressing Westward. Cells are opened from the North to the South.

The trenches are opened approximately 35 feet wide with excavated earth as a berm adjacent to the trench on its limited side. The exposed or dumping face stands at the angle of repose of the surface. The fill, which consists of residential and commercial wastes, begins at one end of the trench and develops progressively along its length. It is compacted and covered daily with earth. The top of the filled portion of the trench is given a heavy earthen cover while the working face is merely closed for the night with a light covering of soil.

The landfill will consist of a series of long narrow refuse cells when completed. The cells are separated longitudinally by ridges or ribs of undisturbed soil below the original ground surface. Sloped or wedge-shaped diaphragms of cover material serve as a dumping face above the original ground.

Large items, such as "white goods" or automobiles, are segregated from normal household wastes and are hauled away to metal yards for final disposal.

Industrial or other hazardous wastes, such as insecticides, are not permitted at the landfill.

Operating hours for the landfill are 8:00 A.M. to 4:00 P.M., Monday through Saturday.

Figure 1 is a diagram giving the dimensions of filled and unfilled portions of the landfill as it existed on January 13, 1984. Approximately 43% of the total usable area had been filled at that time.

Table 1 lists monthly volumes and accumulated volumes of compacted wastes received since October, 1978, when monthly activity reports were first submitted for the landfill. The average rate of waste disposal from October, 1978 to January 13, 1984 was 4,249 cubic yards of compacted waste per month.

Graph 1 is a fill projection based on past monthly activity reports. The landfill will reach its capacity by June, 1988, as estimated by this projection. The projected average rate of waste disposal between September, 1983 and June, 1988 is 6,905 cubic yards per month.

HYDROGEOLOGIC AND HYDROSTRATIGRAPHIC DEFINITION OF THE SITE

The Sumter County Landfill is located within the Withlacoochee River Basin. The Floridan Aquifer in this area of Sumter County consists primarily of rocks in the Tertiary System of the middle to late Eocene Series. Formations in this general area consist of the Lake City Limestone, Avon Park Limestone, and the Ocala Limestone. Table 2 gives the general stratigraphic section and water bearing properties of these formations.

The Floridan Aquifer is covered, except where the limestone outcroppings occur, by unconsolidated deposits. There is no evidence of limestone outcroppings in the area where the landfill is located. The thickness of these deposits in Sumter County may be as thick as one hundred feet or more. The hydraulic characteristics of these deposits range from highly permeable sand to virtually impermeable clay. The extent of recharge to the Floridan Aquifer depends greatly on the depth and hydraulic characteristics of the unconsolidated deposits.

Five exploratory test borings were made at the site in an effort to develop a detailed site lithologic description. The locations of these test borings are shown in Figure 3.

Lithologic columnar sections for the five test holes are shown in Figures 4 through 8. Soils encountered included fine sand, clay, silty sand, clayey sand, and sandy clay. Permeabilities range from 0.014 ft./min. in the fine sand to approximately .00002 ft./min. in the sandy clay.

Mr. Gray Roane of the Soil Conservation Service in Bushnell, Florida lists three types of soils present at the Sumter County Landfill. These soils are:

Candler Sand

Astatula Fine Sand

Apopka Fine Sand

A soils map for the site is shown in Figure 9.

The Candler Series consists of excessively drained, nearly level to moderately steep soils on Coastal Plain Uplands. The surface layer is dark gray sand to a depth of about 5 inches. The subsurface layers are yellow sand to a depth of about 23 inches. The subsoil is very pale brown sand that has white mottles and yellowish brown lamellae or bands of loamy sand between depths of 67 to 109 inches. Below this is brownish yellow sandy loam to depth of 115 inches. Slopes are predominantly 0 to 8 percent, but range to about 25 percent in dissected areas.

The Astatula Series consists of excessively drained, nearly level to steep soils that occur primarily in Central and South Florida. These soils typically have a thin grayish brown surface layer underlain by layers of brownish yellow sand to depths of 86 inches or more. Slopes range from 0 to 30 percent.

The Apopka Series consists of well drained, nearly level to steep soils in Central Florida. The surface layer, in a representative profile, is very dark gray sand about 6 inches thick. The subsurface layer is between depths of 6 to 55 inches. It is yellowish brown sand in the upper 34 inches and light yellowish brown in the lower 15 inches. Red sandy clay loam is below this to depths of 84 inches or more. Slopes are predominantly 0 to 12 percent, but range to 25 percent.

Figure 10 shows general cross-section A-A of the site from Test Hole No. 4 to Test Hole No. 5. Figure 11 shows general cross-section B-B of the site from Test Hole No. 2 to Test Hole No. 3. Cross-sections A-A and B-B are located on plan view in Figure 3. These generalized hydrogeologic sections indicate continuity of lithologic units. Typically, there is a layer of sand ranging from 1 to 20 feet thick, underlain by strata consisting of clayey sand, sandy clay, and clay.

Figure 12 shows ground contours at the landfill prior to any excavation and fill. These contours are approximate as taken from the Bushnell, U.S. Geological Survey Quadrangle Maps. Figure 13 shows the approximate ground contours at the site upon completion of the fill activities.

Figure 14 illustrates unconfined groundwater contours based on water elevations in Test Holes 2, 4, and 5. Groundwater flow is in the direction of decreasing head perpendicular to contour lines depicting the groundwater table. The unconfined groundwater under the pollution source flows toward the North.

Table 3 lists climatological data recorded by the U.S. Department of Commerce from gauging stations in Bushnell and Lisbon. These two stations are the closest gauging stations to the Sumter County Landfill. Values listed are the average for each month.

The rate of horizontal flow of water in the sand strata at the Sumter County Landfill can be estimated using Darcy's Law:

$Q = KiA$

Q = Flow Rate (cu.ft./min.)

K = Coefficient of Permeability (ft./min.)

$i = \Delta h/L$ = Slope of Headloss

A = (Average Depth of Sand) x (Width of Horizontal Flow)

From Permeability tests taken at Hole 1:

K Sand = 0.014 ft./min.

From Figure 15: i = 0.625%

Width of horizontal flow = 975 ft.

From Figures 10 and 11:

Average Depth of Sand = 14 ft.

$Q = KiA = (0.014 \text{ ft./min})(0.00625)(975 \text{ ft.})(14 \text{ ft.})$

Q = 1.19 cu.ft./min.

The estimated rate of horizontal flow in the sand layer is 1.19 cubic feet per minute.

The rate of infiltration at the site can also be estimated using Darcy's Law:

$Q = KiA$

K = Coefficient of permeability in clay is approximately equal to 2×10^{-5} or .00002 ft./min.

i = (average depth of sand)/(depth to groundwater)

i = (14 ft.)/(20 ft. +/-) = 0.7

A = Area of landfill

Q = (2×10^{-5} or .00002 ft./min.)(0.7)(1,000 ft.)(1,400 ft.)

Q = 19.6 cu.ft./min.

The estimated rate of infiltration is 19.6 cubic feet per minute.

MASS WATER BALANCE OF THE POLLUTION SOURCE

QIN = Precipitation

QOUT = Evapotranspiration + infiltration + horizontal flow in sand layer

Values in Table 3 for precipitation and evapotranspiration are used as a basis for this mass balance.

Infiltration + horizontal flow = (19.6+1.19) = 20.79 cu.ft./min. = 0.69 Ac.Ft./Day

Surface area of landfill = 32.14 Ac.

JAN. QIN = (3.01 in./12)(32.14 Ac.) = 8.06 Ac.Ft.

QOUT= (2.10in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 27.01 Ac.Ft.

FEB. QIN = (4.22 in./12)(32.14 Ac.) = 11.30 Ac.Ft.

QOUT= (2.60in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(29)= 26.97 Ac.Ft.

MAR. QIN = (3.84 in./12)(32.14 Ac.) = 10.28 Ac.Ft.

QOUT= (4.50in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 33.44 Ac.Ft.

APR. QIN = (1.87 in./12)(32.14 Ac.) = 5.00 Ac.Ft.

QOUT= (4.5in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(30)= 32.75 Ac.Ft.

MAY QIN = (4.51 in./12)(32.14 Ac.) = 12.08 Ac.Ft.

QOUT= (5.3in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 35.59 Ac.Ft.

JUN. QIN = (6.56 in./12)(32.14 Ac.) = 17.57 Ac.Ft.

QOUT= (4.4in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(30)= 32.48 Ac.Ft.

JUL. QIN = (6.93 in./12)(32.14 Ac.) = 18.56 Ac.Ft.

QOUT= (4.9in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 34.51 Ac.Ft.

AUG. QIN = (7.67 in./12)(32.14 Ac.) = 20.54 Ac.Ft.

QOUT= (4.8in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 34.25 Ac.Ft.

SEP. QIN = (6.30 in./12)(32.14 Ac.) = 16.87 Ac.Ft.

QOUT= (4.0in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(30)= 31.41 Ac.Ft.

OCT. QIN = (2.04 in./12)(32.14 Ac.) = 5.46 Ac.Ft.

QOUT= (3.60in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 31.03 Ac.Ft.

NOV. QIN = (1.95 in./12)(32.14 Ac.) = 5.22 Ac.Ft.

QOUT= (2.7in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(30)= 27.93 Ac.Ft.

DEC. QIN = (2.50 in./12)(32.14 Ac.) = 6.70 Ac.Ft.

QOUT= (2.10in./12)(32.14 Ac.)+(0.69 Ac.Ft./Day)(31)= 27.01 Ac.Ft.

The Soil Conservation Service lists the hydrologic group for the three types of soil present on site as Class A. Class A soils have fast infiltration rates and low runoff potential. A borrow ditch for on site runoff has been constructed along the edge of the filled portion of the landfill. See Figure 13. This borrow ditch will surround the landfill upon completion of fill so that all runoff will be routed to the retention area at the Northeast corner. The following runoff calculations for the landfill is based on the Soil Conservation

Service curve number method. The value used for precipitation is the average monthly rainfall derived from Table 3 which is 4.28 inches.

Area = 32.14 Ac.

S.C.S. CN: 39 (PASTURE in good condition)

$s' = (1,000/39)-10 = 15.64$

$.2s' = 3.13$

$.8s' = 12.51$

$\text{Runoff} = (P - .2s')^2/(P + .8s') = (4.28 - 3.13)^2/(4.28 + 12.51) = 0.08$ in.

Volume Excess Rainfall = (0.08 in./12)(32.14 Ac.) = 0.21 Ac.Ft./Month

Figures 16 and 17 show the direction of stormwater runoff prior to fill and upon completion of fill respectively.

Figure 18 is a portion of a map of the Potentiometric Surface of the Floridan Aquifer by L.A. Bradner of the Department of the Interior, U.S. Geological Survey. The potentiometric surface of the Floridan Aquifer at the Sumter County Landfill was at an elevation of about 45 feet N.G.V.D. in September, 1983.

PROPOSED MONITORING WELL CONSTRUCTION

Figure 14 shows that the unconfined groundwater at the Sumter County Landfill flows toward the North. We propose to monitor unconfined groundwater with four monitoring wells. The locations are shown in Figure 19.

Monitoring well number one will be constructed on the periphery dike on the South side of the landfill about 60 feet East of the Centel Cable Company boundary. It will provide samples at about elevation 35 N.G.V.D., which is approximately 10 feet below the unconfined groundwater table.

Monitoring well number two will be constructed on the periphery dike on the South side of the landfill, approximately 600 feet West of the East boundary of the landfill. It will provide samples at approximately elevation 35 N.G.V.D., which is approximately 10 feet below the unconfined groundwater table.

Wells one and two will monitor groundwater quality upgradient (unaffected natural background) of the pollution source.

Monitoring well number three will be constructed approximately 30 feet South of the North property boundary and approximately 440 feet West of the East property boundary. It will provide samples at approximately elevation 35 N.G.V.D., which is approximately 10 feet below the unconfined groundwater table. Well number three will monitor groundwater quality downgradient (in the most affected area) of the pollution source from the portion of the landfill that has already been filled.

Monitoring well number four will be constructed approximately 30 feet South of the North property boundary and approximately 350 feet East of the West property boundary. It will provide samples at approximately elevation 35 N.G.V.D., which is approximately 10 feet below the unconfined groundwater table. Well number four will monitor groundwater quality downgradient (in the most affected area) of the pollution source from the portion of the landfill that has yet to be filled.

Casings used in all monitoring wells to be constructed will be 2 1/2 inch Schedule 40 P.V.C. A typical monitoring well in place is shown in Figure 20. The first two feet of casing above the end plug will be slotted to a particular width to prevent clogging. A gravel pack will be set around the screen and the remainder of the hole will be sealed with cement to prevent access of surface water down the sides of the casing. A lockable security cover will be set into the cement over the top of the monitoring well. The monitoring well will be capped with a vented well cap.

Samples will be retrieved with a standard bailer.

Confined groundwater has been monitored from 5 wells near the Sumter County Landfill since 1975. The wells in which confined groundwater samples were taken are shown as Wells 1 through 5 in Figure 21 and are identified in the well inventory.

The confined aquifer flows approximately North by Northwest in the vicinity of the landfill. See Figure 18. Wells 1 through 5 are all located North of the landfill and may all be considered as downgradient (in the most affected area) of the pollution source. See Figure 21. It is proposed to continue to use Wells 1 through 5 in Figure 21 for the monitoring of the confined groundwater downgradient of the pollution source.

SAMPLING PROTOCOL

Standard procedures of the State of Florida, Department of Environmental Regulation will be used as the sampling protocol for the monitoring program.

WELL INVENTORY

Data was available on fourteen wells within a one mile radius of the site. The location of these wells is shown in Figure 21.

Limited information is available concerning Wells 1 through 5. These wells are less than 4 inches in diameter and are included because they are used as sampling points to monitor confined groundwater downgradient of the pollution source. They are not on file with Southwest Florida Water Management District (SWFWMD) or the U.S. Geological Survey (U.S.G.S). Available information suggests that Well 2 is the Kinard residence Well. Wells 3 and 4 are on the Mcleod ranch. Well 3 has a windmill and is 175 feet deep. Well 5 is a 2 inch Well and is located at the landfill office.

Wells 6 through 13 are on file with SWFWMD. Information on Wells 6 through 13 consists of the following:

Well 6

Latitude: 28° 44' 48"

Longitude: 82° 05' 39"

SWFWMD C.U.P. Number: 02776

Average Withdrawal Rate: 16,000 G.P.D.

Maximum Withdrawal Rate: 200,000 G.P.D.

Water Use: vegetables

Well 7

Latitude: 28° 44' 38"

Longitude: 82° 06' 11"

SWFWMD C.U.P. Number: 02806

Average Withdrawal Rate: 105,592 G.P.D.

Maximum Withdrawal Rate: 346,000 G.P.D.

Water Use: vegetables

Well 8

Latitude: 28° 44' 12"

Longitude: 82° 05' 00"

SWFWMD C.U.P. Number: 03465

Average Withdrawal Rate: 310,574 G.P.D.

Maximum Withdrawal Rate: 1,080,000 G.P.D.

Water Use: pasture - hay

Well 9

Latitude: 28° 43' 55"

Longitude: 82° 05' 01"

SWFWMD C.U.P. Number: 03465

Average Withdrawal Rate: 310,574 G.P.D.

Maximum Withdrawal Rate: 1,080,000 G.P.D.

Water Use: pasture - hay

Well 10

Latitude: 28° 44' 59"

Longitude: 82° 05' 24"

SWFWMD C.U.P. Number: 04227

Average Withdrawal Rate: 279,000 G.P.D.

Maximum Withdrawal Rate: 1,400,000 G.P.D.

Water Use: vegetables

Well 11

Latitude: 28° 45' 11"

Longitude: 82° 05' 30"

SWFWMD C.U.P. Number: 04227

Average Withdrawal Rate: 279,000 G.P.D.

Maximum Withdrawal Rate: 1,400,000 G.P.D.

Water Use: vegetables

Well 12

Size: 6 inch

Latitude: 28° 44' 00"

Longitude: 82° 04' 58"

SWFWMD C.U.P. Number: 06702

Average Withdrawal Rate: 9,000 G.P.D.

Maximum Withdrawal Rate: 144,000 G.P.D.

Water Use: irrigation

Well 13

Size: 12 inch

Depth: 382 feet

Latitude: 28° 43' 49"

Longitude: 82° 05' 15"

SWFWMD C.U.P. Number: 06926

Average Withdrawal Rate: 80,300 G.P.D.

Maximum Withdrawal Rate: 1,700,000 G.P.D.

Water Use: irrigation

Drillers Log:

0' - 30' surface sand

30' - 60' clay rock mixture

60' - 120' white limerock

120' - 382' light brown limerock

Well 14 is on file with the U.S. Geological Survey and was last known to be owned by Mark Woodard. Information on this well includes the following:

Size: 4 inch

Depth: 130 feet

Latitude: 28° 44' 49"

Longitude: 82° 05' 52"

Water Use: domestic

INVENTORY OF SURFACE WATER BODIES

Lake Panasoffkee lies approximately 3,000 feet North of the landfill and is potentially impacted by the site. The analysis listed in Table 4 are typical for the water in Lake Panasoffkee.

EXISTING GROUNDWATER MONITORING DATA

Existing groundwater monitoring data pertinent to the site consists of water quality data of samples taken from Wells 1 through 5 from May, 1975 to March, 1983. See Figure 21. Mr. Warren Anderson and Mr. Charles P. Laughlin of the U.S. Geological Survey collected water quality data from Well 14 in September, 1978. The results of all water quality data is presented in Appendix A.

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Chemical Analysis of Samples from Wells 1 through 5 in Figure 21 by Flowers Chemical Laboratories, Analytical & Consulting Chemists, P. O. Box 597, Altamonte Springs, Florida 32715-0597 and by Orlando Laboratories, Inc., P. O. Box 8025A, Orlando, Florida 32806.

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Well information was obtained from the Southwest Florida Water Management District and from the United States Geological Survey in Orlando, Florida.

TABLES

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Table 1 from Monthly Activity Reports

Note: Waste Received prior to October, 1978 is considered negligible.

Month	Year	Monthly Volume Cu.Yd.	Total Accumulated Volume Cu.Yd.
Oct.		3,729	3,729
Nov.		3,743	7,472
Dec.		3,828	11,300
Jan.	1979	3,904	15,204
Feb.		3,408	18,612
Mar.		4,441	23,053
Apr.		3,666	26,719
May		3,325	30,044
Jun.		3,769	33,813
Jul.		3,606	37,419
Aug.		3,183	40,602
Sep.		3,147	43,749
Oct.		3,458	47,207
Nov.		3,687	50,894
Dec.		3,797	54,691
Jan.	1980	3,456	58,147
Feb.		3,111	61,258
Mar.		3,865	65,123
Apr.		3,589	68,712
May		3,448	72,160
Jun.		3,424	75,584
Jul.		3,699	79,283
Aug.		3,766	83,049
Sep.		2,732	85,781
Oct.		3,260	89,041
Nov.		3,182	92,223
Dec.		3,777	96,000
Jan.	1981	3,627	99,627
Feb.		3,526	103,153
Mar.		3,919	107,072
Apr.		4,292	111,364
May		3,721	115,085
Jun.		3,628	118,713
Jul.		3,625	122,338
Aug.		3,549	125,887
Sep.		3,353	129,240
Oct.		3,918	133,158
Nov.		3,584	136,742
Dec.		3,784	140,526

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Table 1 (Cont.)

Month	Year	Monthly Volume Cu.Yd.	Total Accumulated Volume Cu.Yd.
Jan.	1982	4,098	144,624
Feb.		4,354	148,978
Mar.		4,424	153,402
Apr.		4,360	157,762
May		4,234	161,996
Jun.		4,547	166,543
Jul.		5,082	171,625
Aug.		4,227	175,852
Sep.		5,071	180,923
Oct.		4,079	185,002
Nov.		4,877	189,879
Dec.		6,030	195,909
Jan.	1983	5,181	201,090
Feb.		4,921	206,011
Mar.		6,163	212,174
Apr.		5,554	217,728
May		4,756	222,484
Jun.		5,695	228,179
Jul.		5,413	233,592
Aug.		6,115	239,707
Sep.		7,849	247,556
Oct.		9,302	256,858
Nov.		4,836	261,694
Dec.		5,147	266,841
Jan.	1984	5,103	271,944

Ending January 13, 1984

TABLE 2

GENERAL STRATIOGRAPHIC SECTION

AND

WATER BEARING PROPERTIES OF THE FLORIDAN AQUIFER

SYSTEM	SERIES	FORMATION	THICKNESS (FT.)	LITHOLOGY	WATER BEARING PROPERTIES
		Ocala Limestone	0 - 200	Upper part chiefly chalky fossiliferous limestone. Lower part chiefly calcitic limestone.	One of the most productive formations of the Floridan. Upper part more productive than lower part. Contains many solution cavities.
Tertiary	Eocene	Avon Park Limestone	200-600	Cream colored to brown chalky limestone and dolomite. Contains gypsum and chert.	Yields moderate to large quantities of water to wells.
		Lake ~~County~~ City Limestone	700-900	Alternating beds of dark brown chalky limestone. Contains gypsum.	Similar to Avon Park Limestone, oldest formation of the Floridan.

TABLE 3

U.S. DEPARTMENT OF COMMERCE

CLIMATOLOGICAL DATA

MONTH	PRECIPITATION (IN.)	EVAPORATION (IN.)	EVAPOTRANSPIRATION (IN.)	TEMPERATURE (°F)
JAN.	3.01	2.63	2.1	58.5
FEB.	4.22	3.23	2.6	59.8
MAR.	3.84	5.06	3.6	65.3
APR.	1.87	6.47	4.5	70.9
MAY	4.51	7.19	5.3	75.7
JUN.	6.56	6.91	4.4	79.5
JUL.	6.93	6.81	4.9	81.0
AUG.	7.67	6.35	4.8	81.1
SEP.	6.30	5.05	4.0	79.4
OCT.	2.04	4.53	3.6	72.4
NOV.	1.95	2.94	2.7	64.8
DEC.	2.50	2.41	2.1	59.9

TABLE 4

CHEMICAL ANALYSES OF WATER

FROM LAKE PANASOFFKEE

(Analyses by U.S. Geological Survey; values in milligrams per liter except where noted.)

Property	Date of sampling			
	May 1966	May 1967	May 1970	May 1973
Water temperature (^{o}C)		28.9	27.0	28.0
Color	10	10	30	
Conductance umho/cm at 25^{o}C.	280	210	240	212
Dissolved oxygen (DO)		11	9.0	7.9
Percent saturation		142	111	100
pH	7.4	7.9	7.5	
Alkalinity	108	61	101	
Bicarbonate (HCO_3)	132	74	123	
Carbonate (CO_3)		0	.0	
Phosphate (P)			0.10	
Dissolved solids (residue at 180^{o}C)		137	167	
Orthophosphate, dissolved as P	0.026	.0	.006	.010
Hardness (Ca,Mg)	124	87	120	
Noncarbonate hardness	16	26	19	
Ammonia (NH_4) as N (nitrogen)			.03	
Oranic nitrogen			.59	.56
Calcium (Ca)	42	26	42	
Magnesium (Mg)	4.6	5.2	3.5	
Sodium (Na)	4.9	5.3	5.7	
Potassium (K)	.2	.2	.2	
Chloride (Cl)	9.0	10	8.8	
Sulfate (SO_4)	17	20	11	
Fluoride (F)	.3	.3	.4	
Silica (Si)	8.1	3.2	4.5	3.4
Iron (Fe)	0	.01		
Manganese (Mn)		.0		
Strontium (Sr)		.37		
Nitrate (NO_3) as N	.023	.0	.0	.0
Nitrite (NO_3) as N			.003	

FIGURES

SUMTER COUNTY LANDFILL
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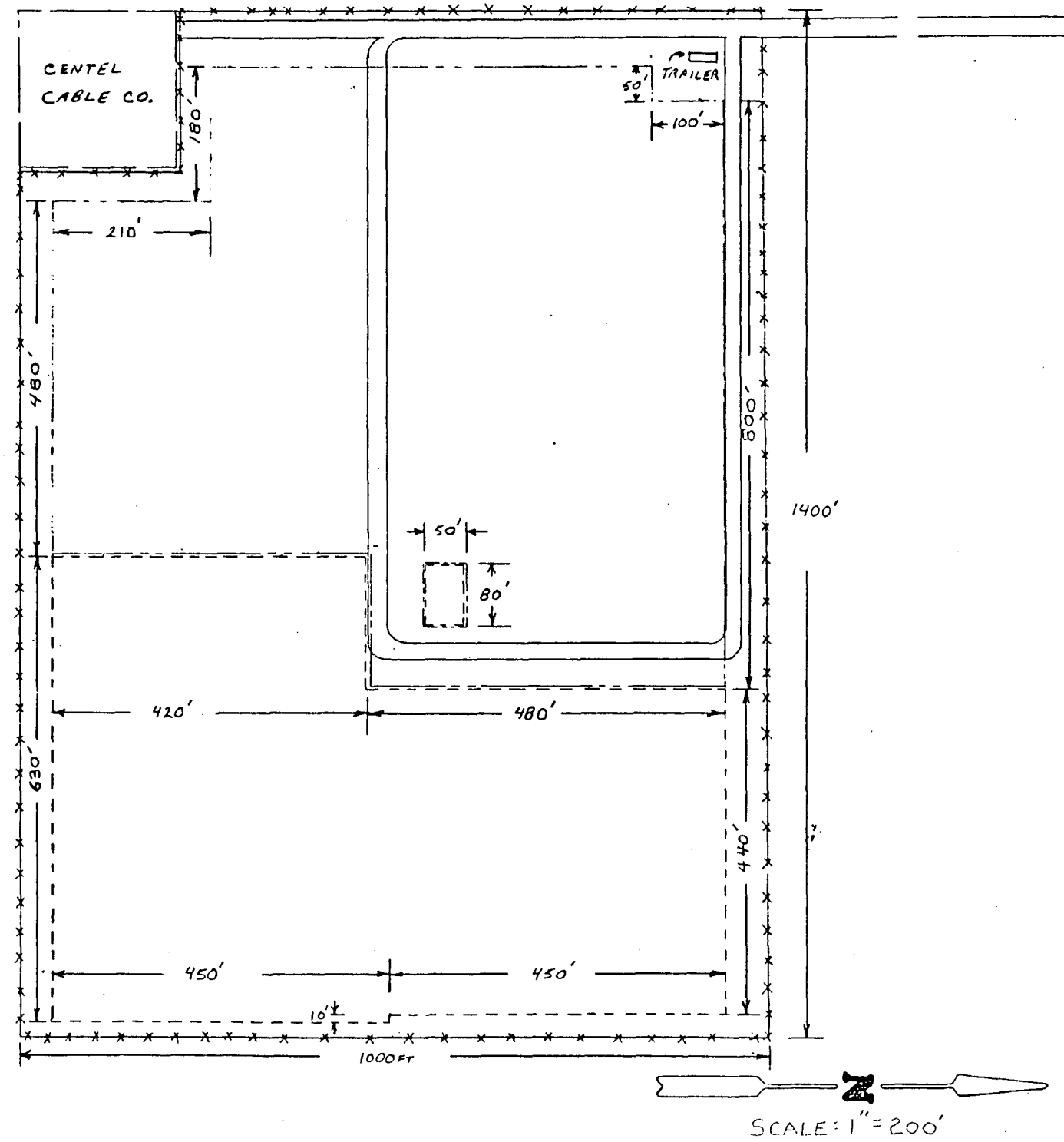
AS OF JAN. 13, 1984

LANDFILL BOUNDARY
DIRT ROAD
CENTEL BOUNDARY
UNFILLED AREA
FILLED AREA

SCALE: 1 IN = 200 FT.

FIG. 1



Springstead & Associates, Inc.
CONSULTING ENGINEERS
LEESBURG, FLORIDA

SUMTER COUNTY LANDFILL SHEET ____ OF ____
JOB NO. C-103
LOCATION MAP BY W.S. DATE 6-5-84

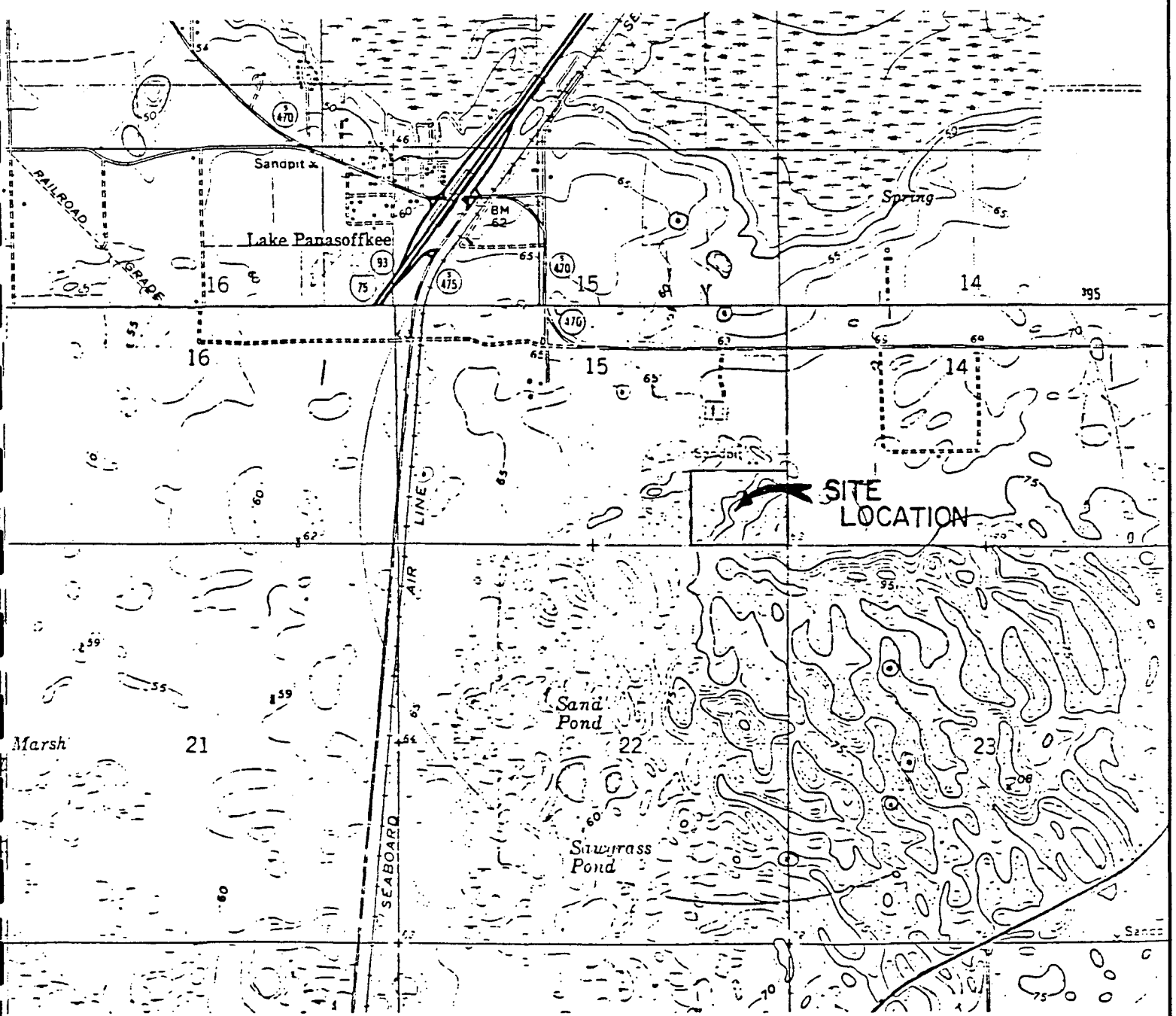


FIG. 2
SUMTER COUNTY LANDFILL
SCALE: 1"=2000'

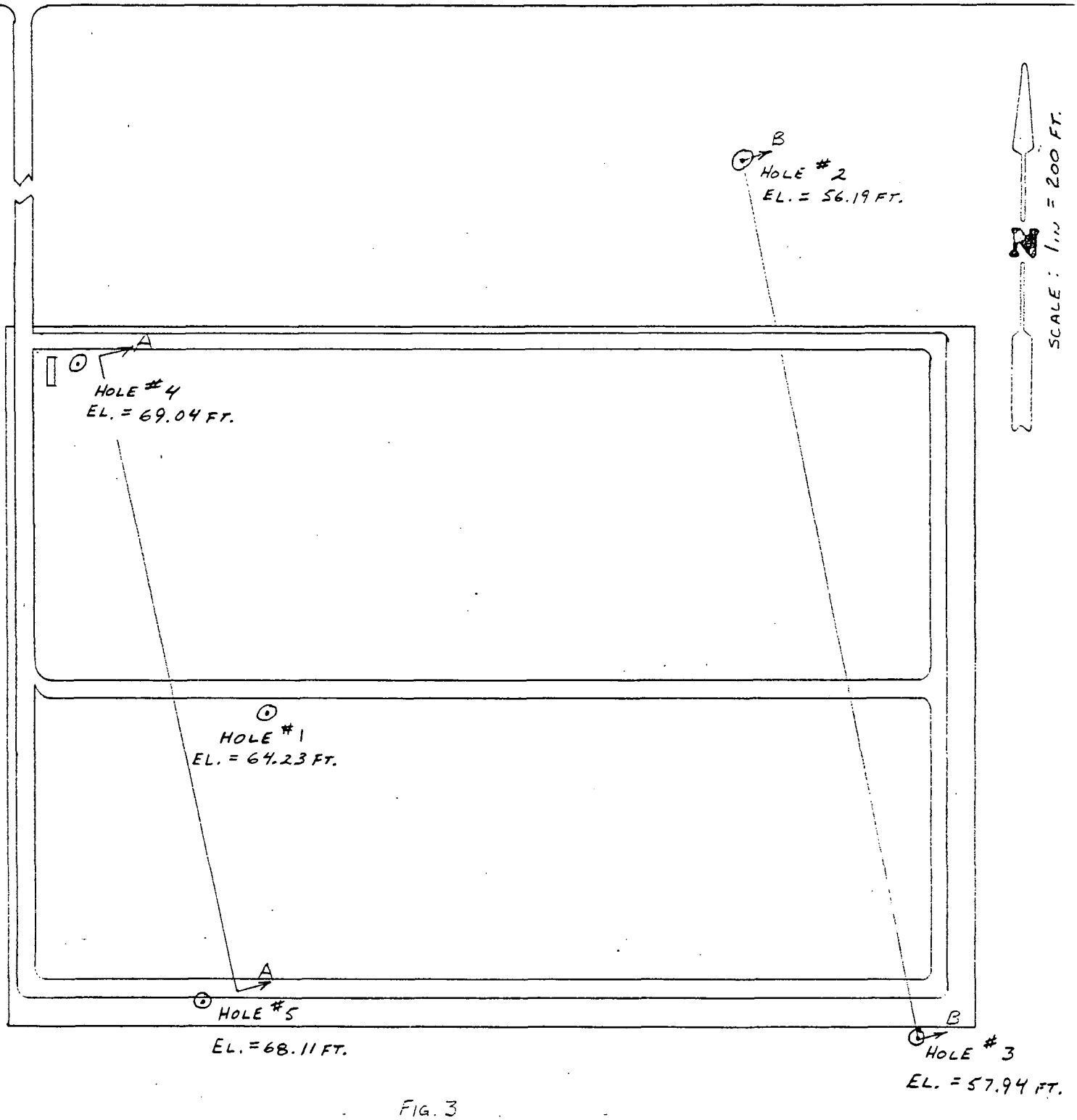
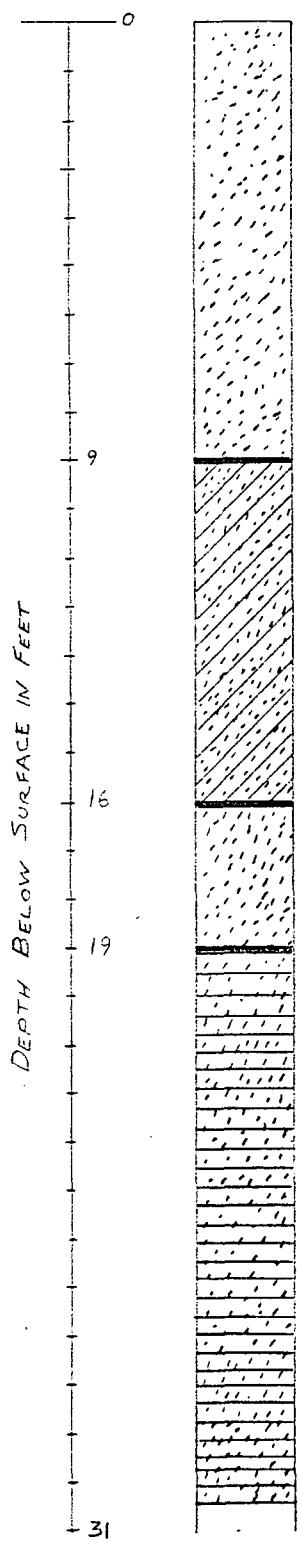


FIG. 3

SUMTER COUNTY LANDFILL

EXPLORATORY TEST BORINGS

(BOREHOLE LOCATIONS AND ELEVATIONS)



TOP OF GROUND EL = 64.23 N.G.V.D.

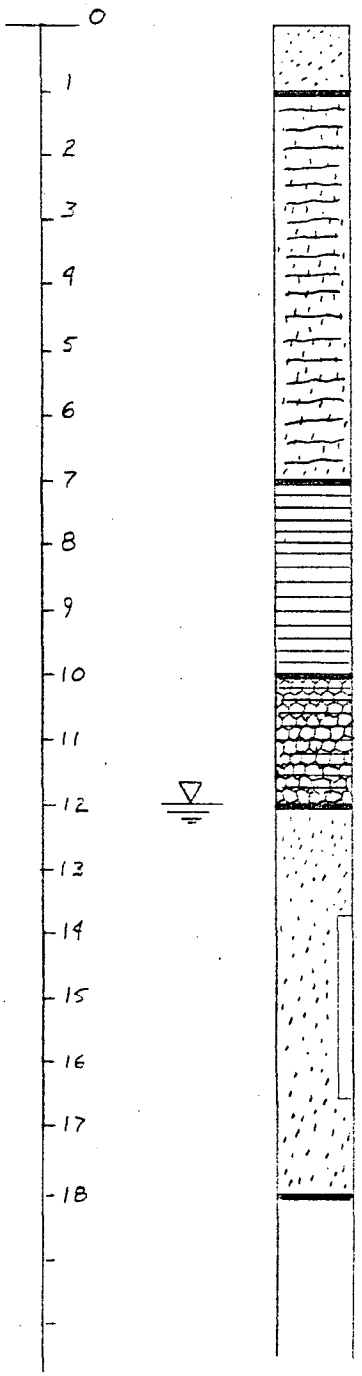
GRAYISH BROWN TO YELLOWISH BROWN SAND
PERMEABILITY = 0.014 FT./MIN.±

BROWN SILTY SAND ±
PERMEABILITY = 5.37×10^{-4} FT./MIN.

LIGHT BROWN SAND

WHITE CLAYEY SAND

FIG. 4
LITHOLOGIC COLUMNAR SECTION
FROM TEST HOLE 1



TOP OF GROUND EL. 56.19
BROWN SAND

BLUEISH GRAY SANDY CLAY

BLUEISH GRAY CLAY

WET BLUEISH CLAY W/BITS OF LIMEROCK

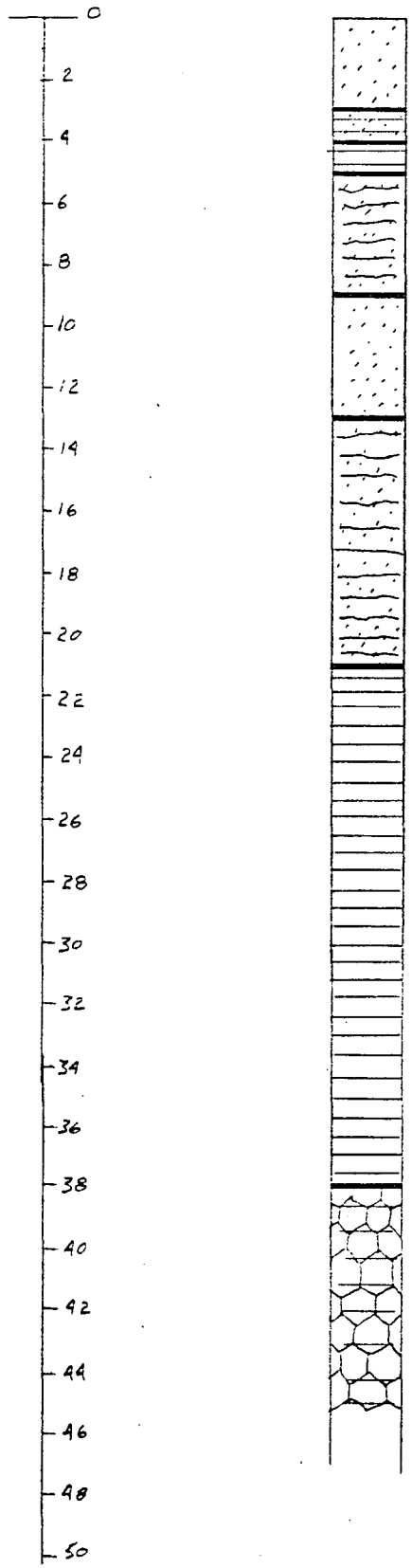
GROUN-WATER TABLE EL. 44.13 (JAN. 1984)

SAMPLE NOT RECOVERED

FIG. 5
LITHOLOGIC COLUMNAR SECTION
FROM TEST HOLE 2

Springstead & Associates, Inc.
CONSULTING ENGINEERS
LEESBURG, FLORIDA

SUMTER COUNTY LANDFILL SHEET ____ OF ____
JOB NO. C-103
BY W.S. DATE 5-25-84



TOP OF GROUND EL. = 57.94 N.G.V.D.

DARK BROWN SAND

GRAY CLAYEY SAND
RED CLAY

LIGHT BROWN SANDY CLAY

LIGHT BROWN SAND

PINKISH SANDY CLAY

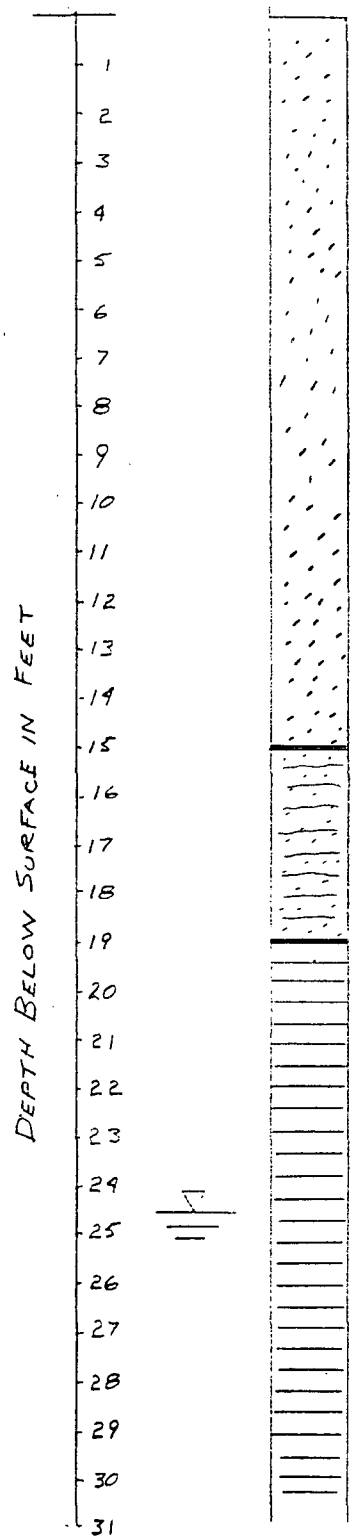
PINKISH WET CLAY

CLAY AND LIMEROCK MIX

FIG. 6
LITHOLOGIC COLUMNAR SECTION
TEST HOLE 3

Springstead & Associates, Inc.
CONSULTING ENGINEERS
LEESBURG, FLORIDA

SUMTER COUNTY LANDFILL SHEET ____ OF ____
JOB NO. C-103
BY W.S. DATE 5-25-84



TOP OF GROUND EL. = 69.04 N.G.V.D.

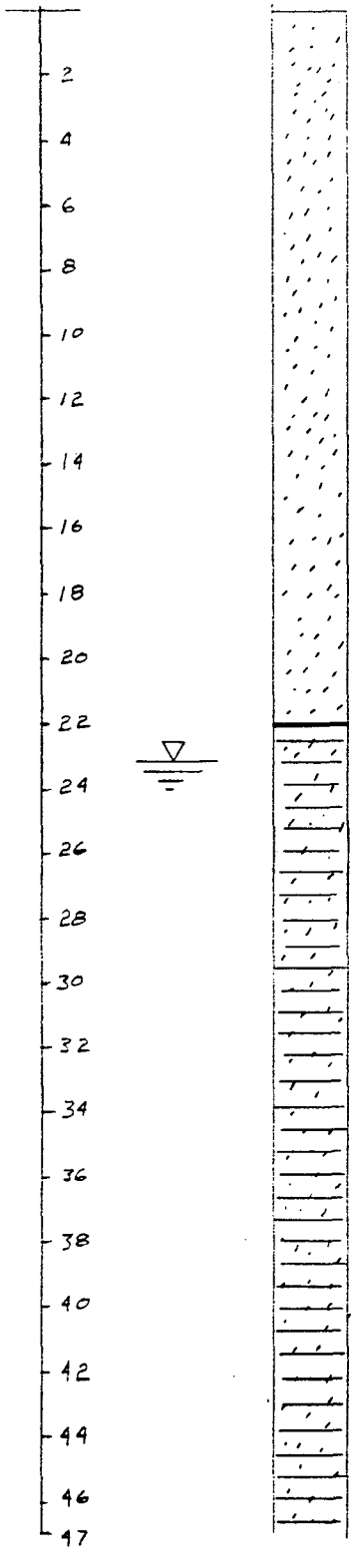
FINE SAND

SANDY CLAY

GREYISH CLAY

GROUND-WATER TABLE EL. 44.36 (JAN. 1984)

FIG. 7
LITHOLOGIC COLUMNAR SECTION
FROM TEST HOLE 4



TOP OF GROUND EL. = 68.11 N.G.V.D.

MEDIUM COURSE SAND

GROUND-WATER TABLE EL. = 44.86 (JAN. 1984)

CLAYEY SAND

FIG. 8
LITHOLOGIC COLUMNAR SECTION
FROM TEST HOLE 5

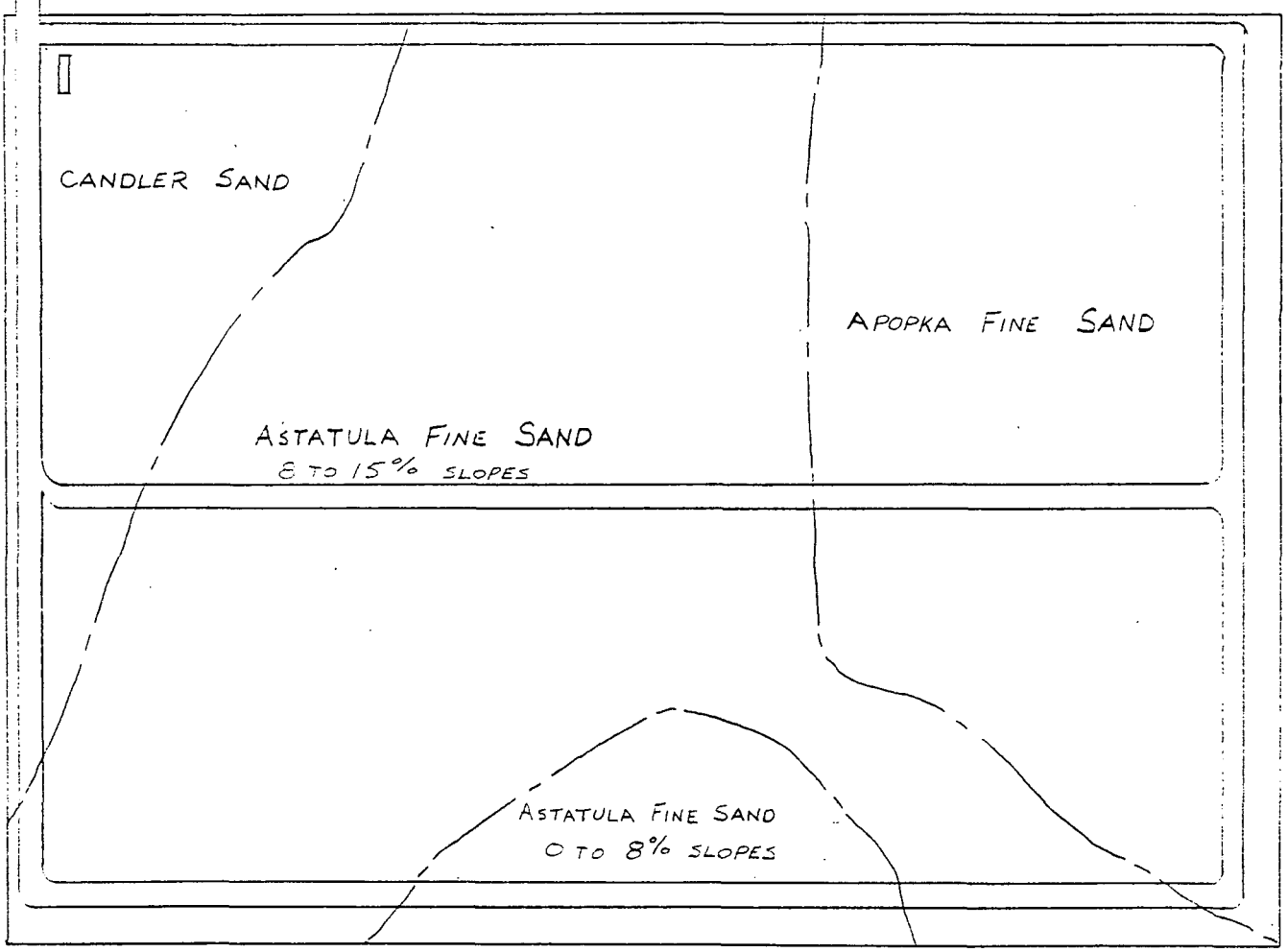


FIG. 9
SUMTER COUNTY LANDFILL
SOILS MAP

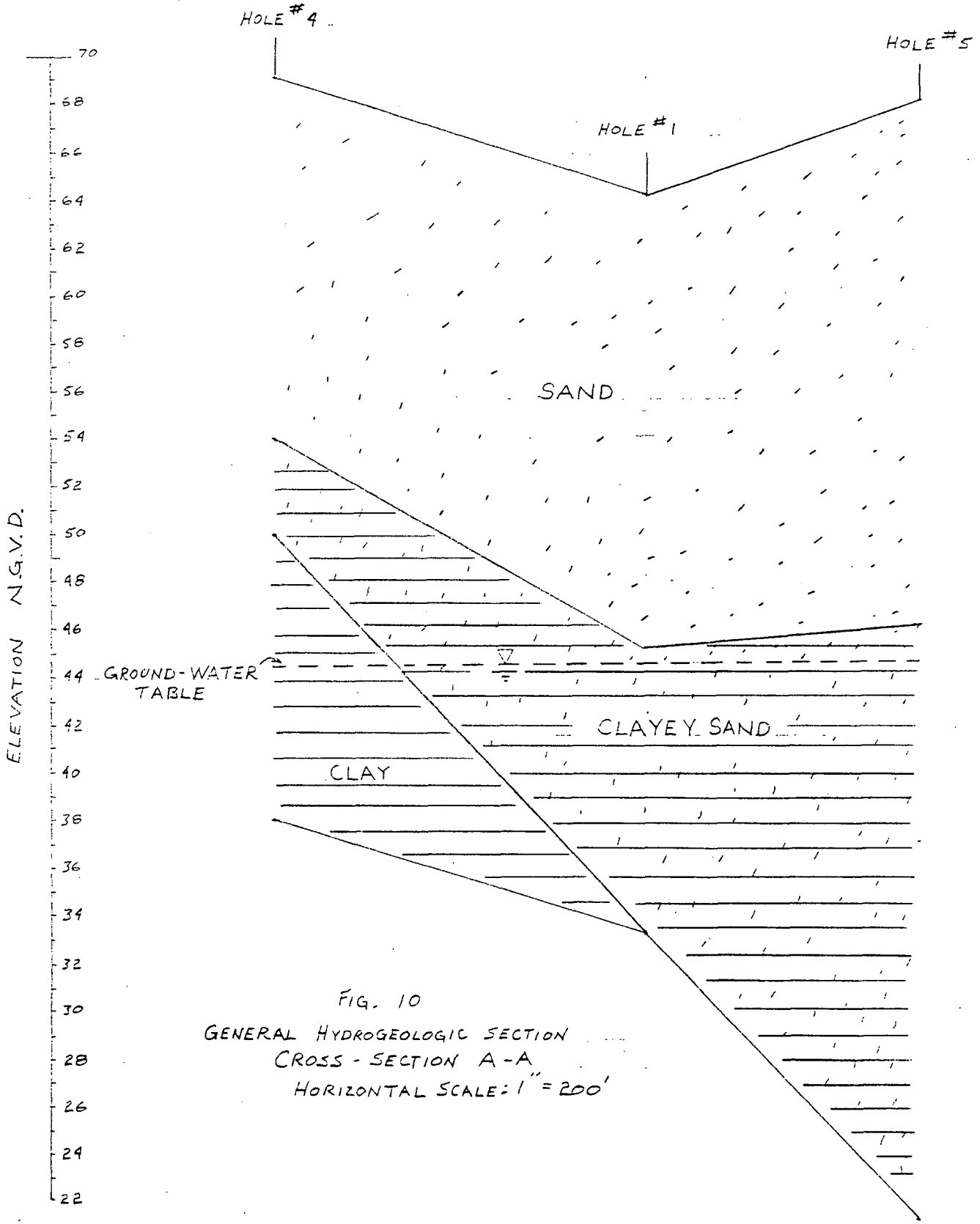


FIG. 10
GENERAL HYDROGEOLOGIC SECTION
CROSS-SECTION A-A
HORIZONTAL SCALE: 1" = 200'

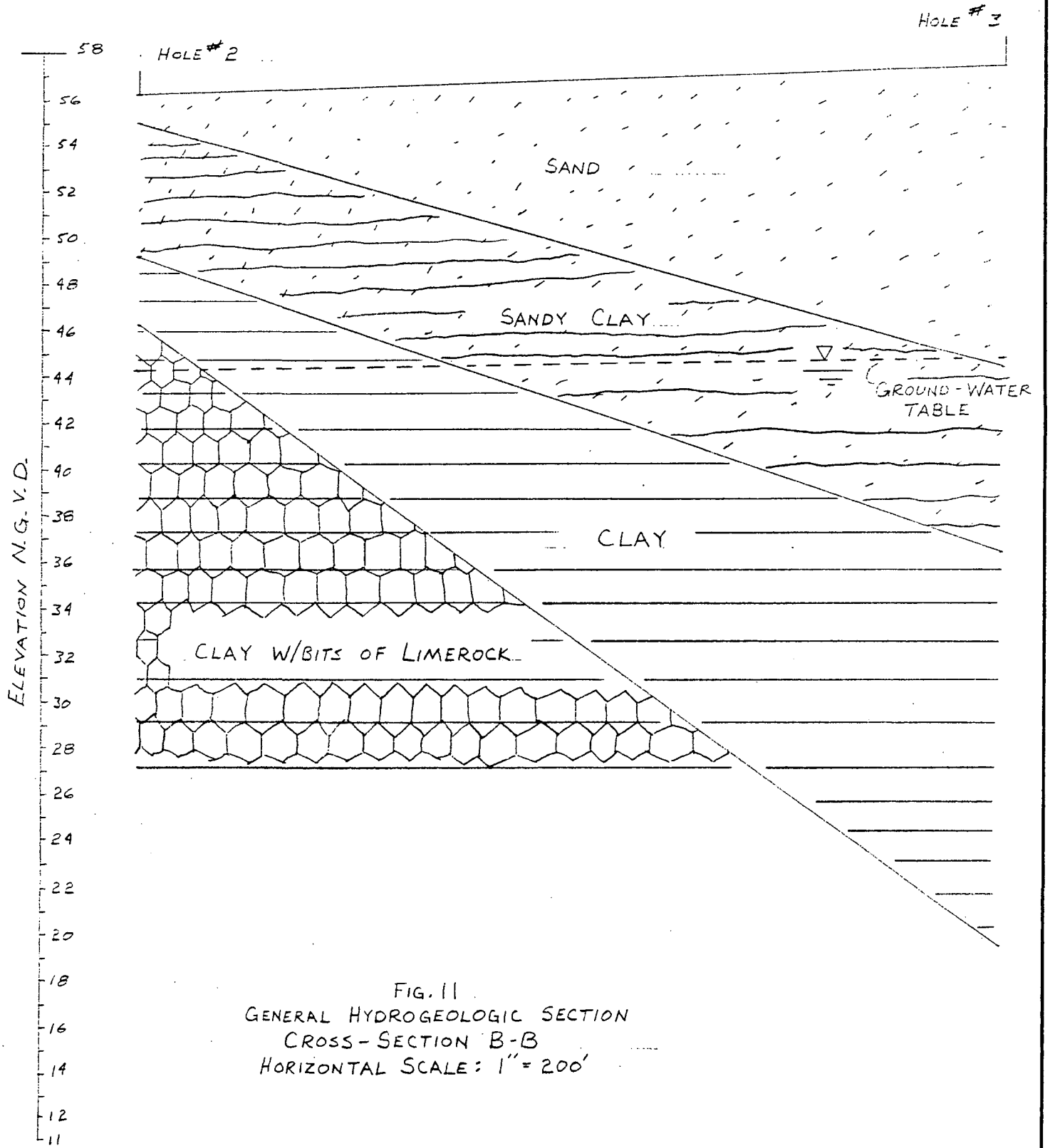


FIG. 11
GENERAL HYDROGEOLOGIC SECTION
CROSS-SECTION B-B
HORIZONTAL SCALE: 1" = 200'

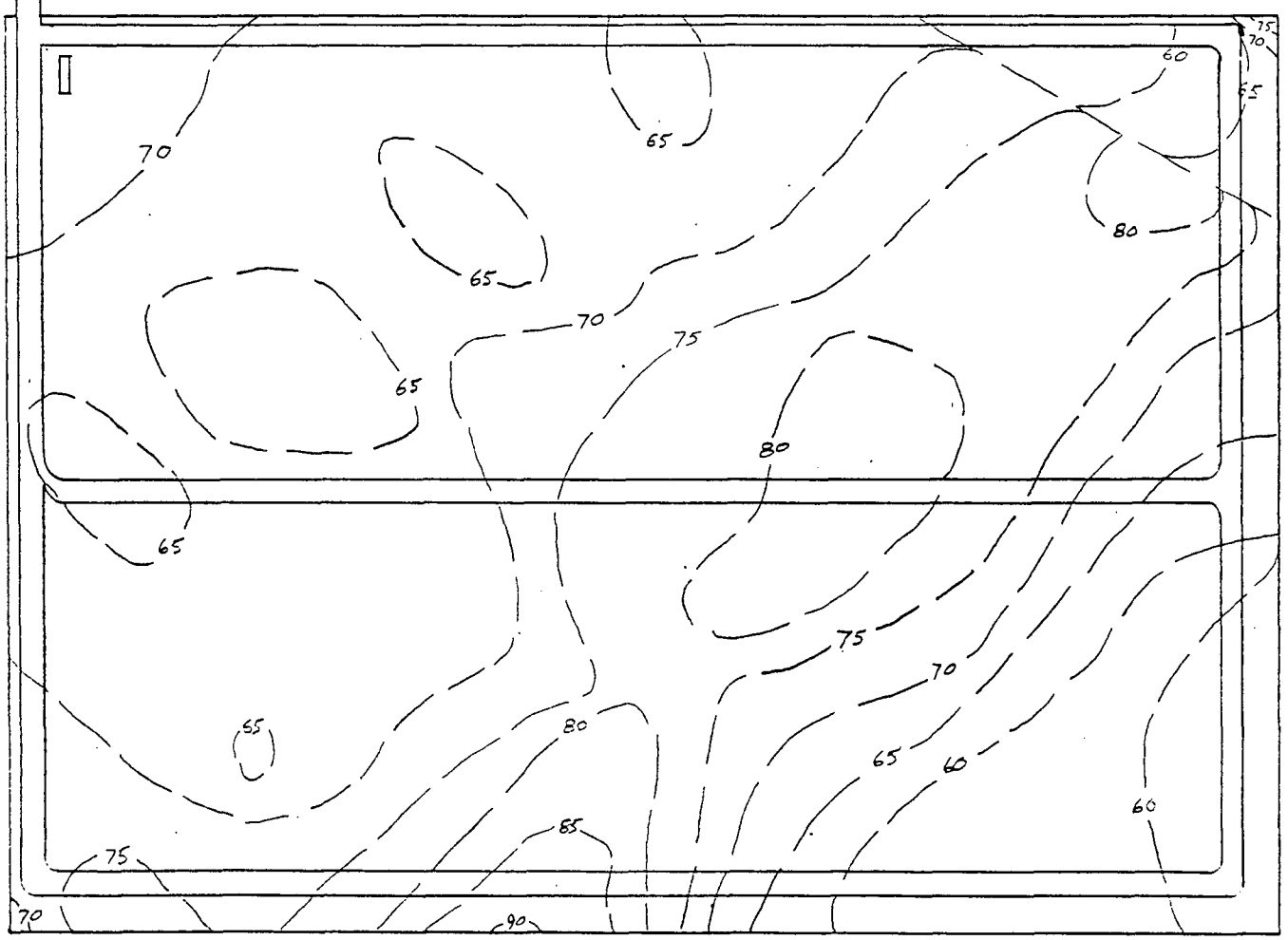


FIG. 12
SUMTER COUNTY LANDFILL
GROUND CONTOURS
PRIOR TO FILL
SCALE: 1" = 200'

NOTE: CONTOURS ARE ONLY APPROXIMATE;
TAKEN FROM U.S.G.S. QUADRANGLE
(5' CONTOURS) BUSHNELL 1958.

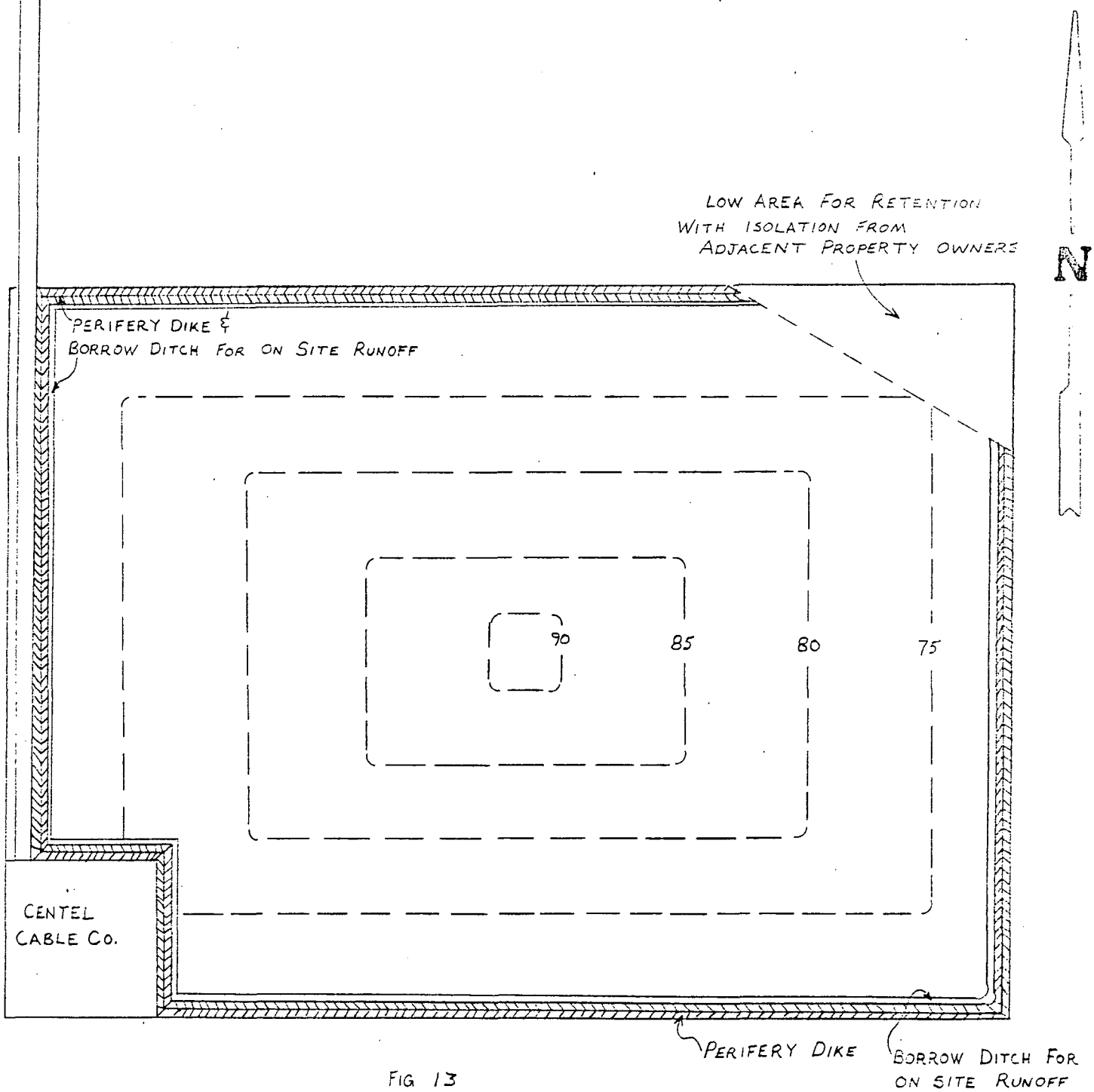


FIG 13
SUMTER COUNTY LANDFILL

APPROXIMATE GROUND CONTOURS
UPON COMPETION OF FILL
SCALE: 1"=200'

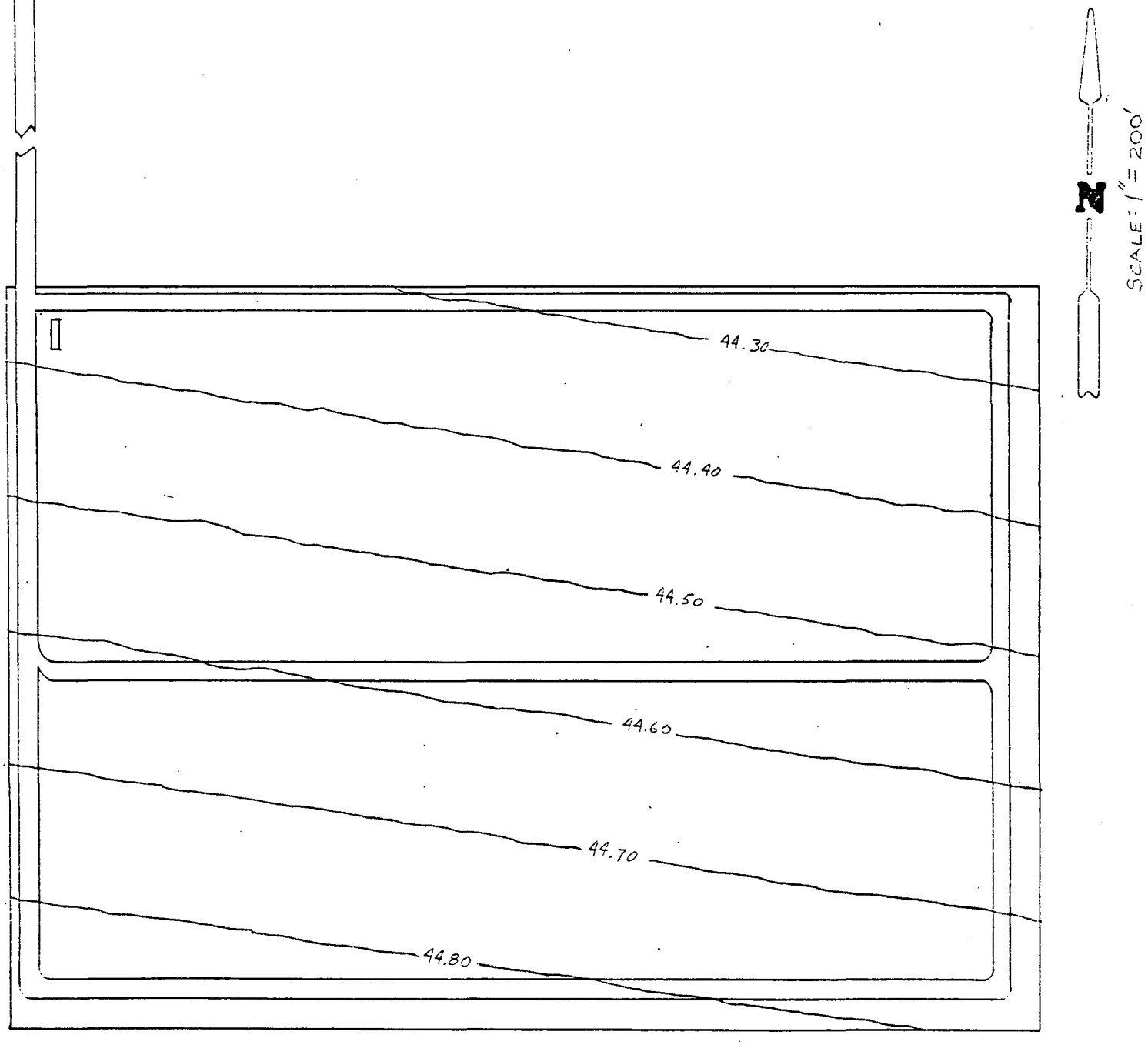


FIG. 14
SUMTER COUNTY LANDFILL
GROUNDWATER CONTOUR (JAN., 1984)
SCALE: 1" = 200'

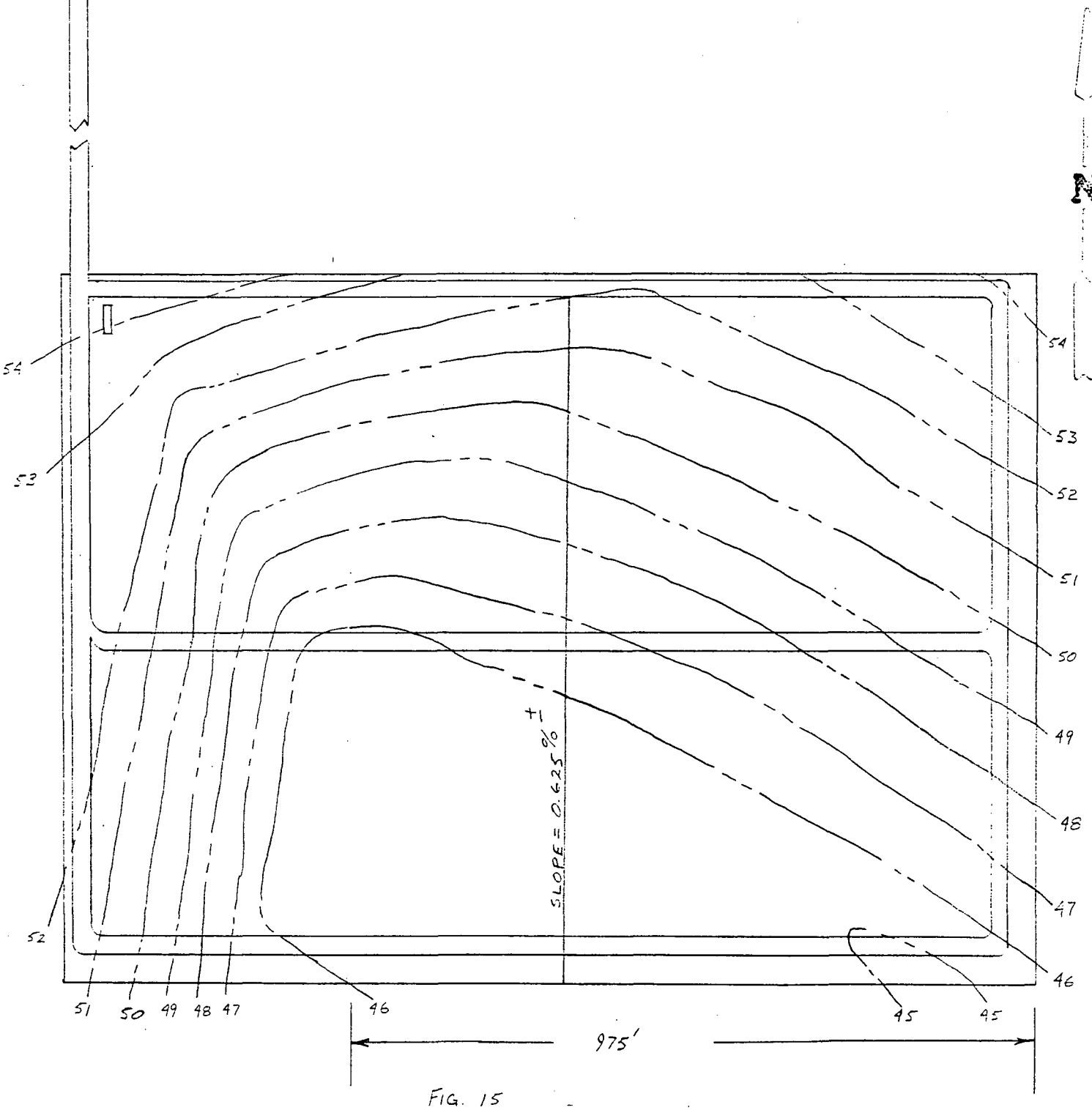


FIG. 15

SUMTER COUNTY LANDFILL

TOP OF CLAYEY SAND, SANDY CLAY CONTOUR

SCALE: 1" = 200'

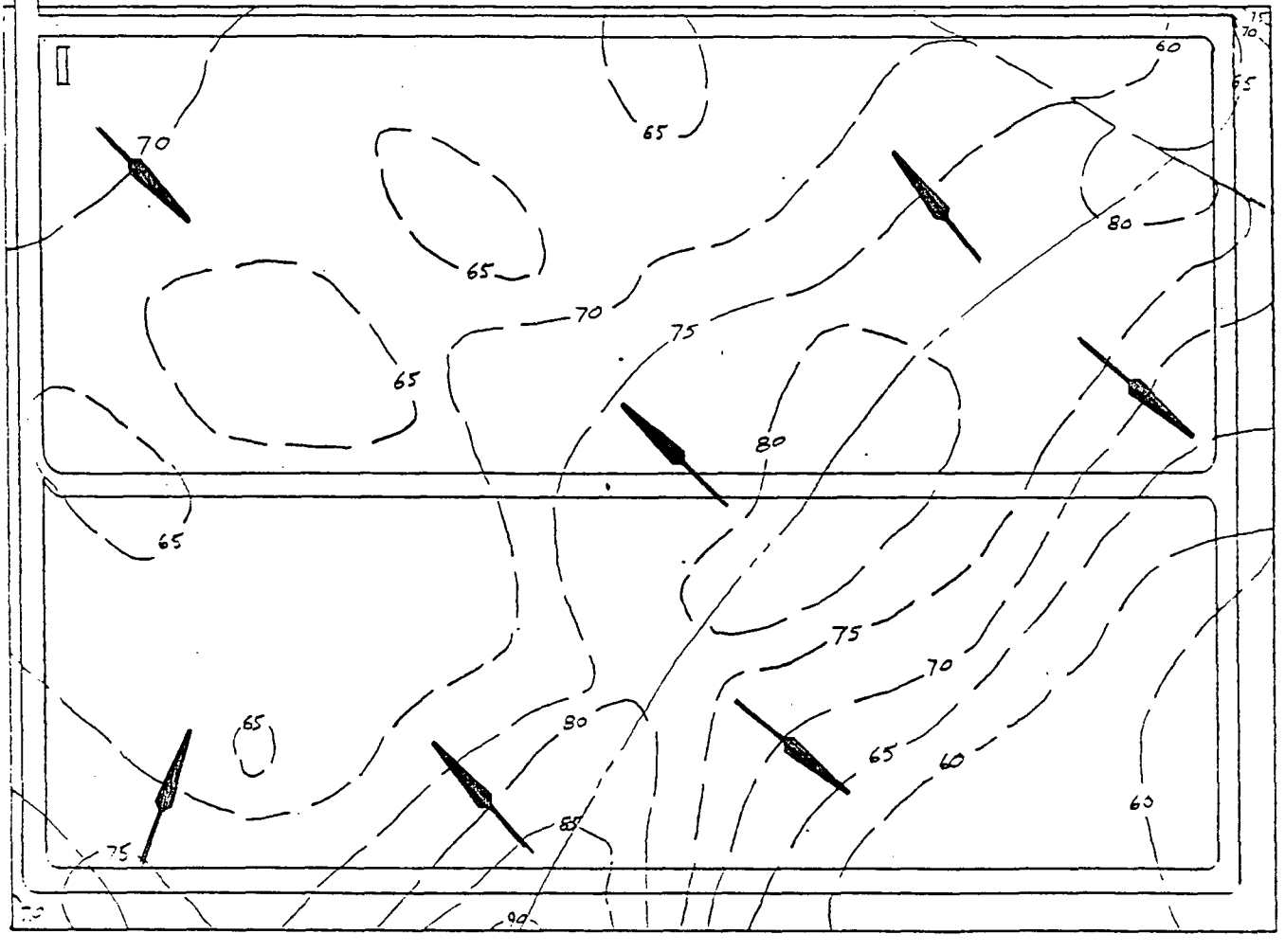


FIG. 16

SUMTER COUNTY LANDFILL

DIRECTION OF STORMWATER RUNOFF

PRIOR TO FILL

——— DRAINAGE DIVIDE

NOTE: CONTOURS ARE ONLY APPROXIMATE;
TAKEN FROM U.S.G.S. QUADRANGLE
(5' CONTOURS) BUSHNELL 1958.

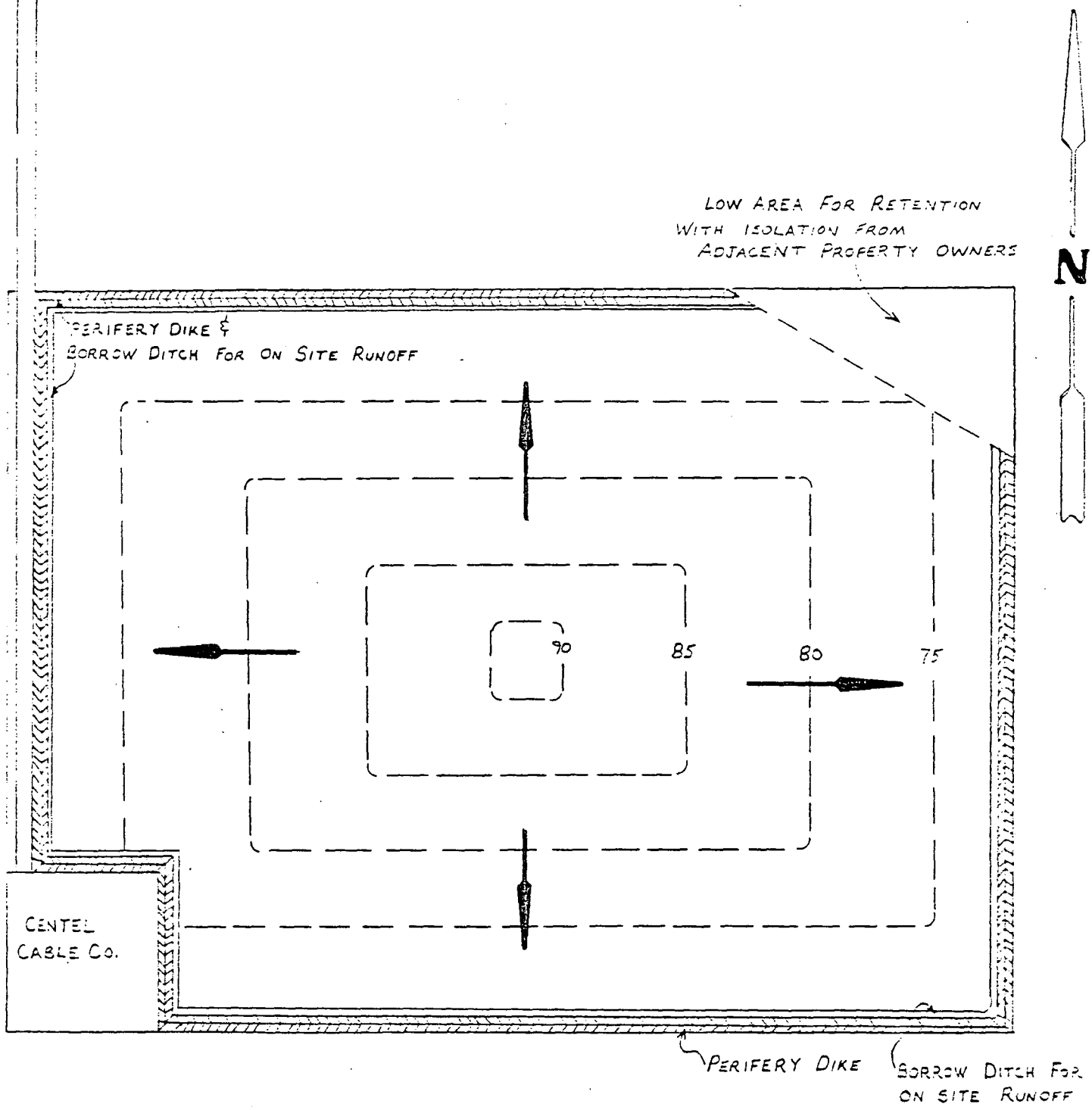


FIG. 17
SUMTER COUNTY LANDFILL
DIRECTION OF STORMWATER RUNOFF
UPON COMPLETION OF FILL

Springstead & Associates, Inc.
CONSULTING ENGINEERS
LEESBURG, FLORIDA

SUMTER COUNTY LANDFILL SHEET ____ OF ____
JOB NO. C-103
BY W.S. DATE 6-11-84

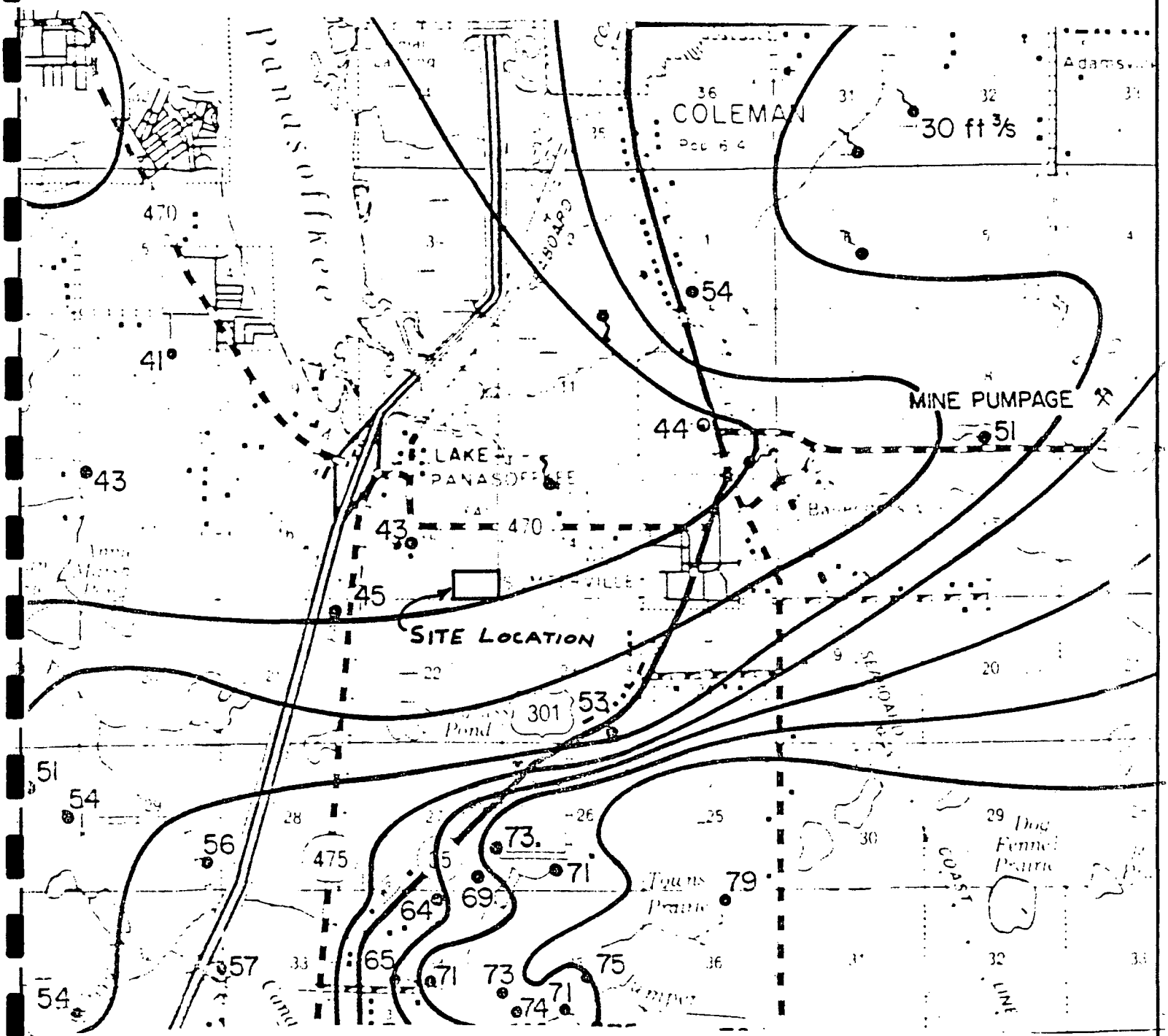


FIG. 18
POTENTIAMETRIC SURFACE OF THE FLORIDAN AQUIFER
BY: L.A. BRADNER SEPTEMBER 1983
SCALE: 1" = 1 MILE

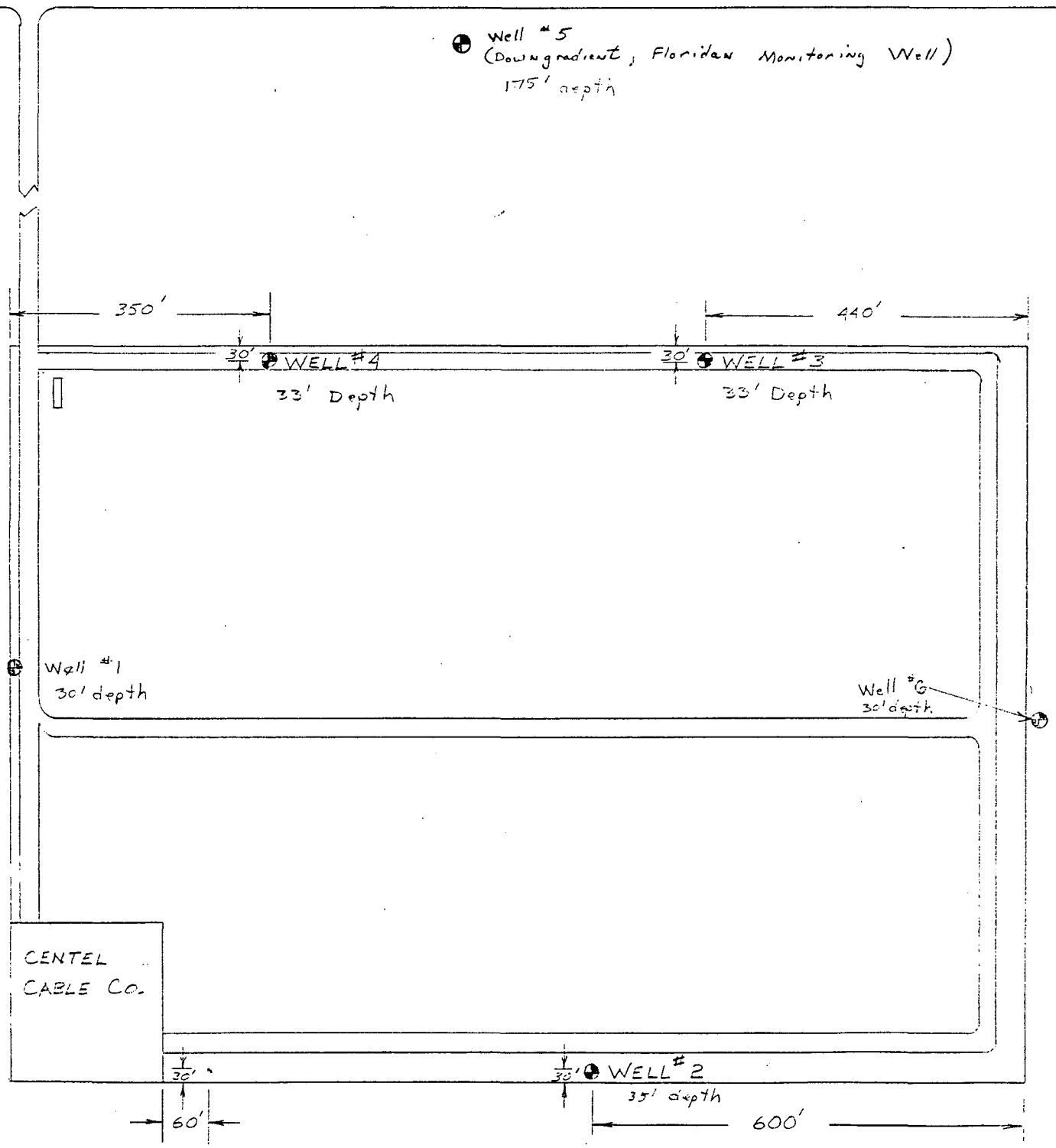


FIG. 19

SUMTER COUNTY LANDFILL

PROPOSED MONITORING WELL LOCATIONS

Revised 1/23/85 (DER)

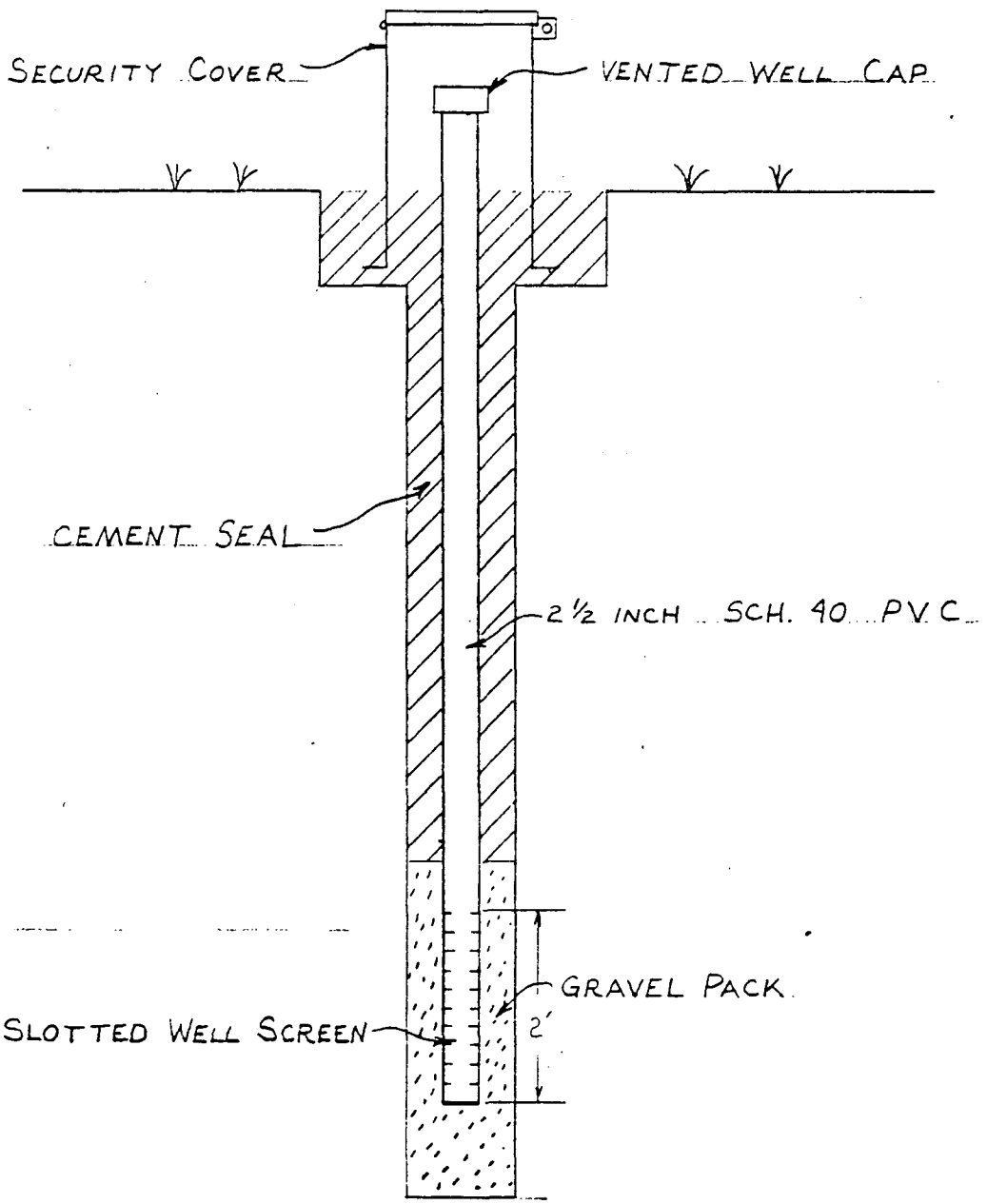


FIG. 20

TYPICAL MONITORING WELL

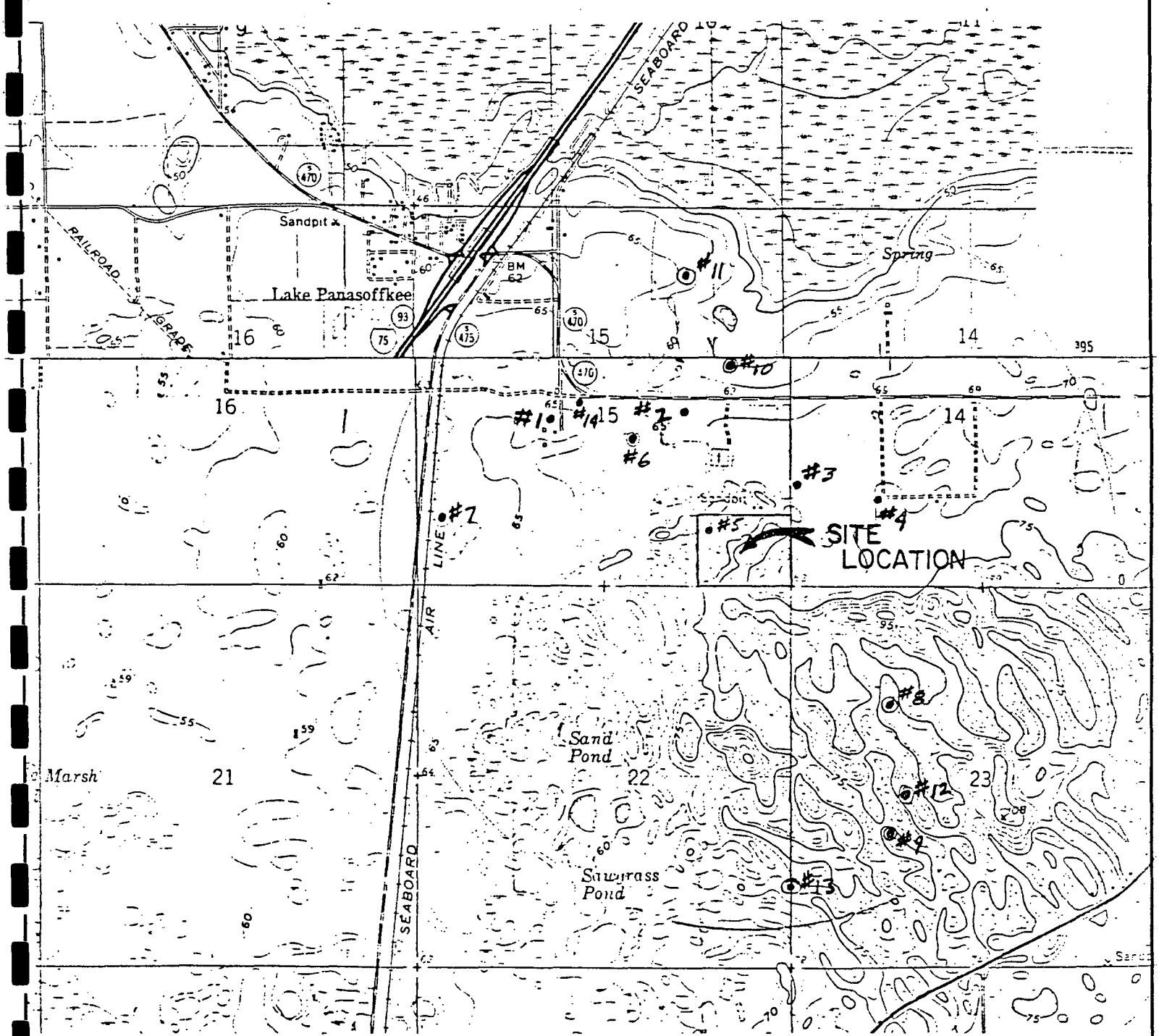
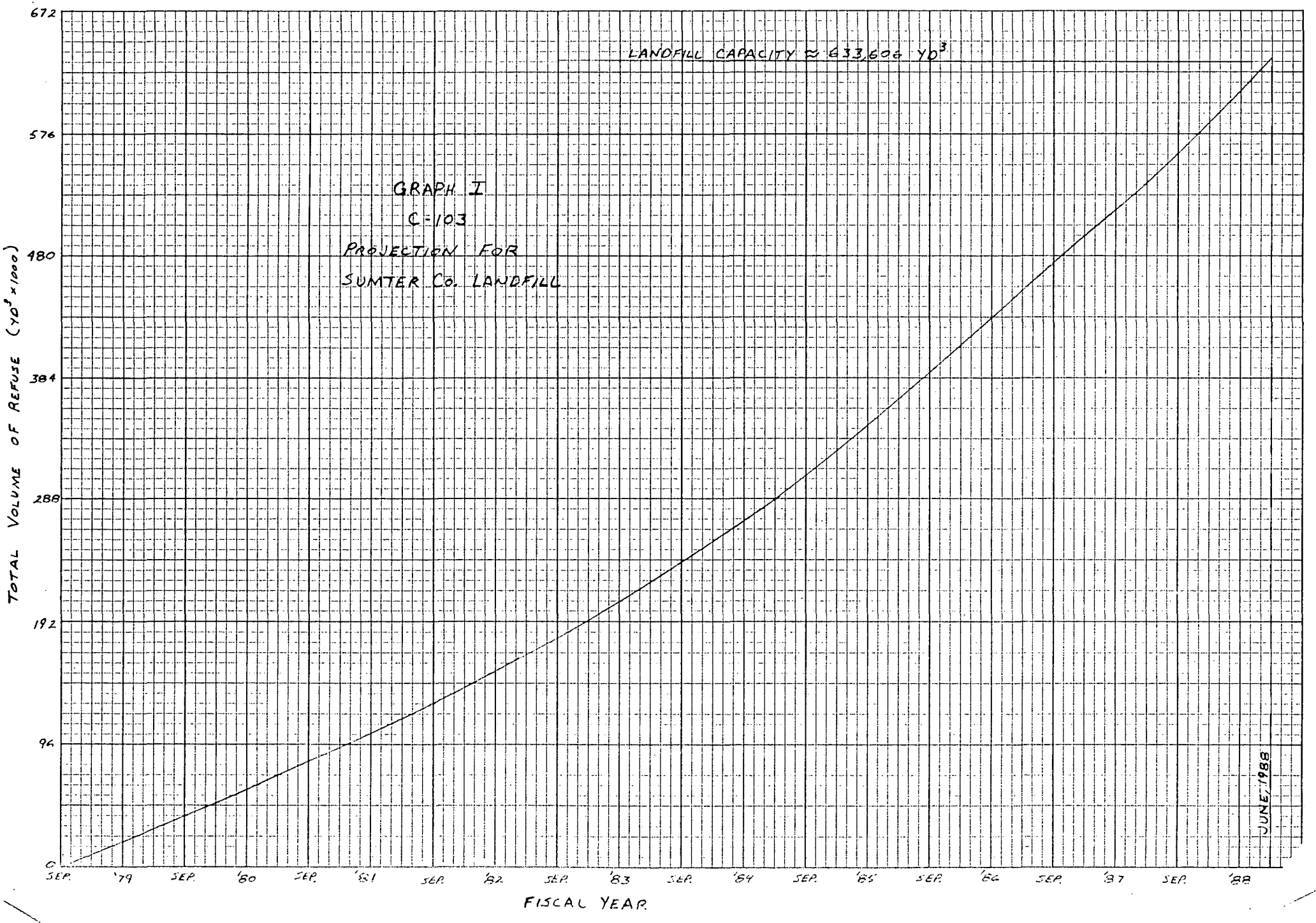


FIG. 21
WELL LOCATIONS
SCALE: 1" = 2000'

GRAPHS



APPENDIX A

FLOWERS CHEMICAL LABORATORIES
ANALYTICAL & CONSULTING CHEMISTS
Established 1957
Complete Laboratory Service
P.O. Box 597 • Altamonte Springs, Fla. 32701 • Phone (305) 339-5984

Received From: Springstead & Assoc.
Box 283
Leesburg Fla.

Date 3/30/83

For: Sumpter Co. Landfill

Laboratory Identification: 8336-39

REPORT OF ANALYSIS

ANALYSES	#1 8336	#3 8337	#4 8338	#5 8339
B O D mg/L	1	1	1	1
C O D mg/L	30	4	20	6
Nitrates mg N/L	2.8	2.4	1.5	1.1
Chlorides mg Cl/L	15	10.5	12	11
pH	7.6	7.7	7.9	8.1
Lead ppm Pb	<0.05	<0.05	<0.05	<0.05
Cadmium ppm Cd	<0.01	<0.01	<0.01	<0.01
Copper ppm Cu	<0.02	0.06	<0.02	<0.02
Chromium ppm Cr	<0.01	<0.01	<0.01	<0.01

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

Established 1957

Complete Laboratory Service

P O Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

Received From: Springstead & Assoc.
Box 283
Leesburg Fla.

Date 3/13/82

For: Sumpter County LAndfill
Sample Nos 7862-65

Laboratory Identification HRS NO 83139

REPORT OF ANALYSIS

ANALYSES	Well # 1 7862	2 7863	4 7864	5 7865
B O D mg/L	2	3	4	5
C O D mg/L	9.6	41.6	8.0	12.8
Nitrates mg N/L	1.86	3.0	1.84	0.68
Chlorides mg Cl/L	14.7	10.1	5.58	10.1
pH	7.7	7.98	7.98	8.2
Lead ppm Pb	0.01	<0.005	0.007	0.005
Cadmium ppm Cd	0.0005	0.0005	<0.0005	<0.0005
Copper ppm Cu	0.018	0.025	0.024	0.024
Chromium ppm Cr	<0.0025	<0.0025	<0.0025	<0.0025

C-103

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

Established 1957

Complete Laboratory Service

P O Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

Received From: Springstead & Associates
Box 283
Leesburg Fla.

Date 4/25/81

For: Sumpter Co. Wells #1,2,4,5
Panasoffkee Landfill

Laboratory Identification 7445-48

HRS NO 83139

REPORT OF ANALYSIS

ANALYSES	1 7445	2 7446	4 7447	5 7448
B O D mg/L	2	11	4	3
COD mg/L	7.3	9.3	6.38	12.4
Nitrates mg N/L	2.3	4.0	0.97	0.91
Chlorides mg Cl/L	15.2	11.9	6.55	11.5
pH	7.55	7.80	8.00	8.10
Lead ppm Pb	0.017	0.017	0.018	0.025
Copper ppm Cu	0.001	0.12	0.001	0.001
Chromium ppm Cr	<0.0025	<0.0025	<0.0025	<0.0025
Cadmium ppm Cd	<0.0005	<0.0005	<0.0005	<0.0005

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

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Complete Laboratory Service

P.O. Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

Received From: Springstead & Assoc.
Leesburg, Fla.

Date 5/27/80

For: Sumpter Co

Laboratory Identification 7207-10

REPORT OF ANALYSIS

ANALYSES	1 7207	3 7208	4 7209	5 7210
B O D mg/L	3	4	2	3
C O D mg/L	6.37	1.76	0.88	1.46
Nitrates mg N/L	3.20	1.17	7.97	5.85
Chlorides mg Cl/L	14.8	7.55	6.55	12.13
pH	7.20	7.50	7.85	8.20
Lead ppm Pb	<0.005	<0.005	0.006	<0.005
Cadmium ppm Cd	<0. 0005	<0.0005	<0.0005	<0.0005
Copper ppm Cu	0.004	0.020	0.011	0.003
Chromium ppm Cr	<0.0025	<0.0025	<0.0025	<0.0025

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

Established 1957

Complete Laboratory Service

P O. Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

C-107

Received From: Springstead & Assoc.
Box 283
Leesburg, Fla.

Date 10/30/79

For: Sumpter Co.

Laboratory Identification 6977-79

REPORT OF ANALYSIS

ANALYSES	#1 6977	#4 6978	#5 6979
B O D mg/L	0.3	3.3	0.9
C O D mg/L	4.5	3.9	11.0
Nitrate mg N/L	2.1	1.73	0.98
pH	7.50	7.60	7.60
Lead ppm Pb	0.011	0.018	0.010
Cadmium ppm Cd	<0.0005	<0.0005	<0.0005
Copper ppm Cu	0.0008	0.001	0.002
Chromium ppm Cr	0.005	0.004	0.003

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

Established 1957

Complete Laboratory Service

P.O Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

Received From: Springstead & Associates
P.O. Box 283
Leesburg, Florida

Date 7/21/78

For: Sumpter County Landfill
Wells 1,3,4,5

Laboratory Identification 6257-60

REPORT OF ANALYSIS

ANALYSES	WELL 1 6257	3 6258	4 6259	5 6260
B O D mg/L	<1	<1	<1	<1
C O D mg/L	3.2	3.8	2.1	2.4
Nitrates mg N/L	0.32	0.21	1.35	1.16
Chlorides mgCl/L	9.6	8.7	10.3	9.2
pH	7.41	7.53	7.69	7.68
Lead ppm Pb	0.003	0.003	0.004	0.003
Cadmium ppm Cd	0.0004	0.0002	0.0002	0.0002
Copper ppm Cu	0.008	0.021	0.108	0.0013
Chromium ppm Cr	0.008	0.001	0.001	0.001

C-103

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL & CONSULTING CHEMISTS

Established 1957

Complete Laboratory Service

P.O. Box 597 ● Altamonte Springs, Fla. 32701 ● Phone (305) 339-5984

Received From: Springstead & Associates
Box 283
Leesburg, Florida

Date 3/13/78

For: Sumpter County

Laboratory Identification 5076-5079

REPORT OF ANALYSIS

ANALYSES	Landfill Residence 5076	LAndfill Windmill 5077	Landfill 5078	Farmhouse 5079
B o D mg/L	<1.0	<1.0	<1.0	<1.0
C O D mg/L	3.6	4.8	1.2	1.2
Nitrate N mg N/L	0.02	0.01	0.04	0.03
Chlorides mg Cl/L	8.5	7.5	11.0	7.0
pH	7.73	7.75	7.81	7.83
Lead ppm Pb	<0.001	0.001	0.001	0.001
Cadmium ppm Cd	<0.001	0.002	<0.001	0.007
Copper ppm Cu	<0.01	0.02	<0.01	0.01
Chromium ppm Cr	<0.005	<0.005	<0.005	<0.005

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO: Sumter County Commission
Sumter County Courthouse
Bushnell, Florida 33513

Report # 13687
Date: Aug. 3/77
Sampled by: Client

IDENTIFICATION: Samples submitted by Springstead & Associates.
#1-Sumter County Landfill, Well #1
#2-Sumter County Landfill, Well #3
#3-Sumter County Landfill, Well #4
#4-Sumter County Landfill, Well #5

RESULTS OF ANALYSIS:	#1	#2	#3	#4
BOD-5 day	0.6	0.4	<0.1	0.2
COD	1.8	1.2	0.5	0.7
Nitrates, NO_3	4.43	6.56	6.73	8.86
Chlorides, Cl	8.6	8.5	7.2	11.9
Copper, Cu	<0.1	<0.1	<0.1	<0.1
Chromium Total, Cr	<0.01	<0.01	<0.01	<0.01
Cadmium, Cd	<0.01	<0.01	<0.01	<0.01
Lead, Pb	<0.01	<0.01	<0.01	<0.01
pH	7.5	7.3	7.3	7.3

RESULTS EXPRESSED IN mg/l, UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Tubbs

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

RECEIVED 5-3-77 SFA

FILE COPY C-103

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO:

Springstead & Associates
Consulting Engineers
P.O. Box 283
Leesburg, FL. 32748

Report # 13196
Date: 27 April. 77
Sampled by: Client

IDENTIFICATION:

1 - Sumter County Landfill Sample 1
2 - " " " " 3
3 - " " " Well 5
4 - " " " Well 4

RESULTS OF ANALYSIS:	1	2	3	4
BOD-5 day	1.2	0.2	3.0	0.8
COD	1.9	<1.0	11.1	<1.0
pH	7.5	7.8	7.8	7.5
Nitrates, NO_3	2.88	3.77	5.76	0.80
Chlorides, Cl	6	9	5	5
Copper, Cu	0.01	0.02	<0.01	0.01
Chromium, Total, Cr	<0.01	<0.01	<0.01	<0.01
Cadmium, Cd	<0.01	<0.01	<0.01	<0.01
Lead, Pb	<0.01	<0.01	<0.01	<0.01

RESULTS EXPRESSED IN mg/l, UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Furbish
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8008 • Orlando, Florida 32856 • 305/843-1661

TO:
Sumter County Commission
Sumter County Courthouse
Bushnell, FLA. 33513

Report # 14253-1
Received: 30 Nov. 77
Reported: 5 Dec. 77
Sampled by: Client

IDENTIFICATION:

1 - Sumter County Landfill Well #1
2 - Sumter County Landfill Well #3

RESULTS OF ANALYSIS:

	Storet #	1	2
BOD-5 day	00310	5.8	6.5
Chemical Oxygen Demand, COD	00340	18	51
pH	00403	7.4	7.3
Nitrates, NO_3	71850	2.04	3.37
Chlorides, Cl	00940	8.4	8.5
Copper, Cu, ug/l	01042	<100	<100
Chromium Total, Cr, ug/l	01034	<10	<10
Cadmium, Cd, ug/l	01027	<10	<10
Lead, Pb, ug/l	01051	<10	<10

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Carl Starr
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8008 • Orlando, Florida 32856 • 305/843-1661

TO:

Sumter County Commission
Sumter County Courthouse
Bushnell, FLA. 33513

Report # 14253-2
Received: 30 Nov. 77
Reported: 5 Dec. 77
Sampled by: Client

IDENTIFICATION:

3 - Sumter County Landfill Well #4
4 - Sumter County Landfill Well #5

RESULTS OF ANALYSIS:

	Storet #	3	4
BOD-5 day	00310	6.0	7.0
Chemical Oxygen Demand, COD	00340	21	63
pH	00403	7.7	7.7
Nitrates, NO_3	71850	5.98	7.31
Chlorides, Cl	00940	6.8	12
Copper, Cu, ug/l	01042	<100	<100
Chromium Tota, Cr, ug/l	01034	<10	<10
Cadmium, Cd, ug/l	01027	<10	<10
Lead, Pb, ug/l	01051		

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO:

Springstead & Associates, Inc.
Consulting Engineers
P.O. Box 283
Leesburg, FL 32748

Report # 12622-1
Date: 14 Dec. 76
Sampled by: Client

IDENTIFICATION:

1 - Well #1 Sumter County Landfill
2 - Well #3 Sumter County Landfill

RESULTS OF ANALYSIS:	1	2
Chemical Oxygen Demand, COD	<1.0	<1.0
pH	7.4	7.5
Chloride, Cl	6	6
Nitrates, NO3	0.89	4.34
Cadmium, Cd	<0.01	<0.01
Chromium, Total, Cr	<0.01	<0.01
Copper, Cu	<0.1	<0.1
Lead. Pb	0.02	<0.01
Biochemical Oxygen Demand, BOD-5 day	<0.1	<0.1

RESULTS EXPRESSED IN mg/l, UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Fubish
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO:

Springstead & Associates, Inc.
Consulting Engineers
P.O. Box 283
Leesburg, FL 32748

Report # 12622-2
Date: 14 Dec. 76
Sampled by: Client

IDENTIFICATION:

3 - Well #4 Sumter County Landfill
4 - Well #5 Sumter County Landfill

RESULTS OF ANALYSIS:	3	4
Chemical Oxygen Demand, COD	<1.0	<1.0
pH	7.9	8.0
Chloride, Cl	6	9
Nitrates, NO_3	6.87	7.75
Cadmium, Cd	<0.01	<0.01
Chromium, Total, Cr	<0.01	<0.01
Copper, Cu	<0.1	0.1
Lead, Pb	<0.01	0.05
Biochemical Oxygen Demand, BOD-5 day	<0.1	<0.1

RESULTS EXPRESSED IN mg/l, UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Furbish
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO:

Springstead & Associates, Inc.
Consulting Engineers
P.O. Box 283
Leesburg, FL 32748

Report # 11725 -1
Date: 2 June 76
Sampled by: Client

IDENTIFICATION:

1 - Sumter County Landfill Well # 1
2 - Sumter County Landfill Well #5
3 - Sumter County Landfill Well #3

RESULTS OF ANALYSIS:	#1	#2
Chemical Oxygen Demand, COD	6.92	2.77
pH	7.7	7.8
Chloride, Cl	14	7
Nitrates, NO_3	62.02	6.87
Cadmium, Cd	<0.01	<0.01
Chromium Total, Cr	<0.01	<0.01
Copper, Cu	<0.1	0.1
Lead, Pb	<0.01	<0.01
Biochemical Oxygen Demand, BOD-5 day	4.0	4.0

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Furbish

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO:

Springstead & Associates, Inc.
Consulting Engineers
P.O. Box 283
Leesburg, FL 32748

Report # 11725-2
Date: 2 June 76
Sampled by: Client

IDENTIFICATION:

1 - Sumter County Landfill Well # 1
2 - Sumter County Landfill Well # 5
3 - Sumter County Landfill Well #3

RESULTS OF ANALYSIS:	#3
Chemical Oxygen Demand, COD	8.30
pH	7.8
Chloride, Cl	4
Nitrates, NO_3	8.86
Cadmium, Cd	<0.01
Chromium Total, Cr	<0.01
Copper, Cu	<0.1
Lead, Pb	<0.01
Biochemical Oxygen Demand, BOD-5 day	3.0

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Turbish
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.
P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO: Springstead & Associates
1426 North Blvd.
Leesburg, Florida 32748

Report # 11271
Date: 2/16/76
Sampled by: client

IDENTIFICATION: (1) Well site #1
(2) Well site #2 (kinard)
(3) Well site #3 (windmill)
(4) Well site #4
(5) Well site #5 (Landfill)

RESULTS OF ANALYSIS:	(1)	(2)	(3)	(4)	(5)
BOD- 5 day	26	6	8	8	15
COD	<2	<2	6.12	<2	<2
pH	7.5	7.8	7.5	7.9	7.9
Nitrates, NO_3	0.150	5.50	0.305	2.10	0.167
Chlorides, Cl	5	8	5	3	6
Copper, Cu	0.02	0.02	0.05	<0.01	0.03
Chromium, Total, Cr	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium, Cd	<0.01	<0.01	<0.01	<0.01	<0.01
Lead, Pb	0.031	<0.001	0.002	0.003	0.006

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

INTERNATIONAL ANALYSIS OF WATER, SEWAGE & INDUSTRIAL WASTEWATER· ENVIRONMENTAL IMPACT STUDIES

REPORT OF ANALYSIS

file
Sumter Co. Landfill
C-103

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO: Mr. Clark Crueger
P. O. Box 283
Leesburg FL 32745

Report #
Date: July 16, 1975
Sampled by: J. V. Rooks

IDENTIFICATION: Windmill pump on McLeod Ranch
Central Landfill C-103, Sumter County
Well Depth 175'

RESULTS OF ANALYSIS: ppm

hydrolyzable PO_4	1.5
SO_4	67
Cl	7

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Donna Fusbish
Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO: Board of County Commissioners
Sumter County, Florida
P. O. Drawer A
Bushnell, Florida 33513

Report # 10307
Date: 5/6/75
Sampled by: client

IDENTIFICATION: Re: Sumter County Landfill
(3) Windmill

RESULTS OF ANALYSIS:	(3)
Specific Conductance/umhos	479
Nitrate Nitrogen, N	0.07
Cadmium, Cd	<0.001
Chromium, Total, Cr	<0.001
Lead, Pb	0.003
Chemical Oxygen Demand	41.6

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

STANDARD WATER ANALYSIS REPORT

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

Report to: Board of County Commissioners

Appearance: Clear

Date: June 5, 1975

Sampled by: Client

Report Number: 10307

Identification: Windmill, #3

METHODS

This water was analyzed according to "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF.

RESULTS

Determination	Data Significance	p.p.m.	Determination	Data Significance	p.p.m.
Total Dissolved Solids, @ 105°C.	x.	335	Total Hardness, as $CaCO_3$	x.	228
Phenolphthalein Alkalinity, as $CaCO_3$	x.	0	Calcium Hardness, as $CaCO_3$	x.	210
Total Alkalinity, as $CaCO_3$	x.	156	Magnesium Hardness, as $CaCO_3$	x.	18
Carbonate Alkalinity, as $CaCO_3$	x.	0	Calcium, as Ca	x.	84
Bicarbonate Alkalinity, as $CaCO_3$	x.	156	Magnesium, as Mg	.x	4.4
Carbonates, as CO_3	x.	0	Sodium, as Na	x.	5.7
Bicarbonates, as HCO_3	x.	190	Iron, as Fe	.x	1.0
Hydroxides, as OH	x.	0	Manganese, as Mn	.x	<0.05
Carbon Dioxide, as CO_2	x.	8	Copper, as Cu	.x	<0.1
Chloride, as Cl	x.	<1.0	Silica, as SiO_2	x.	6
Sulfate, as SO_4	x.	76	Color, Standard Platinum Cobalt Scale		0
Fluoride, as F	.x	0.2	Odor Threshold	x.	0
Phosphate, as PO_4	.x	11	Turbidity, Jackson Units	x.	4.9
pH (Laboratory)	.x	7.6			
pHs	.x	7.5			
Stability Index	.x	7.4			
Saturation Index	.x	0.1			

Signed: Donna Turbish
Chemist

(To convert ppm to grains per gallon, divide ppm by 17.1 – p.p.m. = mg/l)

INTERNATIONAL ANALYSIS OF WATER, SEWAGE & INDUSTRIAL WASTEWATER-ENVIRONMENTAL IMPACT STUDIES

MEMBER OF THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

REPORT OF ANALYSIS

lic C-103

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

TO: Board of County Commissioners
Sumter County, Florida
P. O. Drawer A
Bushnell, Florida 33513

Report # 10282
Date: 5/29/75
Sampled by: client

IDENTIFICATION: Sumter County Landfill
(1) Dairy
(2) Kinard
(4) McLeod

RESULTS OF ANALYSIS:	(1)	(2)	(4)
Specific Conductance/umhos	280	215	170
Nitrate Nitrogen, N	2.00	1.15	0.96
Cadmium, Cd	<0.001	<0.001	<0.001
Chromium, Total, Cr	<0.001	<0.001	<0.001
Lead, Pb	<0.001	<0.001	<0.001
Chemical Oxygen Demand	3.3	6.7	4.6

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED

Respectfully submitted,

ORLANDO LABORATORIES, INC.

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved methods unless otherwise designated.

STANDARD WATER ANALYSIS REPORT

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

Report to: Board of County Commissioners

Appearance: Clear

Date: May 29, 1975

Sampled by: Client

Report Number: 10282-1

Identification: Dairy

METHODS

This water was analyzed according to "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF.

RESULTS

Determination	Data Significance	p.p.m.	Determination	Data Significance	p.p.m.
Total Dissolved Solids, @ 105°C.	x.	195	Total Hardness, as $CaCO_3$	x.	108
Phenolphthalein Alkalinity, as $CaCO_3$	x.	0	Calcium Hardness, as $CaCO_3$	x.	108
Total Alkalinity, as $CaCO_3$	x.	78	Magnesium Hardness, as $CaCO_3$	x.	<1.0
Carbonate Alkalinity, as $CaCO_3$	x.	0	Calcium, as Ca	x.	43
Bicarbonate Alkalinity, as $CaCO_3$	x.	78	Magnesium, as Mg	.x	<0.1
Carbonates, as CO_3	x.	0	Sodium, as Na	x.	7.1
Bicarbonates, as HCO_3	x.	95	Iron, as Fe	.x	<0.1
Hydroxides, as OH	x.	0	Manganese, as Mn	.x	<0.05
Carbon Dioxide, as CO_2	x.	8	Copper, as Cu	.x	<0.1
Chloride, as C1	x.	18	Silica, as SiO_2	x.	5
Sulfate, as SO_4	x.	6	Color, Standard Platinum Cobalt Scale		0
Fluoride, as F	.x	0.1	Odor Threshold	x.	0
Phosphate, as PO_4	.x	2.5	Turbidity, Jackson Units	x.	0.4
pH (Laboratory)	.x	7.3			
pHs	.x	8.1			
Stability Index	.x	8.9			
Saturation Index	.x	-0.8			

Signed: Donna Furbish

Chemist

(To convert ppm to grains per gallon, divide ppm by 17.1 – p.p.m. = mg/l)

STANDARD WATER ANALYSIS REPORT

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

Report to: Board of County Commissioners

Appearance: Clear

Date: May 29, 1975

Sampled by: Client

Report Number: 10282-2

Identification: Kinard

METHODS

This water was analyzed according to "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF.

RESULTS

Determination	Data Significance	p.p.m.	Determination	Data Significance	p.p.m.
Total Dissolved Solids, @ 105°C.	x.	160	Total Hardness, as $CaCO_3$	x.	108
Phenolphthalein Alkalinity, as $CaCO_3$	x.	0	Calcium Hardness, as $CaCO_3$	x.	90
Total Alkalinity, as $CaCO_3$	x.	84	Magnesium Hardness, as $CaCO_3$	x.	18
Carbonate Alkalinity, as $CaCO_3$	x.	0	Calcium, as Ca	x.	36
Bicarbonate Alkalinity, as $CaCO_3$	x.	84	Magnesium, as Mg	.x	4.4
Carbonates, as CO_3	x.	0	Sodium, as Na	x.	3.9
Bicarbonates, as HCO_3	x.	103	Iron, as Fe	.x	<0.1
Hydroxides, as OH	x.	0	Manganese, as Mn	.x	<0.05
Carbon Dioxide, as CO_2	x.	5	Copper, as Cu	.x	<0.1
Chloride, as C1	x.	6	Silica, as SiO_2	x.	6
Sulfate, as SO_4	x.	6	Color, Standard Platinum Cobalt Scale		0
Fluoride, as F	.x	0.1	Odor Threshold	x.	0
Phosphate, as PO_4	.x	1.9	Turbidity, Jackson Units	x.	0.5
pH (Laboratory)	.x	7.6			
pHs	.x	8.1			
Stability Index	.x	8.6			
Saturation Index	.x	-0.5			

Signed: Donna Turbish

Chemist

(To convert ppm to grains per gallon, divide ppm by 17.1 – p.p.m. = mg/l)

STANDARD WATER ANALYSIS REPORT

Orlando Laboratories, Inc.

P. O. Box 8025A • Orlando, Florida 32806 • 305/843-1661

Report to: Board of County Commissioners

Appearance: Clear

Date: May 29, 1975

Sampled by: Client

Report Number: 10282-4

Identification: McLeod

METHODS

This water was analyzed according to "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF.

RESULTS

Determination	Data Significance	p.p.m.	Determination	Data Significance	p.p.m.
Total Dissolved Solids, @ 105°C.	x.	135	Total Hardness, as $CaCO_3$	x.	90
Phenolphthalein Alkalinity, as $CaCO_3$	x.	0	Calcium Hardness, as $CaCO_3$	x.	90
Total Alkalinity, as $CaCO_3$	x.	78	Magnesium Hardness, as $CaCO_3$	x.	<1.0
Carbonate Alkalinity, as $CaCO_3$	x.	0	Calcium, as Ca	x.	36
Bicarbonate Alkalinity, as $CaCO_3$	x.	78	Magnesium, as Mg	.x	<0.1
Carbonates, as CO_3	x.	0	Sodium, as Na	x.	3.1
Bicarbonates, as HCO_3	x.	95	Iron, as Fe	.x	<0.1
Hydroxides, as OH	x.	0	Manganese, as Mn	.x	<0.05
Carbon Dioxide, as CO_2	x.	3	Copper, as Cu	.x	<0.1
Chloride, as C1	x.	3	Silica, as SiO_2	x.	4
Sulfate, as SO_4	x.	6	Color, Standard Platinum Cobalt Scale		0
Fluoride, as F	.x	0.1	Odor Threshold	x.	0
Phosphate, as PO_4	.x	3.5	Turbidity, Jackson Units	x.	0.7
pH (Laboratory)	.x	7.7			
pHs	.x	8.2			
Stability Index	.x	8.7			
Saturation Index	.x	-0.5			

Signed: Donna Furbish

Chemist

(To convert ppm to grains per gallon, divide ppm by 17.1 – p.p.m. = mg/l)

WATER QUALITY DATA FROM WELL 14

File No.: 284449082055201

Date: September 20, 1978

Specific Conductance per centimeter at 25°C, in micromhos: 482

pH, in standard units: 7.2

Hardness as $CaCO_3$, mg/l: 240

Chloride, mg/l: 7.5

Fluoride, mg/l: 0.1

Sulfate, mg/l: 110

Sulfide, mg/l: 0.3

Iron, micrograms per liter: 200

Dissolved solids, residue at 180°, mg/l: 312