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Contract No. DE-AC05-81OR20722

REPORT ON DRILLING AND WELL INSTALLATIONS AT THE MAYWOOD INTERIM STORAGE SITE

Maywood, New Jersey

October 1985

Bechtel National, Inc.
Advanced Technology Division

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REPORT OF DRILLING AND WELL INSTALLATIONS AT THE MAYWOOD INTERIM STORAGE SITE

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UNITED STATES DEPARTMENT OF ENERGY
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By

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SUMMARY

The purpose of the drilling program at the Maywood Interim Storage Site was to:

- Collect subsurface geologic information for use in evaluating the suitability of the site for temporary and/or permanent storage of low level radioactive materials
- Install ground-water monitoring wells
- Drill two holes for radiological characterization

This report documents the procedures used and results obtained during this subsurface investigation conducted as a part of the Department of Energy's Formerly Utilized Sites Remedial Action Program.

The program included overburden and bedrock sampling, permeability testing, installation of ground-water monitoring wells, and measurement of ground-water levels. A total of 15 ground-water monitoring wells were installed and two geologic boreholes were drilled. The results of the investigation indicate that:

- Overburden materials range in thickness from 1.6 to 21.5 ft in the site area
- No consistent permeability values can be determined for the overburden due to the reworked nature of the materials
- Bedrock permeabilities ranged from 10^{-3} to 10^{-5} cm/sec
- The ground-water in both the overburden and bedrock aquifers flows generally southwest

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1.0 INTRODUCTION

This report documents the procedures used and results obtained during the subsurface investigation and monitoring well installation program conducted at the Maywood Interim Storage Site (MISS) between October 25 and February 12, 1985 (Figure 1-1). The work was conducted as a part of the Department of Energy (DOE) Formerly Utilized Sites Remedial Action Program (FUSRAP).

The MISS is located adjacent to the Stepan Company and is bisected by the boundary between the Township of Rochelle Park and the Borough of Maywood, New Jersey. The site is roughly triangular in shape and comprises slightly more than 11.7 acres (Figure 1-2). There are currently three above-ground structures on the site; a one-story pump house used by the Stepan Company to draw makeup water from the Passaic River; the water reservoir; and Building 76, an industrial warehouse that will be demolished. Two railroad spurs run through the site, one services the Stepan Company and the other a Sears warehouse adjacent to Stepan. The site is surrounded by a 6- to 8-ft high chain link fence.

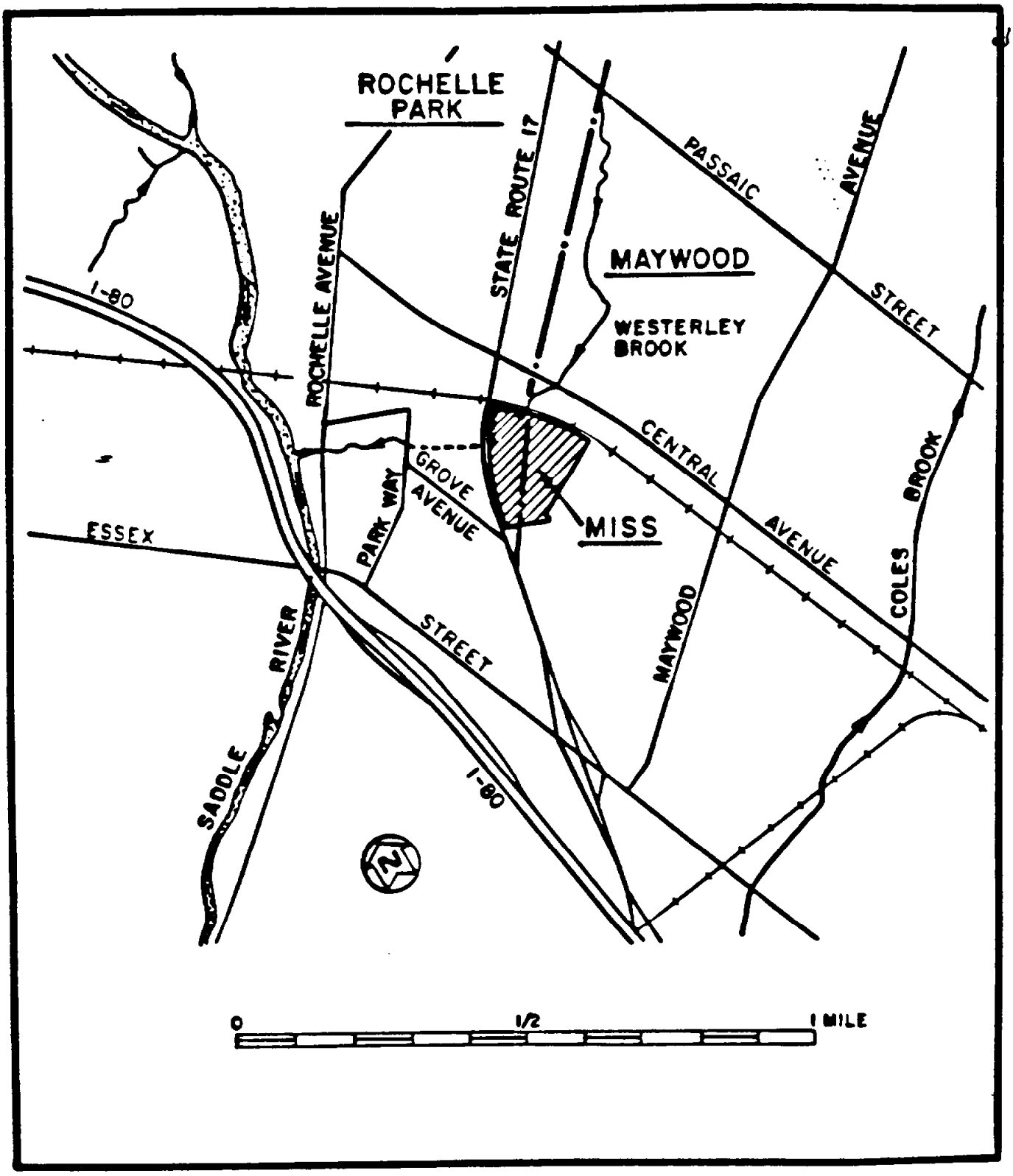


FIGURE 1-1 MISS LOCATION

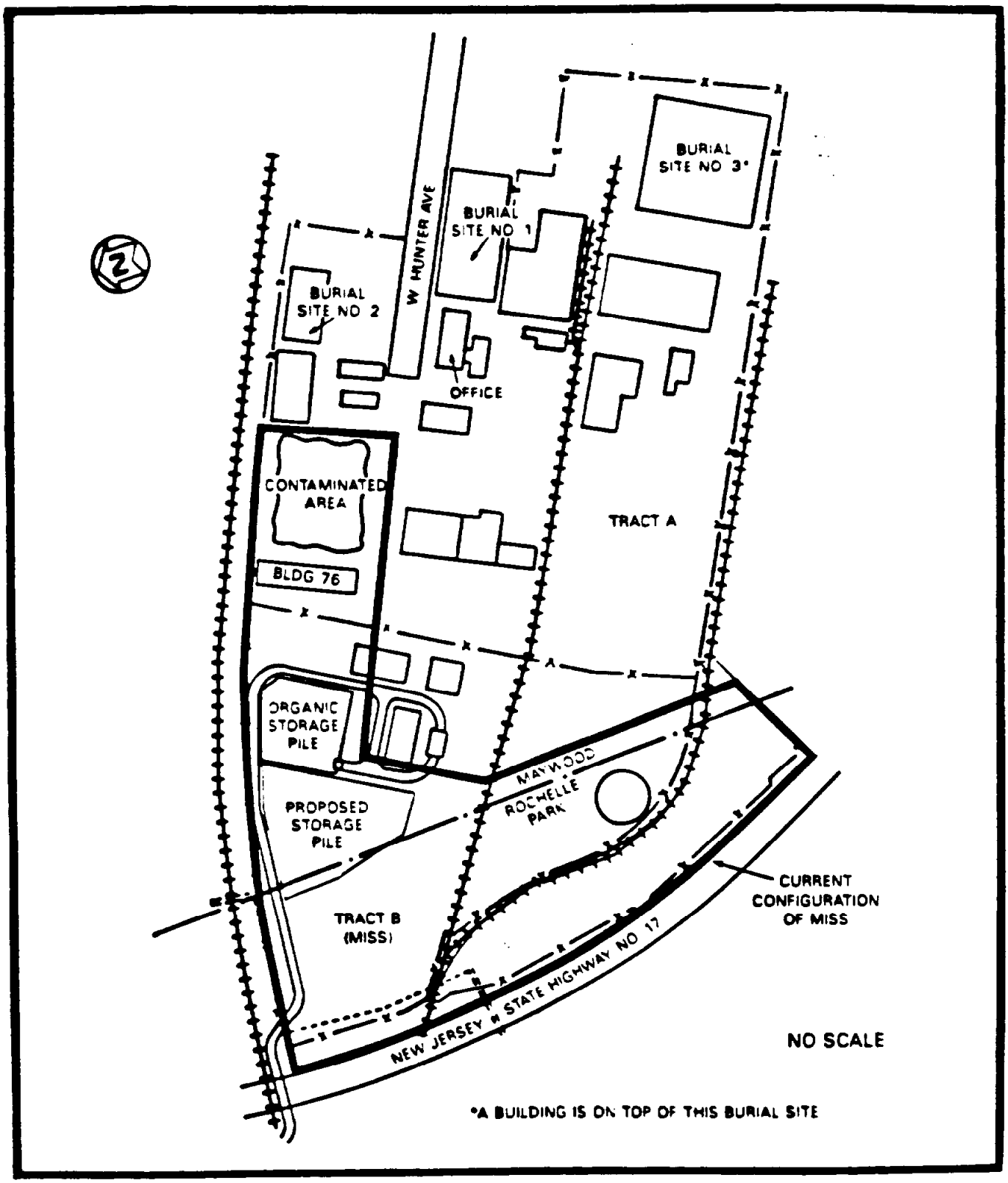


FIGURE 1-2 MISS MAP

2.0 PURPOSE AND SCOPE

2.1 PURPOSE

The purpose of the drilling program at the MISS was to collect subsurface geologic information for use in evaluating the suitability of the site for storing low level radioactive materials, to drill two holes under New Jersey State Highway 17 for radiological characterization, and to install ground-water monitoring wells. The geologic information to be collected included:

- Stratigraphic information such as lithology, thickness, areal extent, and continuity of subsurface materials
- Ground-water information including ground-water levels and gradients, permeability, and aquifer/aquiclude characteristics

2.2 SCOPE

A total of 15 ground-water monitoring wells were installed at the MISS; seven were installed to monitor water levels in bedrock and eight were installed to monitor water levels in the overburden materials. In addition to the 15 monitoring wells, two additional borings were completed to obtain further geologic information and two angle holes were drilled for radiological assessment. Upon completion, these borings were backfilled with cement/bentonite grout.

All wells were installed to allow ground-water sampling in accordance with NJPDES Permit No. NJ0054500 requirements.

One overburden monitoring well and one bedrock monitoring well were installed at each of seven locations around the perimeter of the site, except for site 5 where an additional overburden well was installed. (Note: "Site 5" refers to the area of MISS-5A, -5A-1, and -5B; site 1 refers to MISS-1A and -1B, and so on.)

Figure 2-1 shows the locations of all monitoring wells and borings. Monitoring wells ranged in depth from 8 to 58.5 ft. Soil samples were taken at 5-ft intervals or changes in material, whichever occurred first, at each site. Each monitoring well was tested to determine the permeability of the formations screened. Section 6.0 contains details of permeability testing.

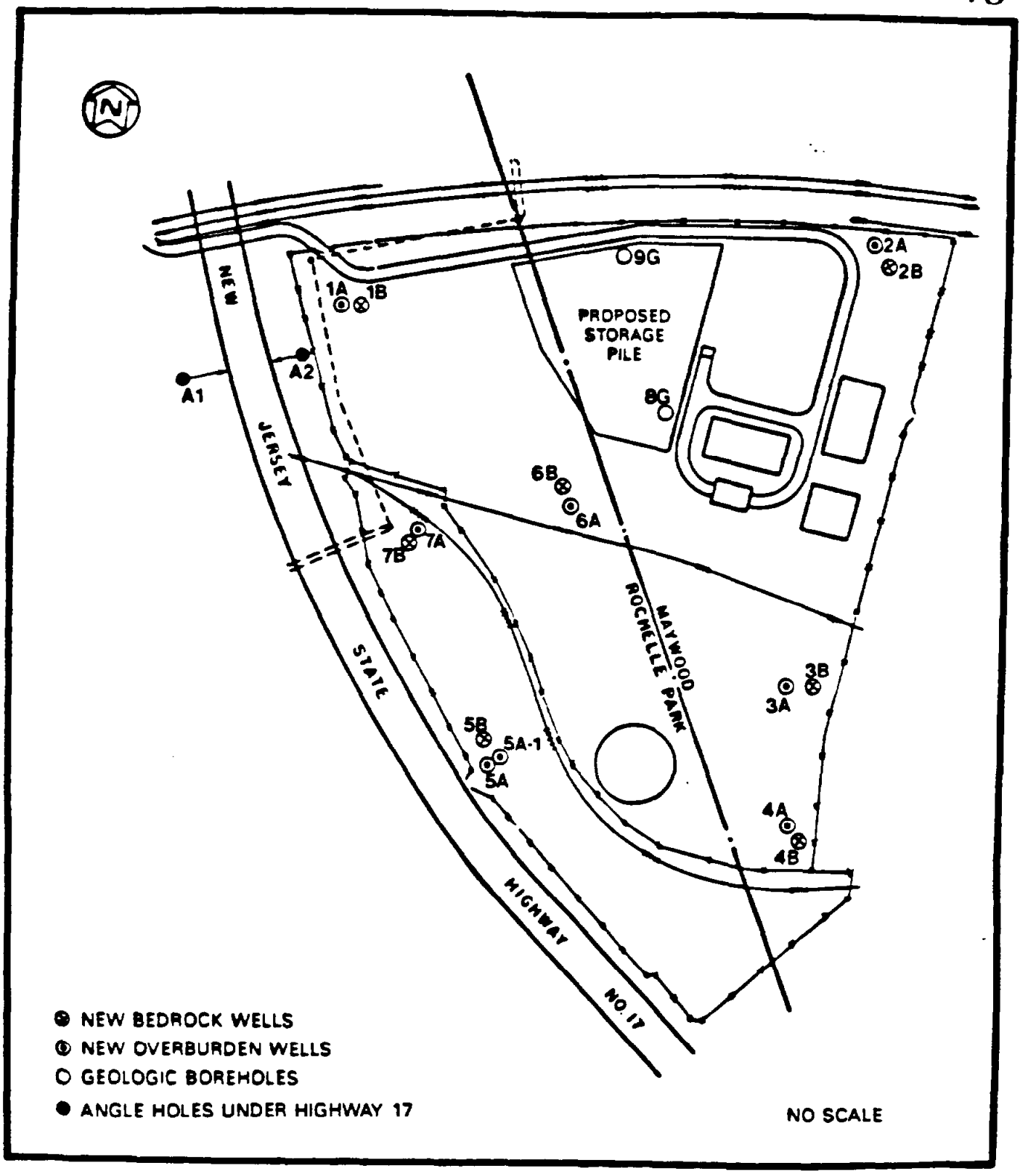


FIGURE 2-1 GENERAL LOCATION OF MONITORING WELLS AT MISS

3.0 SITE GEOLOGY

3.1 TOPOGRAPHY

Surface topography is generally flat, ranging in elevation from approximately 51 to 61 ft above mean sea level. The highest elevations are in the northeastern portions of the site. The minor surface fluctuations that occur are the result of process waste storage by the former Maywood Chemical Works. At least two partially buried structures (cisterns or cesspools) remain from these waste storage operations. A water reservoir and an adjacent one-story pump house are currently in use by the Stepan Company. These are the only permanent structures within the site area except for the two railroad spurs. The remainder of the site is essentially grass covered with relatively few trees. The surface contours of the site are shown in Figure 3-1.

3.2 STRATIGRAPHY

The site is located in the Piedmont Physiographic Province in northeastern New Jersey. Two distinct lithologic units were encountered at the MISS: an unconsolidated granular overburden unit and a sandstone bedrock unit. The overburden is principally Quaternary age glacial till, a heterogeneous mixture of sand, silt, clay, gravel, cobbles, and occasional boulders. However, in the immediate site area, the overburden has been disturbed and in some cases was partially removed by the former Maywood Chemical Works during excavation and on-site burial of process wastes. The current overburden often consists of obvious fill material including dark gray odorous sludge (site 2), construction backfill (wood, shingles, and tar paper at site 6), and surface dumping (thinly interbedded, multicolored silty sand at site 5). Overburden thickness varied from 1.8 to 21.5 ft (Figures 3-2 and 3-3). Due to the apparent random burial of waste products at the MISS, there is little lateral continuity within the overburden materials which consist essentially of silty clayey fine-grained sands with no apparent structure.

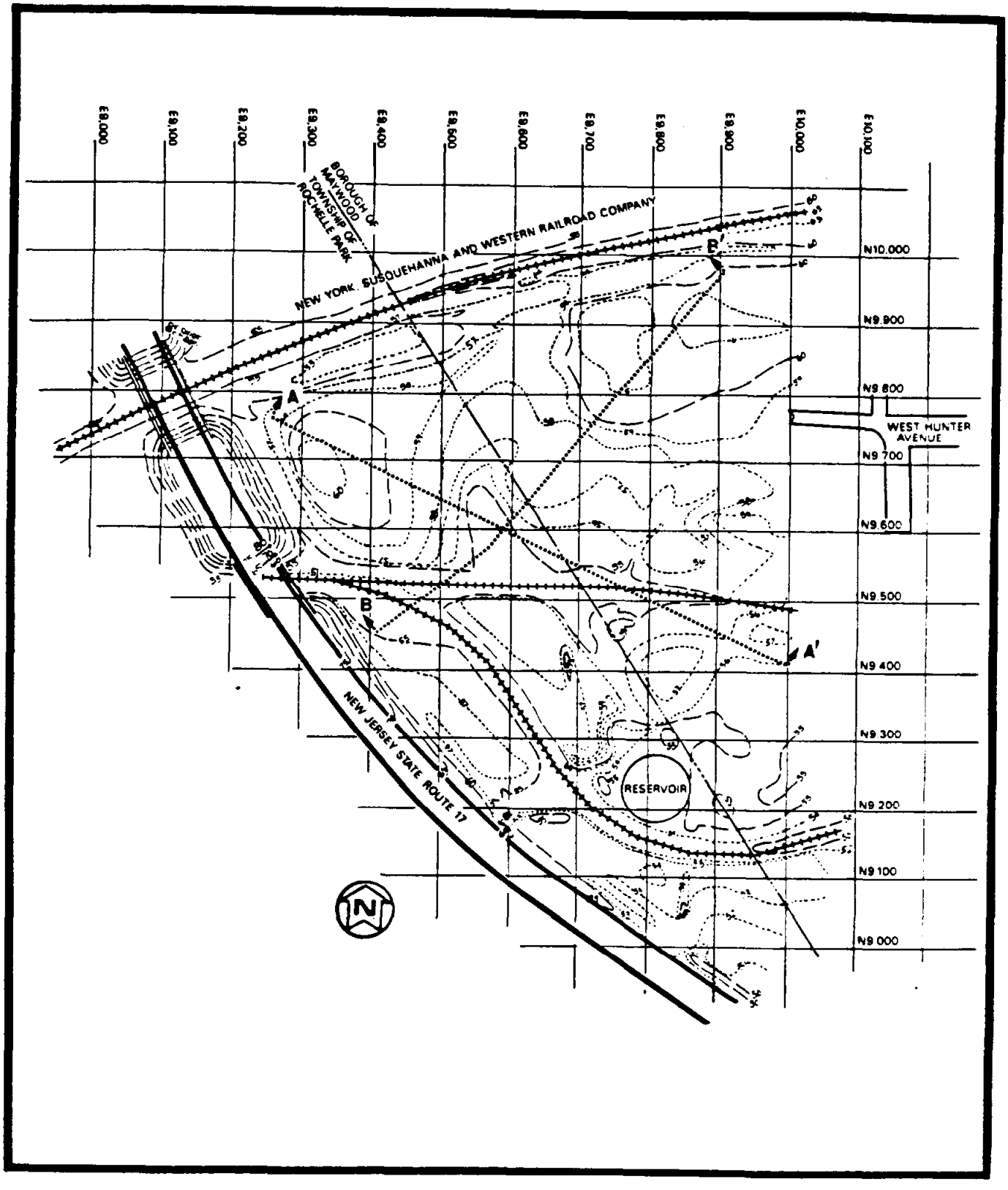


FIGURE 3-1 SURFACE CONTOURS AT THE MISS

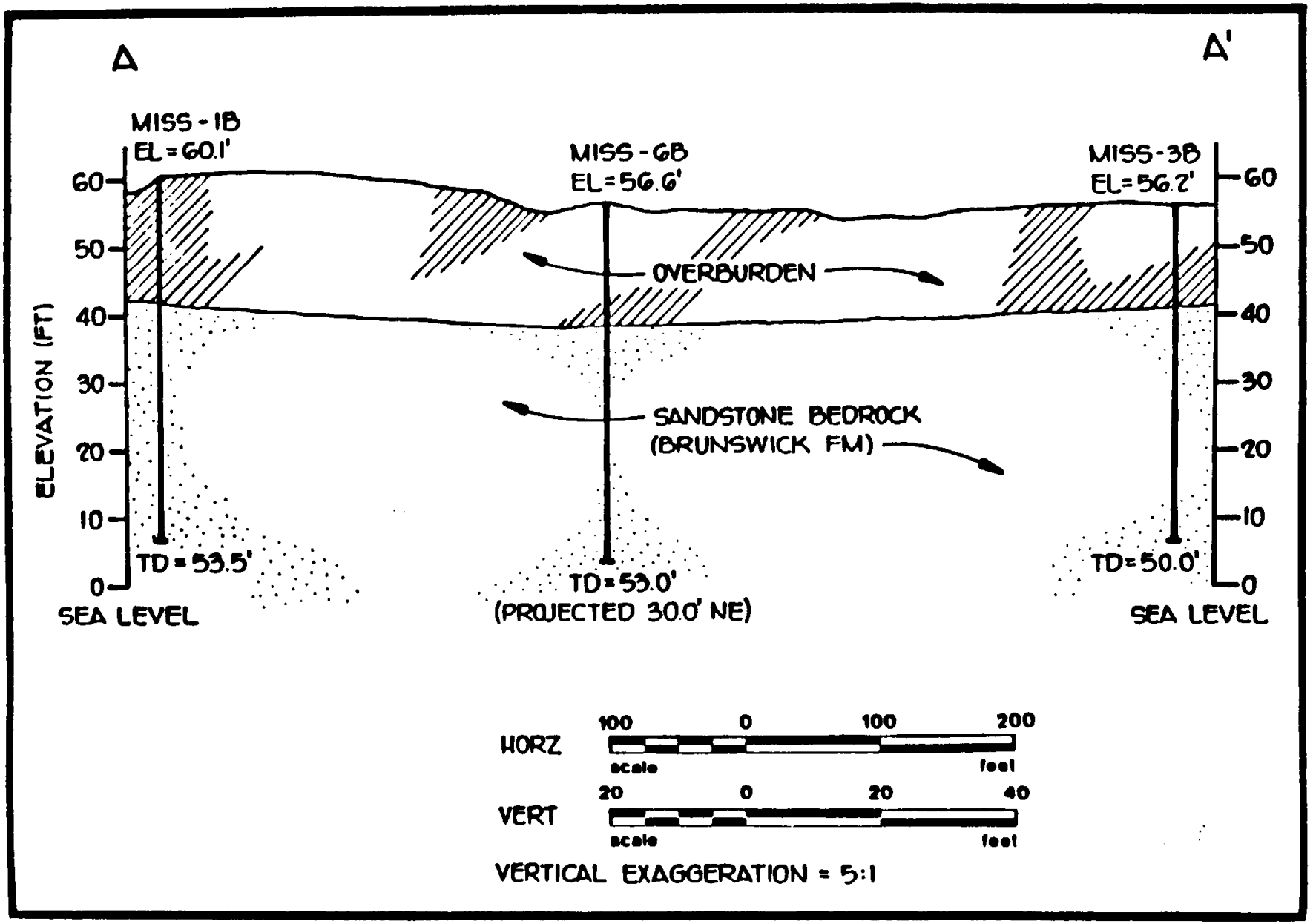


FIGURE 3-2 GEOLOGIC CROSS SECTION A - A'

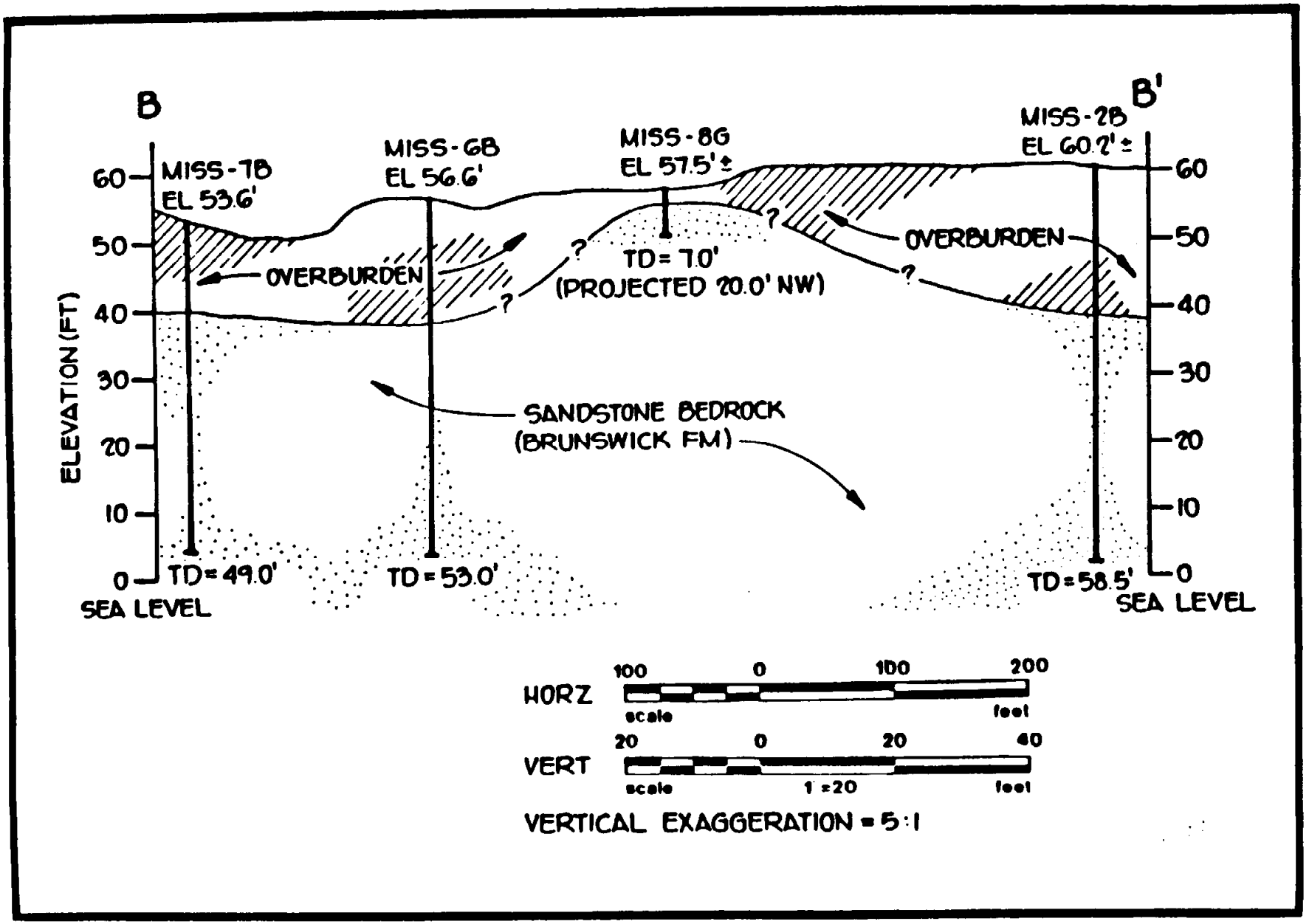


FIGURE 3-3 GEOLOGIC CROSS SECTION B - B'

The Triassic age Brunswick Formation lies beneath the unconsolidated sandy overburden and consists mainly of a fine-grained, well-cemented, reddish sandstone with some conglomerate and occasional interbeds of shale. The sandstone and shale exhibit a thinly laminated bedding. The dip of these beds ranges from less than 20 degrees to nearly horizontal. The upper 15 to 20 ft often contains numerous vertical to near vertical, fresh to slightly weathered, open fractures. The storage and movement of ground water within the bedrock appears to be confined to these secondary openings.

4.0 WELL DESIGN

The monitoring wells were designed to monitor ground-water levels and water quality in the overburden and bedrock. The monitoring depth of each monitoring well was based on an evaluation of the geologic logs and soil samples collected from each well boring. Well construction is discussed in Section 8.0 and shown on the as-built monitoring well logs (Appendix A). Figures 4-1 and 4-2 show typical overburden and bedrock monitoring wells. The locations of the monitoring wells are shown in Figure 2-1.

4.1 OVERBURDEN MONITORING WELLS

Eight overburden monitoring wells (MISS-1A, -2A, -3A, -4A, -5A, -5A-1, -6A, and -7A) were installed at the MISS. The design of the overburden wells required that they be drilled to a depth no greater than 1 ft above bedrock to avoid creating a conduit for overburden waste materials to enter the bedrock aquifer. The depths of the wells ranged from 8 ft (MISS-5A-1) to 20 ft (MISS-2A). Each well used a 2-in. diameter Schedule 40 PVC screen and riser installed in a 7-in. diameter hole with a 4- or 6-in. diameter steel surface casing.

4.2 BEDROCK MONITORING WELLS

Seven bedrock monitoring wells (MISS-1B, -2B, -3B, -4B, -5B, -6B, and -7B) were installed at the MISS. These wells monitor ground water entirely within the bedrock aquifer. This was accomplished by installing and grouting 4-in. diameter steel casings in 8-in. diameter holes through the overburden and at least 5 ft into competent bedrock. A 3-in. diameter (NX core) hole was drilled 30 ft below the bottom of the steel casings. No screens were installed in the wells and the 30-ft interval below the casings remains open.

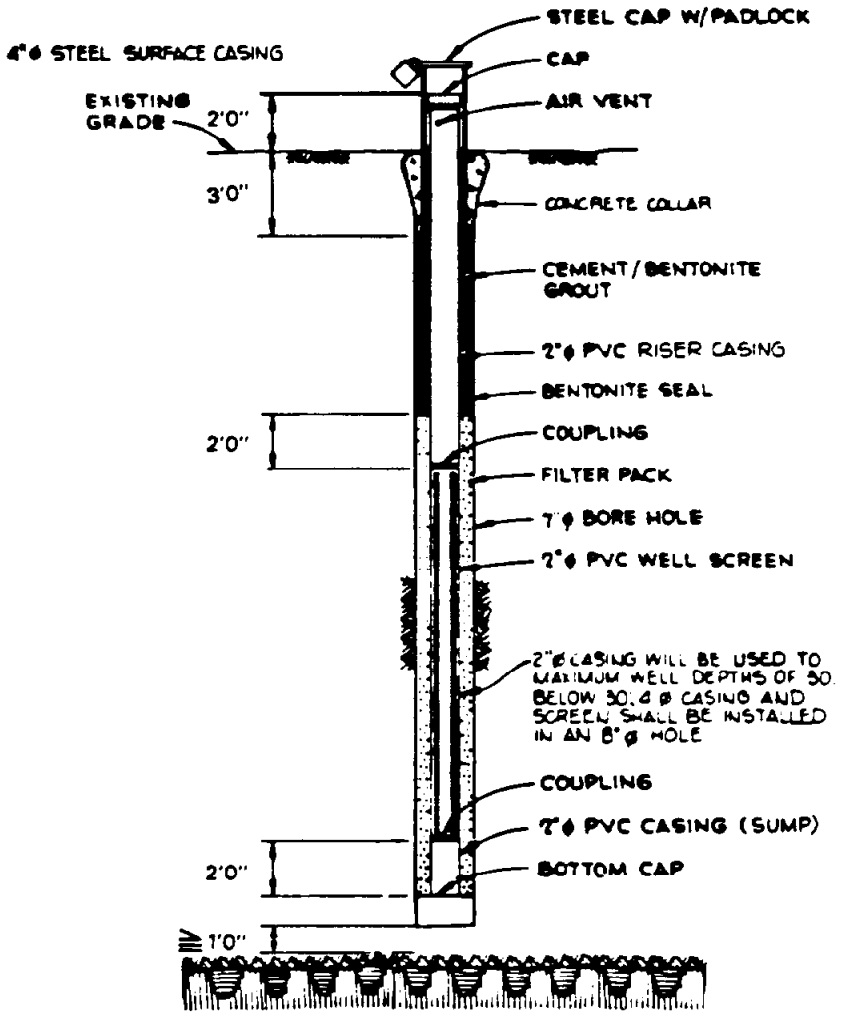


FIGURE 4-1 TYPICAL OVERBURDEN MONITORING WELL

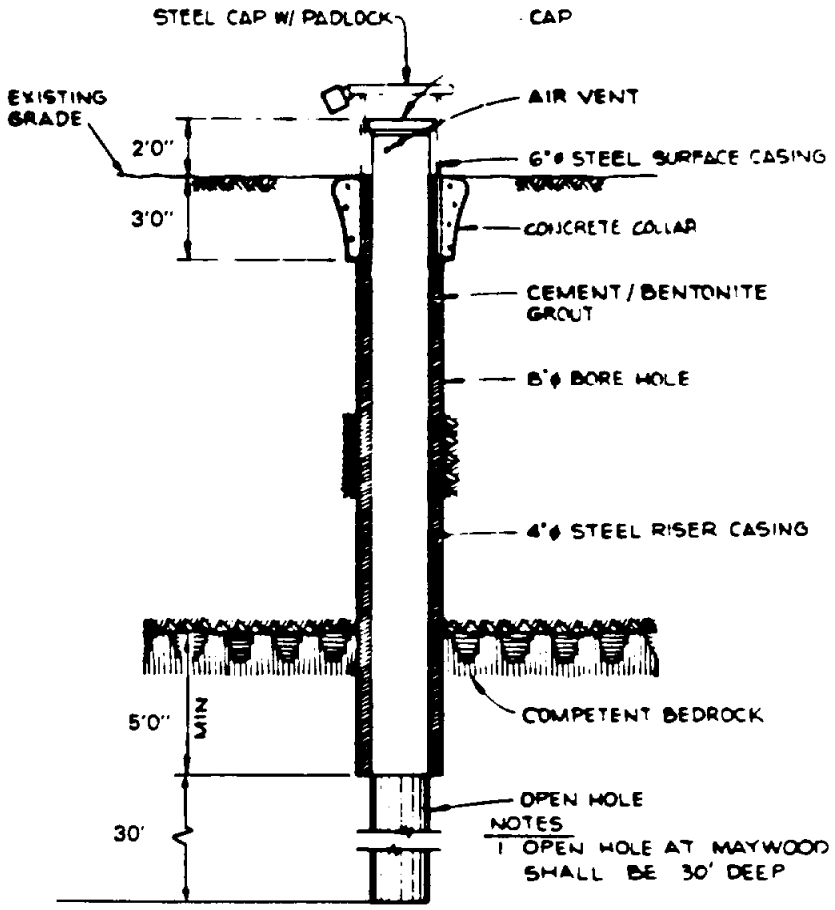


FIGURE 4-2 TYPICAL BEDROCK MONITORING WELL

5.0 GEOLOGIC BORINGS

In addition to the monitoring wells, two borings (MISS-8G and MISS-9G, Figure 2-1) were drilled to competent bedrock to provide additional information regarding overburden materials and thickness within the site. These borings were sampled and logged in the same manner as the monitoring wells, but were backfilled with cement/bentonite grout when completed. The drill logs for these holes are found in Appendix B.

6.0 TESTING

6.1 PERMEABILITY TESTING

Tests were conducted in the boreholes at selected depths and intervals to determine the permeability of the various lithologic units. Constant head (including pressurized packer tests) and falling head tests were performed during and after drilling operations. After the wells were installed and developed, recovery readings were taken to ensure that the wells were operating properly and to use in calculating permeability for the open portion of the well. A summary of permeability test results and intervals tested is presented in Table 6-1.

6.1.1 Constant Head

Two types of constant head permeability tests were used at the MISS. One test, constant head gravity, consisted of measuring the rate of additional water required to maintain a given head in the casing. This method was used in both overburden and bedrock wells. In overburden, a 4-in. diameter steel casing was driven to a specified depth. The material inside the casing was carefully washed out and the casing pulled up 2 or 3 ft. An attempt was made to maintain a constant head of water at the top of the steel casing while the rate of flow was monitored. However, a watertight seal could not be maintained at the bottom of the casing and water leaked around the casing. It was decided to discontinue this method and test only completed well installations. Overburden wells MISS-1A and -7A were tested successfully in this manner. Maintaining a constant head of water inside the riser casing of bedrock wells was not a problem because the casing was set 5 ft into bedrock and sealed with grout. Bedrock wells MISS-1B, -4B, and -7B were also tested in this manner.

TABLE 6-1

SUMMARY OF PERMEABILITY TEST RESULTS

Hole No.	Depth (ft)	Geologic Unit	Test Method	Coefficient of Permeability ft/min	Coefficient of Permeability cm/sec
MISS-1A	4.0-11.4	Overburden	chg	5.1×10^{-2}	2.6×10^{-2}
MISS-1A	4.0-11.4	Overburden	fh	3.2×10^{-2}	1.63×10^{-2}
MISS-1B	39.0-50.5	Bedrock	chp	1.35×10^{-3}	6.86×10^{-4}
MISS-1B	23.0-53.5	Bedrock	chg	2.56×10^{-3}	1.3×10^{-3}
MISS-1B	23.0-53.5	Bedrock	rec	3.02×10^{-3}	1.53×10^{-3}
MISS-2A	7.5-10.0	Overburden	fh[a]	1.04×10^{-5}	5.3×10^{-6}
MISS-2A	12.5-15.0	Overburden	fh[a]	6.7×10^{-5}	3.4×10^{-5}
MISS-2A	17.5-20.0	Overburden	fh[a]	1.3×10^{-4}	6.6×10^{-5}
MISS-2A	5.0-18.9	Overburden	rec	3.35×10^{-4}	1.7×10^{-4}
MISS-2B	33.0-44.5	Bedrock	chp	2.04×10^{-3}	1.04×10^{-3}
MISS-2B	44.5-56.0	Bedrock	chp	3.58×10^{-4}	1.82×10^{-4}
MISS-2B	28.5-58.5	Bedrock	rec	1.98×10^{-4}	1.01×10^{-4}
MISS-3A	5.0-12.7	Overburden	fh	1.12×10^{-1}	5.7×10^{-2}
MISS-3A	5.0-12.7	Overburden	rec	3.12×10^{-3}	1.58×10^{-3}
MISS-3B	24.4-35.9	Bedrock	chp	1.55×10^{-4}	7.89×10^{-5}
MISS-3B	34.4-45.9	Bedrock	chp	2.18×10^{-3}	1.1×10^{-3}
MISS-3B	20.0-50.0	Bedrock	fh	7.40×10^{-4}	3.6×10^{-4}
MISS-3B	20.0-50.0	Bedrock	rec	6.09×10^{-4}	3.09×10^{-4}
MISS-4A	3.8-9.7	Overburden	rec	5.22×10^{-5}	2.65×10^{-5}
MISS-4B	23.2-34.7	Bedrock	chp	2.65×10^{-3}	1.35×10^{-3}
MISS-4B	33.2-44.7	Bedrock	chp	1.61×10^{-3}	8.18×10^{-4}
MISS-4B	17.0-47.0	Bedrock	chg	2.68×10^{-2}	1.36×10^{-3}
MISS-4B	17.0-47.0	Bedrock	rec	1.3×10^{-3}	6.59×10^{-4}
MISS-5A	10.0-14.6	Overburden	fh	3.0×10^{-4}	1.53×10^{-4}
MISS-5A-1	2.5-8.0	Overburden	fh	1.29×10^{-2}	6.5×10^{-4}
MISS-5B	28.8-40.3	Bedrock	chp	2.74×10^{-3}	1.39×10^{-3}
MISS-5B	31.8-43.3	Bedrock	chp	1.99×10^{-3}	1.01×10^{-3}
MISS-5B	41.8-53.3	Bedrock	chp	1.15×10^{-3}	5.85×10^{-4}
MISS-6B[b]	23.0-38.0	Bedrock	fh	1.6×10^{-4}	8.3×10^{-5}
MISS-7A	2.5-9.6	Overburden	chg	9.62×10^{-4}	4.89×10^{-4}
MISS-7B	24.6-36.1	Bedrock	chp	2.75×10^{-3}	1.39×10^{-3}
MISS-7B	34.6-46.1	Bedrock	chp	1.56×10^{-3}	7.91×10^{-4}
MISS-7B	19.0-49.0	Bedrock	chg	6.89×10^{-3}	3.5×10^{-3}
MISS-7B	19.0-49.0	Bedrock	rec	7.91×10^{-3}	4.02×10^{-3}

NOTES: Tests for chg and chp were conducted in compliance with U.S. Bureau of Reclamation, 1974, Earth Manual Designation E-18.

chg - constant head gravity chp - constant head pressure (packers)
fh - falling head rec - recovery

[a]Denotes test conducted during drilling operations; all others conducted after wells installed.

[b]A permeability test was not done on MISS-6A because the well recovered so slowly.

6.3 GROUND-WATER SAMPLING

Samples of ground water from each Maywood monitoring well (except MISS-1A and -5A-1 which were dry) were taken in accordance with NJPDES Permit No. NJ0054500 requirements by New York Testing of Westbury, Long Island, New York.

7.0 DRILLING

Empire Soils Investigations Inc. (ESI) of Edison, New Jersey, was subcontracted to do the drilling and to install the monitoring wells at Maywood according to Bechtel Subcontract No. 14501-138-SC-111. Two drill rigs, a truck-mounted Mobile B61 and a CME550 mounted on an all terrain vehicle (ATV), were used. In addition, ESI provided on Acker TH rig to drill two angle holes to determine whether radioactively contaminated material extended beneath New Jersey State Highway 17. The ATV rig performed soil sampling using hollow-stem flight augers and installed all of the overburden wells. At the first three locations (sites 2, 3, and 4), the ATV drilled a pilot hole to determine depth to bedrock. Each of these holes was subsequently completed by the mobile rig as bedrock monitoring wells. Knowing the depth to bedrock, the ATV rig drilled the overburden wells so they would not penetrate to bedrock. After the initial three sites were completed in this manner, the drillers decided to grout the bedrock pilot holes to make setting up at the sites easier for the mobile rig. The mobile rig would then drill a new bedrock well through the overburden using a roller bit and bentonite drilling fluid. Only talcum powder, vegetable shortening, or string were used to facilitate connecting and disconnecting drill rods. All drilling fluids were recirculated to a mud tub on the surface. After the overburden drilling was completed, the remaining drilling mud and cuttings were either pumped back to the decontamination pad at the site or directly to storage drums. The mobile rig would then core 30 ft into bedrock using clean water and an NX double-tube core barrel. Clean water for drilling and permeability testing was provided from a Borough of Maywood water line in the Stepan Company plant. All drilling equipment used below ground by either rig was steam cleaned at the decontamination pad before being used again at another well site. No significant problems were encountered during either rotary or auger drilling operations.

8.1 OVERBURDEN WELLS

Overburden wells were drilled with 7-in. od, (3-1/2-in. id) hollow-stem flight augers to their required depth. The augers were left in the well to prevent caving of the side walls. A 2-in. diameter, flush-joint, Schedule 40 PVC well screen with a PVC cap on the bottom was then placed through the center of the augers to the bottom of the well. In order to maximize the length of screened interval within the well, a blank section of PVC to form a sump was not always installed below the screen where the bedrock was shallow (e.g., 11.5 ft at site 4). Filter sand (Table 8-1) was then washed down inside the augers around the well screen. The augers were gradually withdrawn from the well as the filter sand was being placed. To prevent the hole from caving, the level of sand was always maintained inside augers. This method of placing filter sand does not require centralizers to be used. Because of the shallow nature of some of the overburden wells and the ground water (Table 8-2), it was sometimes necessary to modify the requirement of having the filter sand extend 2 ft above the top of the well screen and still allow sufficient length of drill hole for the bentonite plug and grout. After the filter sand was placed, a layer of bentonite pellets approximately 1 ft thick was placed on top of the filter sand. At this point the augers were removed (the bentonite pellets were generally within 3 ft of the surface) and a cement/bentonite grout placed in the remaining annulus around the PVC riser. The surface casing was then pushed down inside the grout; at this point, the PVC riser was filled with water to verify that the well was operating. Specific dimensions for each well are found in Appendix A.

8.2 BEDROCK WELLS

An 8-in. diameter hole was drilled through the overburden and 5 ft into competent bedrock using a roller bit and bentonite drilling mud. A 4-in. steel riser casing was then set to the bottom of the

TABLE 8-1

WELL FILTER SAND

ANALYSES

Millimeters	Sieve No.	Cum. Grams	% Ret.	% Pass.
1.680	12	.4	.4	99.6
1.410	14	16.2	15.8	83.8
1.190	16	38.0	21.8	62.0
1.000	18	72.2	34.2	27.8
.840	20	92.6	20.4	7.4
.710	25	98.5	5.9	1.5
.590	30	99.2	.7	.8
.500	35	99.8	.6	.2
.420	40	100.0	.2	

Typical Chemical Analyses

SiO_2	99.390
Fe_2O_3	.240
Al_2O_3	.190
TiO_2	.120
CaO	.010
MgO	.004
L.O.I.	.046

Acid solubility (1:1 HCL) .08 to .11%
Specific Gravity - 2.64 to 2.66

compressed air through a 3/4-in. diameter hose placed within 1 ft of the bottom of the well. The water displaced by the compressed air blew out of the top of the riser casing and was collected in a bucket at random intervals to check for turbidity and yield. Bedrock wells were developed using an air-lifting technique in which the air hose was placed inside a length of 2-in. flush-joint PVC. Sufficient PVC was suspended from the surface to reach to within 1 or 2 ft of the bottom of the well. An air hose was then lowered inside the PVC until it was approximately 5 ft above the bottom of the PVC. A tee fitting was installed on the top of the PVC. When the compressed air (supplied by a 100-cfm compressor) was turned on, water in the well would travel up the 2-in. PVC and be discharged from one side of the tee. From this point, the water was collected and checked for turbidity and the well yield was measured. The pumping times and yields of each well are recorded on New Jersey Department of Environmental Protection (NJDEP) Form A. After well development was complete, water level recovery was measured. The permeability was determined from the recovery curve for each well and is shown in Table 6-1.

6.2 MATERIALS

6.2.1 Soils Classification

Five representative samples of overburden material (two from site 1 and one each from sites 4, 6, and 7) were sent to Empire Soils Investigations (ESI) soils laboratory in Albany, New York, for classification. Grain size and liquid and plastic limits were determined. The results of these analyses are shown in Appendix C and are reflected in Appendix B, Geologic Drill Logs.

6.2.2 Storage Drums

Storage drums used to store spoils from drilling operations met the requirements stated in Bechtel Subcontract No. 14501-138-SC-111.

The second test, constant head pressure, consisted of pumping water at a constant pressure through an interval of the well isolated by double pneumatically inflated packers. This second method could only be used in bedrock because the overburden sediments are not sufficiently consolidated for the packers to maintain an effective seal. Before testing, the permeability equipment (including hoses, water meter, 1-in. iron pipe, and packers) was assembled horizontally on the ground and injected with water to determine head loss through the equipment. Water pressures used during testing varied from 14 to 30 psi with most tests run at 15 psi. Packer inflation pressures generally were maintained between 65 to 100 psi using nitrogen gas. Bedrock well MISS-1B, -2B, -3B, -4B, -5B, and -7B were tested successfully in this manner.

6.1.2 Falling Head

Falling head permeability tests were successfully run in the overburden of only one well (MISS-2A) during initial drilling operations. The problem with maintaining an effective seal at the bottom of the casing that prevented running constant head tests in the overburden (see Subsection 6.1.1), also precluded additional falling head tests. After well installations were completed, falling head tests were successfully performed in MISS-1A, -3A, -3B, -5A, -5A-1, and -6B. Generally these tests were performed while other operations were being conducted. They did not require continued presence (as was the case in constant head tests), because the water levels declined very slowly.

6.1.3 Well Development and Recovery Tests

After the monitoring wells were developed in accordance with NJPDES Permit No. NJ0054500 (development for minimum of 1 hour or until turbidity-free water is discharged), recovery tests were conducted on wells MISS-1B, -2A, -2B, -3A, -3B, -4A, -4B, and -7B. Development of the overburden wells was accomplished by blowing

TABLE 8-2

MISS GROUND-WATER LEVELS AS OF NOVEMBER 21, 1984

Well No.	Depth to Water Below Ground (ft)	Elevation of Ground Water (ft)
MISS-1A	Dry	-
MISS-1B	16.00	44.10
MISS-2A	8.65	51.05
MISS-2B	10.94	49.26
MISS-3A	6.80	49.40
MISS-3B	10.10	46.10
MISS-4A	6.63	48.37
MISS-4B	10.45	44.85
MISS-5A	10.21	47.19
MISS-5A-1	Dry	-
MISS-5B	14.70	42.70
MISS-6A	11.03	45.57
MISS-6B	11.39	45.21
MISS-7A	6.03	47.07
MISS-7B	10.34	43.26

hole and cement/bentonite grout was pumped through drill rods placed to the bottom of the hole along the outside of the casing. Pumping continued until grout displaced all the drilling mud and cuttings from the annulus. Grout often came up inside the casing which ensured an effective seal between the casing and the bedrock. A minimum of 48 hours was required for the grout to set before further drilling could resume. After that time, any residual grout inside the casing was removed by drilling to the bottom of the casing with a roller bit and fresh water. Below the bottom of the casing, a 30-ft open hole was cored with fresh water and an NX core barrel. The open section was flushed with clean water and permeability tested using double pneumatically inflated packers. The wells were subsequently developed and recovery readings recorded to verify that the wells were operating.

9.0 RADIOLOGICAL MONITORING

Eberline Analytical Corporation (EAC) provided radiological monitoring at the MISS. The ground surface at each drill site was scanned before any drilling activities began. During drilling, EAC personnel collected soil samples from the augers for analysis at their laboratory in Middlesex, New Jersey, and field-scanned random soil samples from the well borings. After completing drilling at each well, EAC ran a down-hole scan of the well by lowering a probe inside a temporary PVC casing that was set to the bottom of the well. EAC personnel also scanned all equipment upon arrival and before departing from the site and checked down-hole equipment for radioactive contamination before the equipment was moved from one well site to another. The uranium-238, radium-226, and thorium-232 measurements of the composite soil samples are given in Table 9-1. The down-hole gamma scans support these data. A comprehensive radiological survey is scheduled for FY 1986 and will be documented in a report.

TABLE 9-1

RANGE OF RADIONUCLIDE VALUES IN MAYWOOD WELLS

Well Number	Uranium-238	Radium-226 (pCi/g)	Thorium-232
1B	<4.7-13.0	0.4-0.8	2.0-10.4
2B	<4.7	<0.5-1.4	0.6-1.2
3B	<3.8	0.4-0.9	<1.5
4B	30.0	<1.9	80.9
5B	<5.0	0.4-2.6	1.2-8.2
6B	<5.1	<0.7-1.7	0.9-4.9
7B	<6.7	0.9-1.0	2.5-6.2

10.0 RESULTS

Overburden materials encountered during the drilling program at the MISS ranged in thickness from 1.8 to 21.5 ft (Figures 3-2 and 3-3). Because of the reworked nature of much of the soil, no consistent value can be determined for the permeability of the overburden. Permeabilities calculated from field tests of the overburden varied from 10^{-2} cm/sec (medium permeability) to 10^{-6} cm/sec (low permeability). As discussed in Section 6.1.1, attempts to test specific intervals within the overburden during drilling were generally unsuccessful because of the difficulty in achieving watertight seals around the casing. Therefore, the majority of the test results shown in Table 6-1 reflect an average permeability of the entire well section and may not be indicative of discrete intervals within the overburden.

The bedrock at the MISS (see Section 3.2) contains numerous vertical fractures near its surface. Storage and movement of ground water occurs in these secondary fracture openings because there is virtually no primary porosity or permeability in the bedrock. Bedrock permeability as calculated from field testing (Table 6-1) varied from 10^{-3} to 10^{-5} cm/sec.

An examination of the permeabilities included in Table 6-1 shows that permeability increased in every well during recovery tests (i.e., after well development was complete). These post-development values are probably the most representative permeability characteristics of the bedrock. Water sampled during development of bedrock wells at sites 2 through 7 showed a foamy discharge and brownish to yellowish color and may reflect leaching of contaminants from the overburden material. The water was tested chemically for organics and showed no values more than 3 ppm. The results of the tests were forwarded to the NJDEP in accordance with the NJPDES Permit No. NJ0054500 requirements.

The ground-water level was measured in each monitoring well to provide data for constructing potentiometric surface maps of the shallow and deep aquifers. These maps, Figures 10-1 and 10-2, show that the ground-water gradient for each of the aquifers is generally southwest. However, the potentiometric surface map for the shallow aquifer shows an anomalous condition at well site 6. This condition will be examined in detail if the potentiometric contours developed from later water level measurements have similar indications.

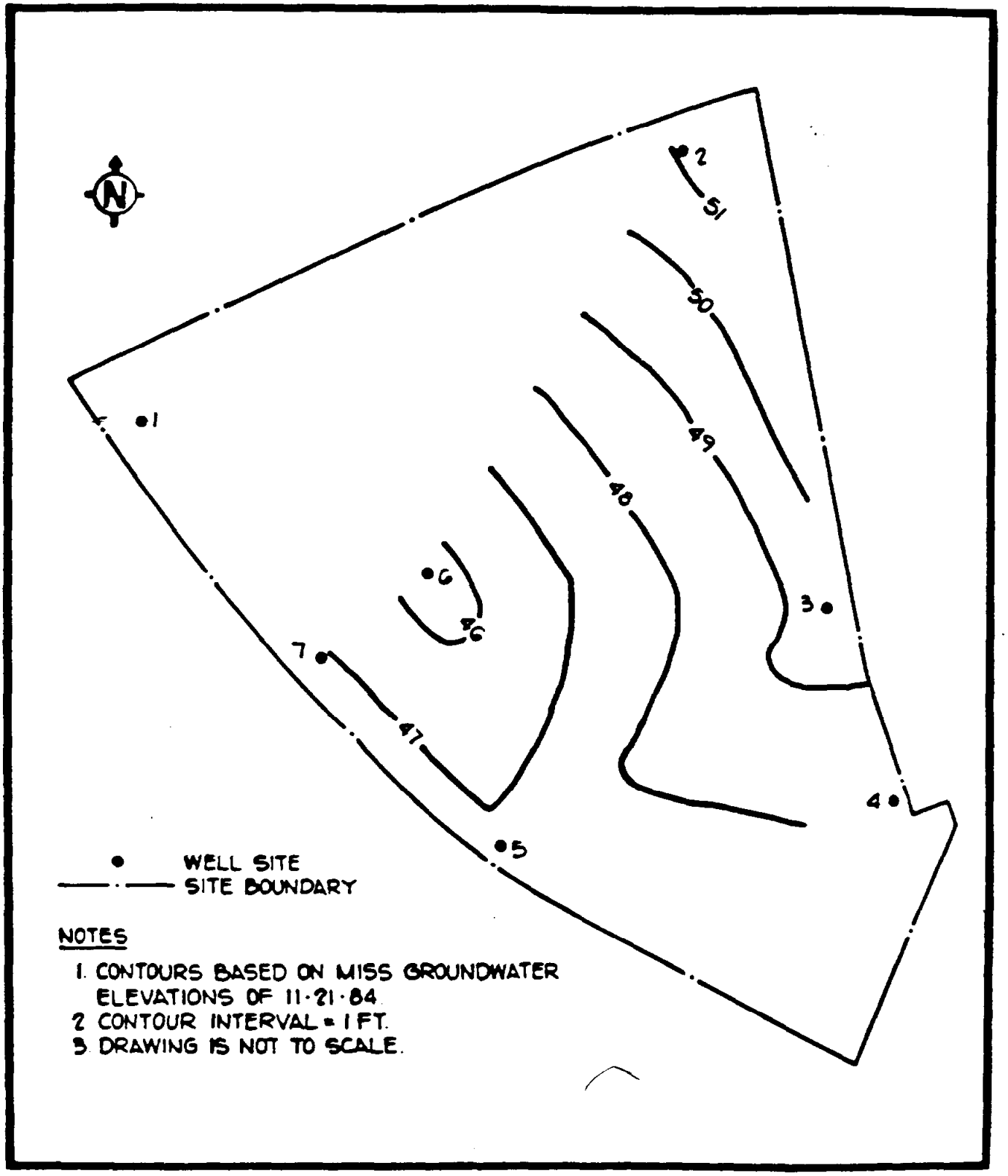


FIGURE 10-1 POTENTIOMETRIC SURFACE - OVERBURDEN AQUIFER

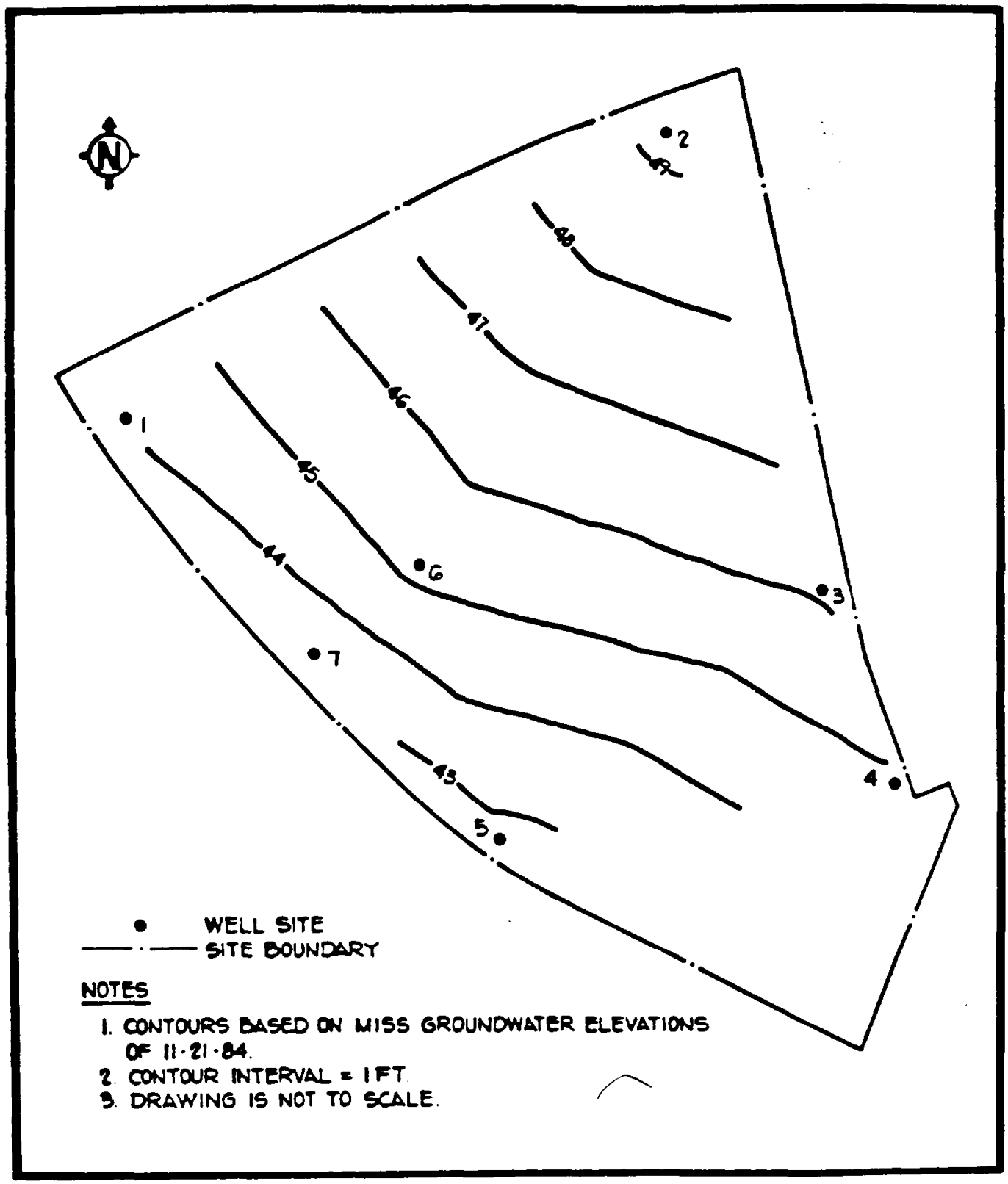


FIGURE 10-2 POTENTIOMETRIC SURFACE - BEDROCK AQUIFER

APPENDIX A

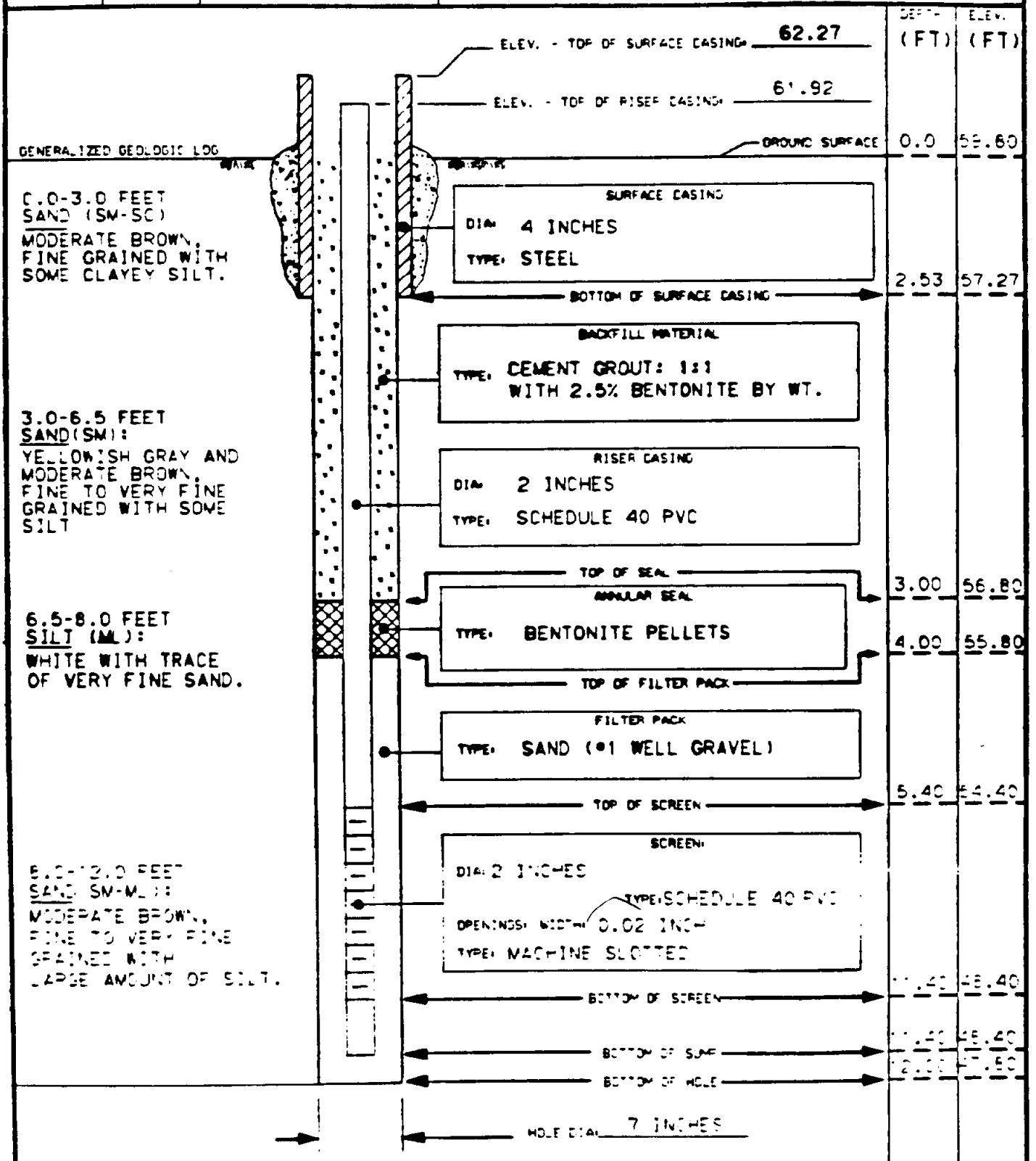
MONITORING WELL

INSTALLATION LOGS

32073

MONITORING WELL

PROJECT: FUSRAP		WELL NO.: MW89-1A
JOB NO.: 14501	SITE: MAYWOOD I.S.S.	COORDINATES (JOB-FEET): N 9745.86 E 9274.65
BEGUN: 11-6-84	COMPLETED: 11-6-84	PREPARED BY: R.H.NELSON
REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING		



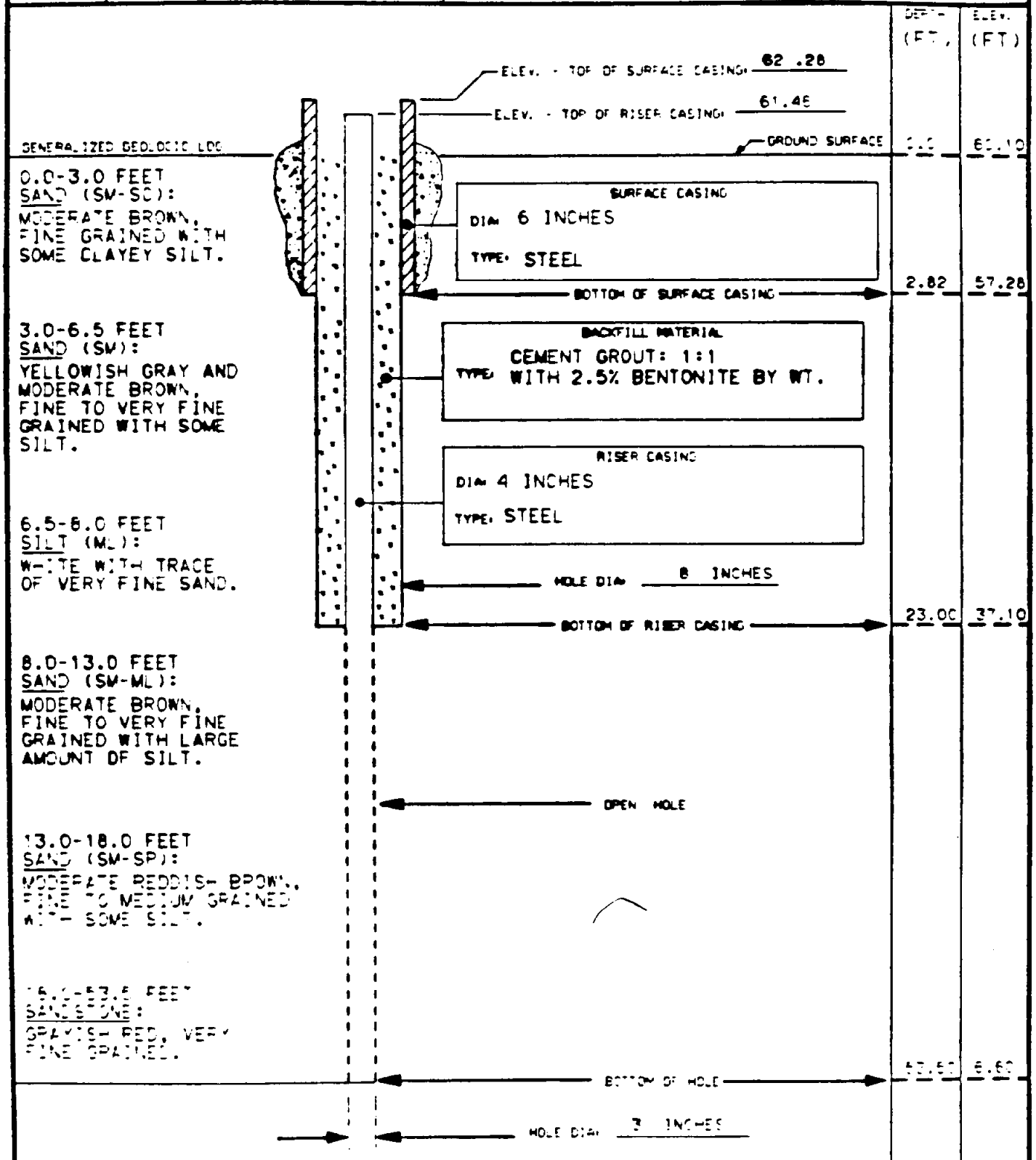
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-1B

JOB NO.	SITE	COORDINATES (JOB-FEET)
1450	MAYWOOD I.S.S.	N 9747.02 E 9278.93

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
11-6-64	11-13-64	R. H. NELSON	TOP OF RISER CASING



32073

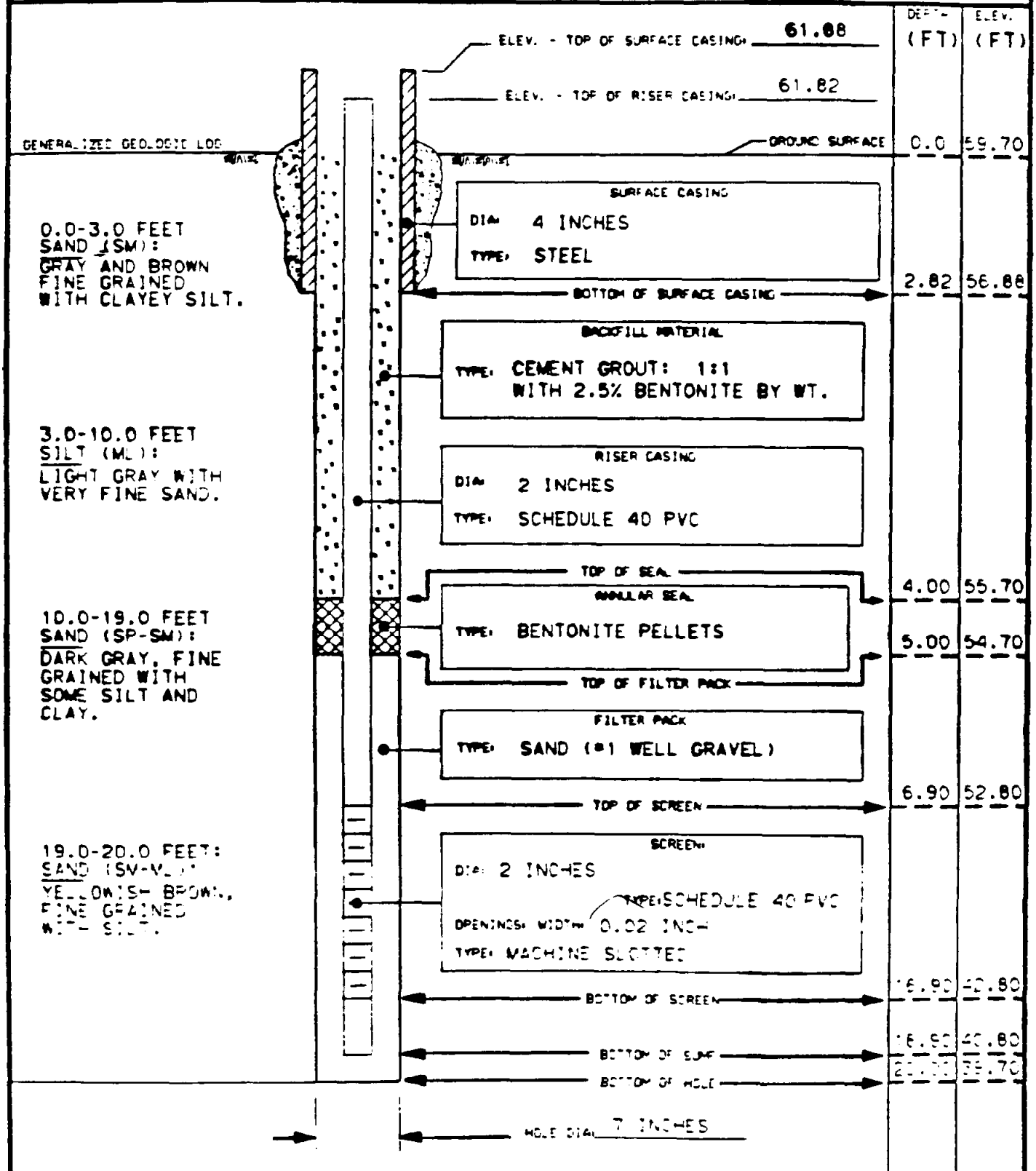
MONITORING WELL

JOB NO. 14501	SITE MAYWOOD I.S.S.	COORDINATES (IN FEET) N 9973.36 E 9875.92
BEGUN 10-29-84	COMPLETED 10-30-84	PREPARED BY F.H.NELSON

PROJECT: FUSRAP

WELL NO.: MISS-2A

REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING



32073

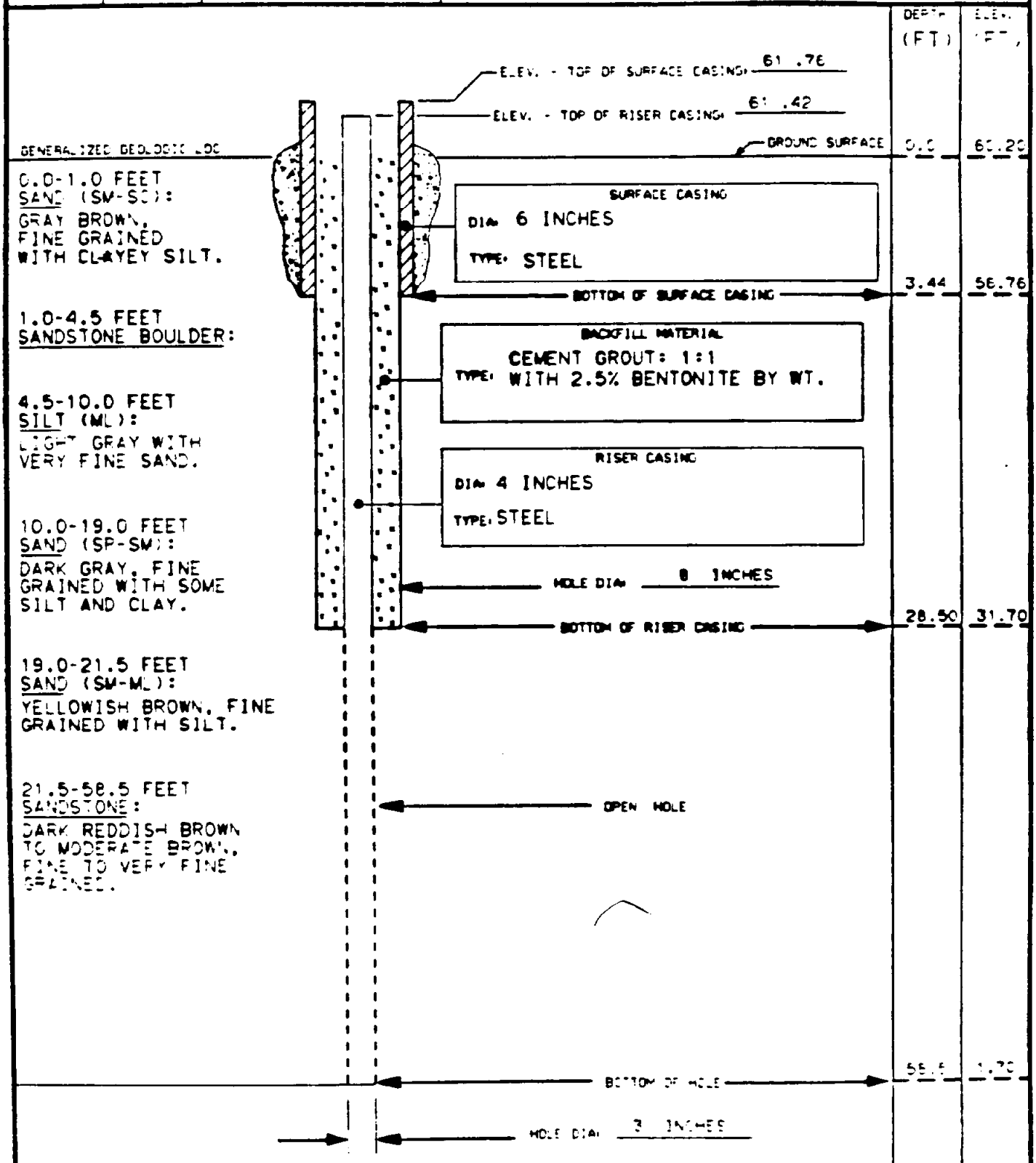
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MW3-2B

JOB NO.	SITE	COORDINATES (JOB-FEET)
14501	MAYWOOD I.S.S.	N 9962.48 E 9886.21

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-29-84	11-12-84	R. H. NELSON	TOP OF RISER CASING



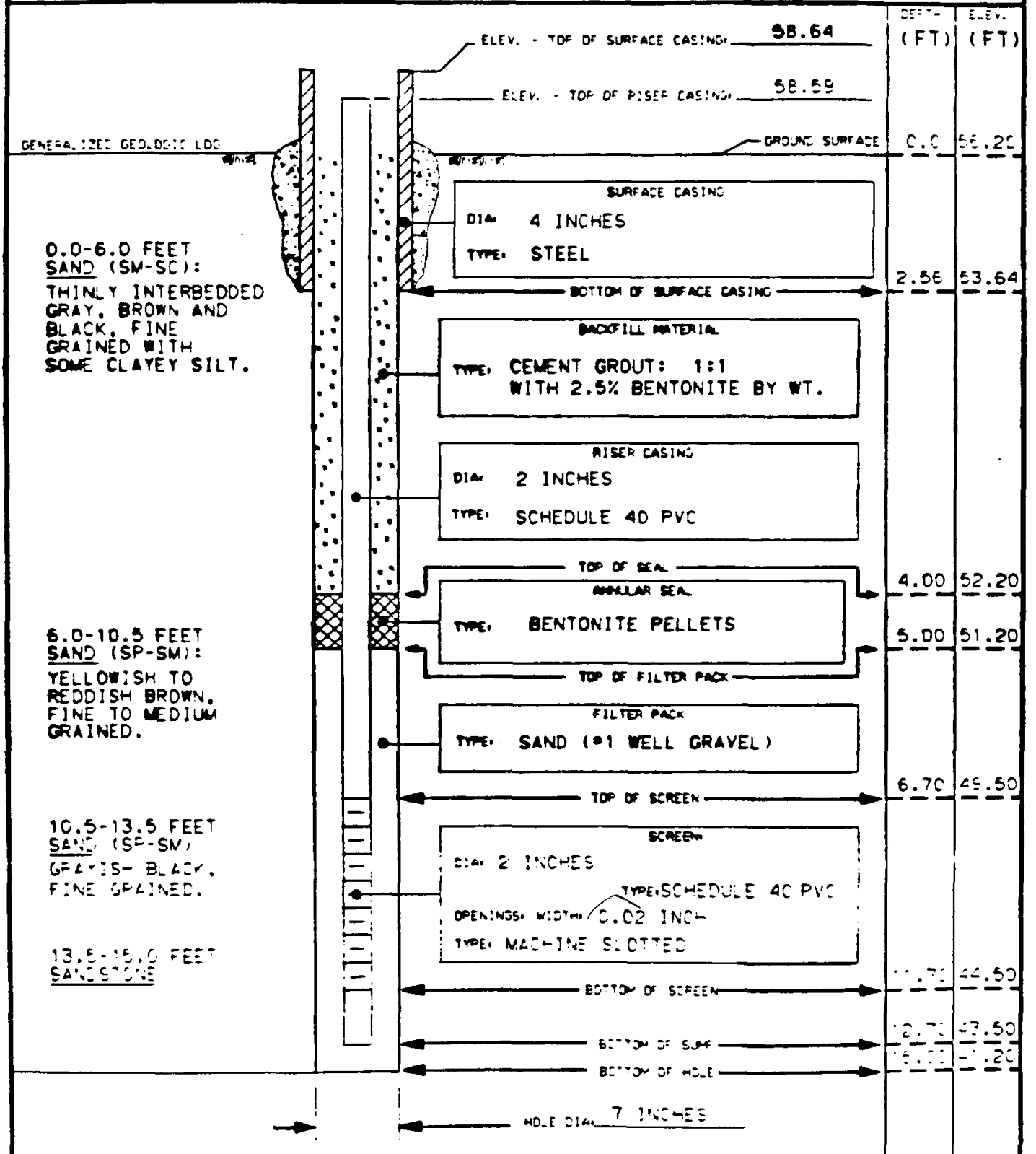
32073

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	MISS-3A

JOB NO.	SITE	COORDINATES (IN FEET)
14501	MAYWOOD I.S.S.	N 9423.37 E 9952.38

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-25-84	10-25-84	R.H.NELSON	TOP OF RISER CASING



32073

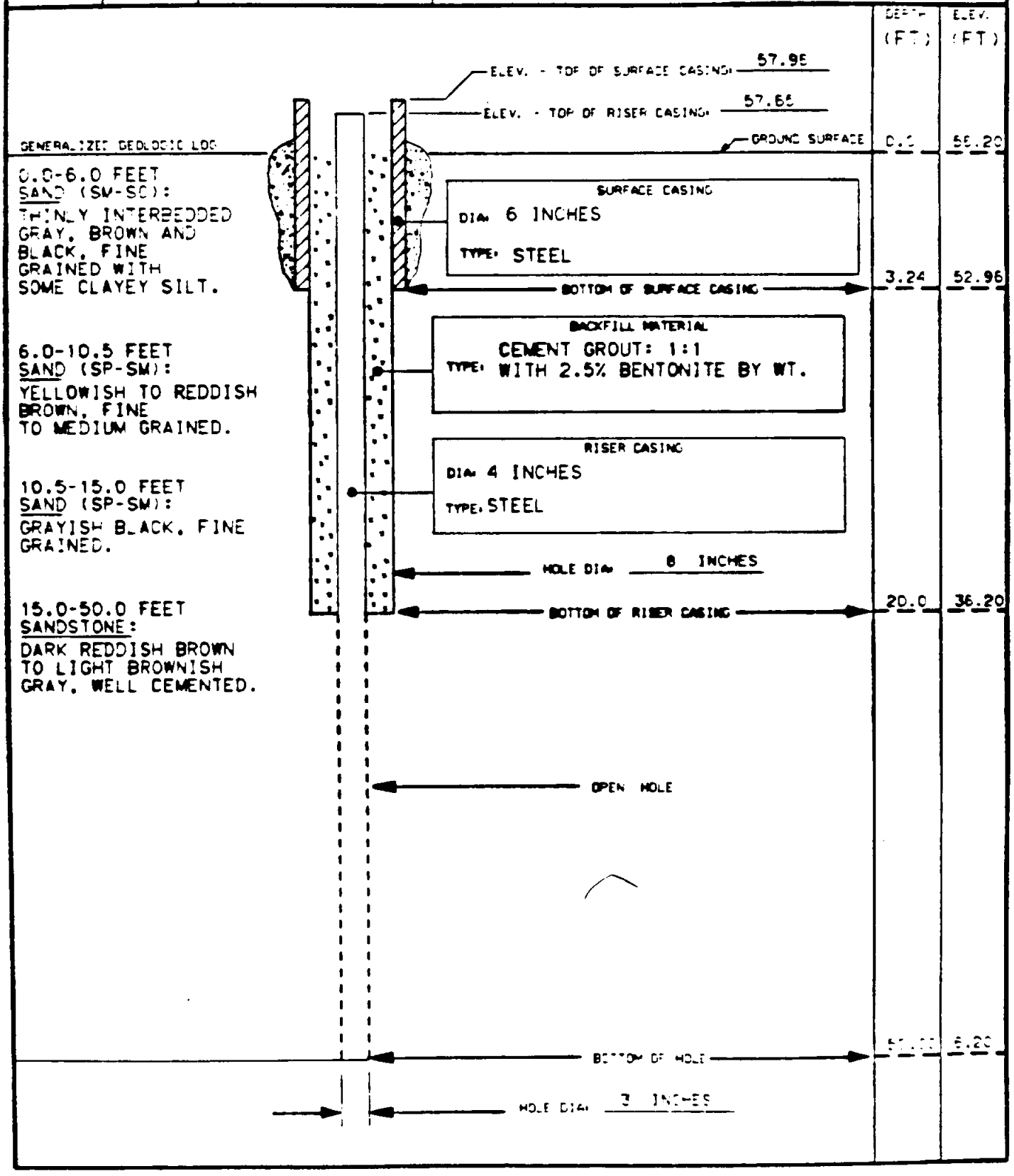
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-3B

JOB NO.	SITE	COORDINATES (JOB-FEET)
14501	MAYWOOD I.S.S.	N 9427.50 E 9966.48

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-25-84	10-26-84	R. H. NELSON	TOP OF RISER CASING



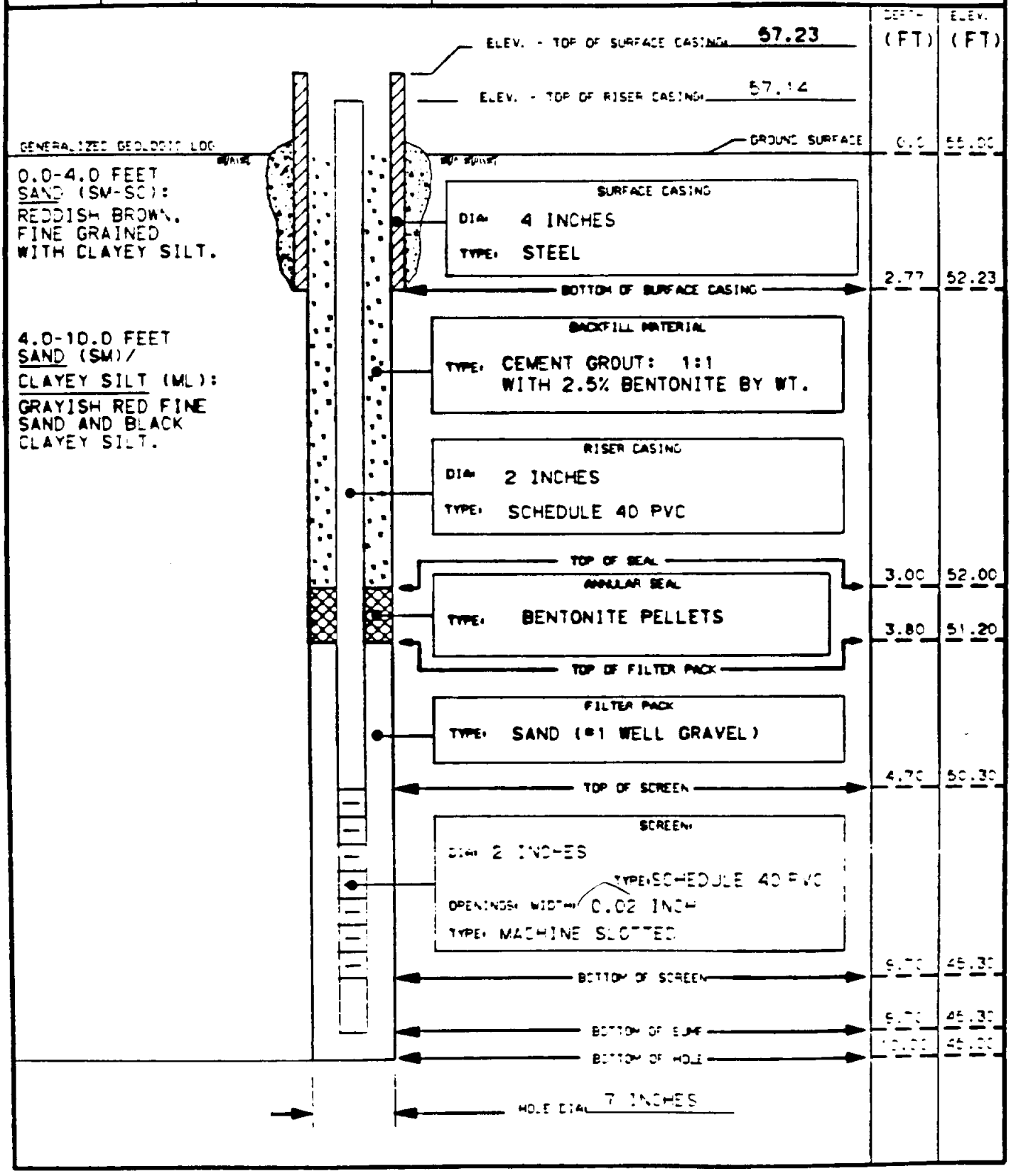
32073

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	MISS-4A

JOB NO.	SITE	COORDINATES (IN FEET)
14501	MAYWOOD I.S.S.	N 9216.49 E 9996.87

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
12-26-84	12-26-84	P.H.NELSON	TOP OF RISER CASING



32073

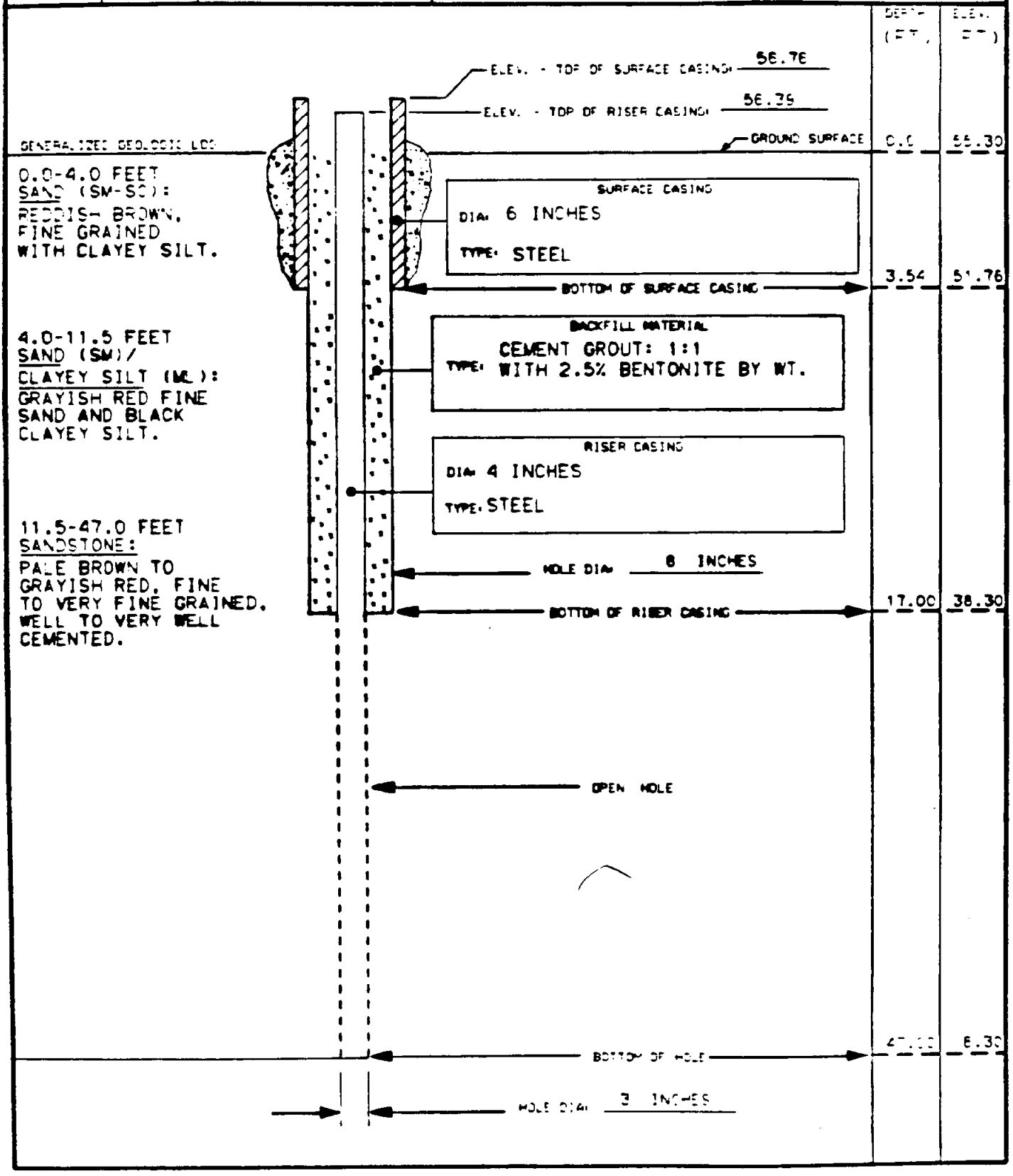
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-4B

JOB NO.	SITE	COORDINATES (JOB-FEET)
14501	MAYWOOD I.S.S.	N 9208.16 E 10,008.36

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-26-84	11-10-84	R. H. NELSON	TOP OF RISER CASING



32073

MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-5A

JOB NO.: 14501

SITE: MAYWOOD I.S.S.

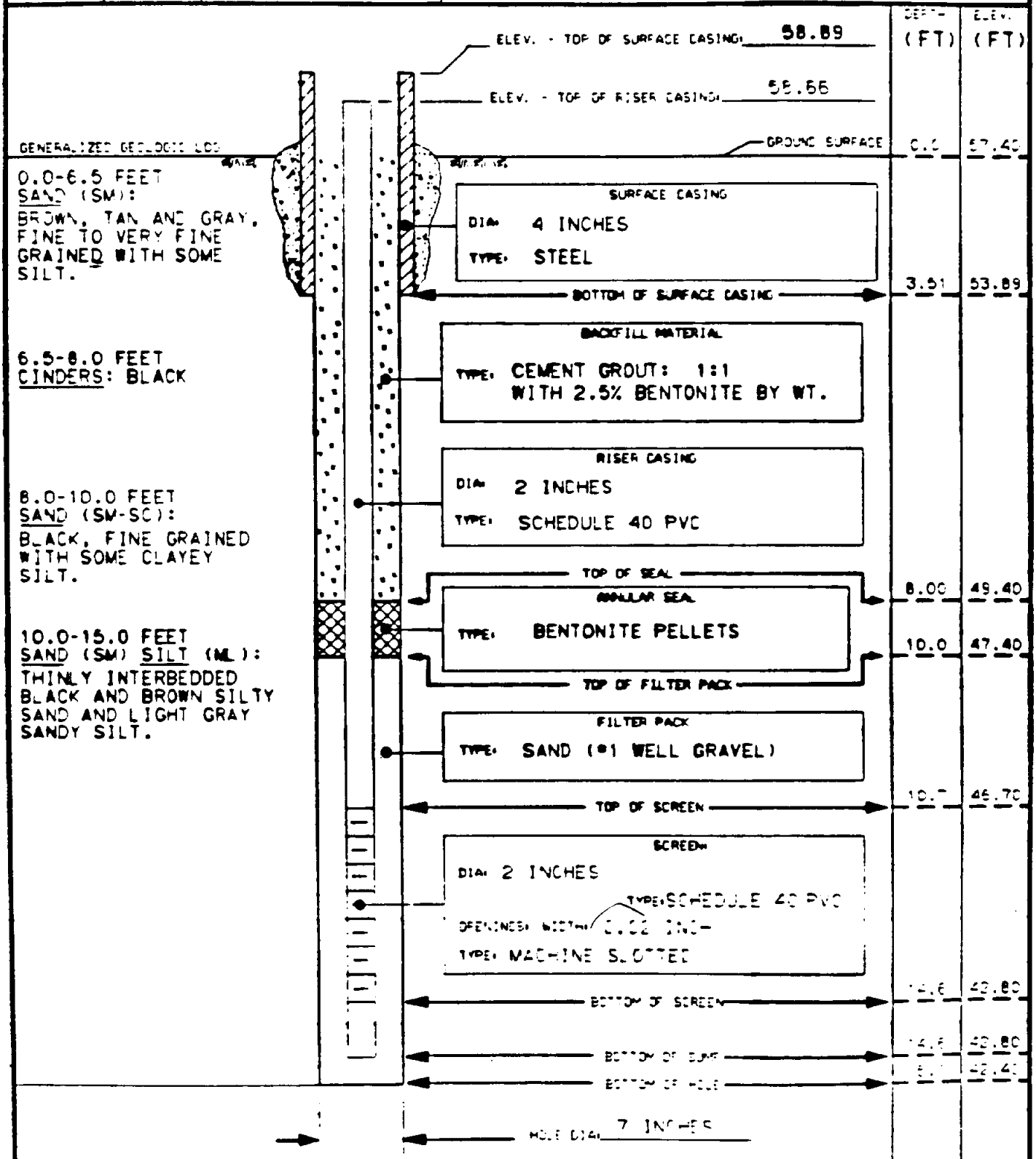
COORDINATES (IN FEET): N 9234.35 E 9602.57

BEGUN: 11-1-84

COMPLETED: 11-1-84

PREPARED BY: P.H.NELSON

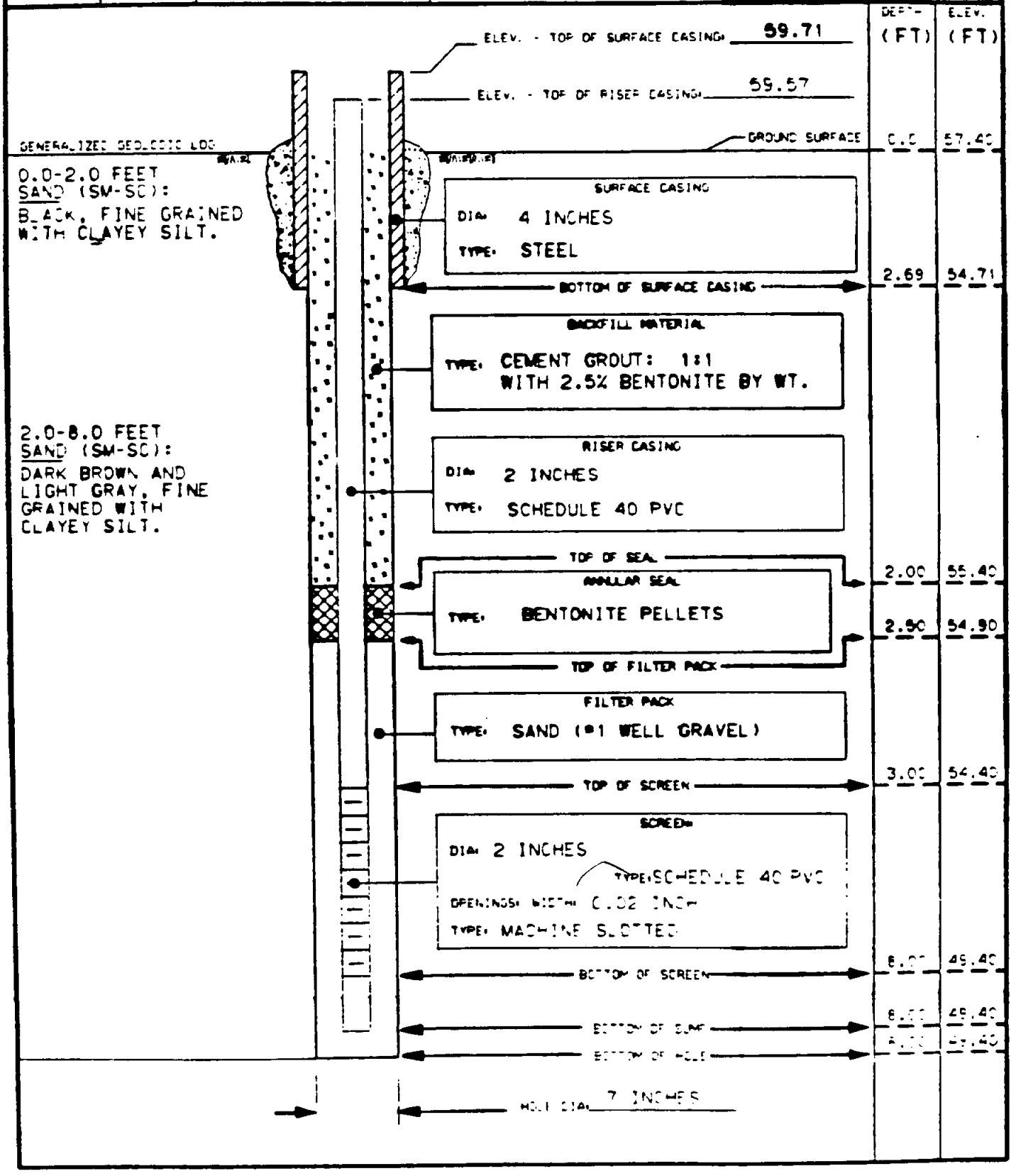
REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING



32073

MONITORING WELL

PROJECT: FUSRAP		WELL NO.: MISS-SA-1
JOB NO.: 14501	SITE: MAYWOOD I.S.S.	COORDINATES (IN FEET): N 9235.52 E 9604.72
BEGUN: 11-1 -84	COMPLETED: 11-1 -84	PREPARED BY: R.H.NELSON
REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING		



32073

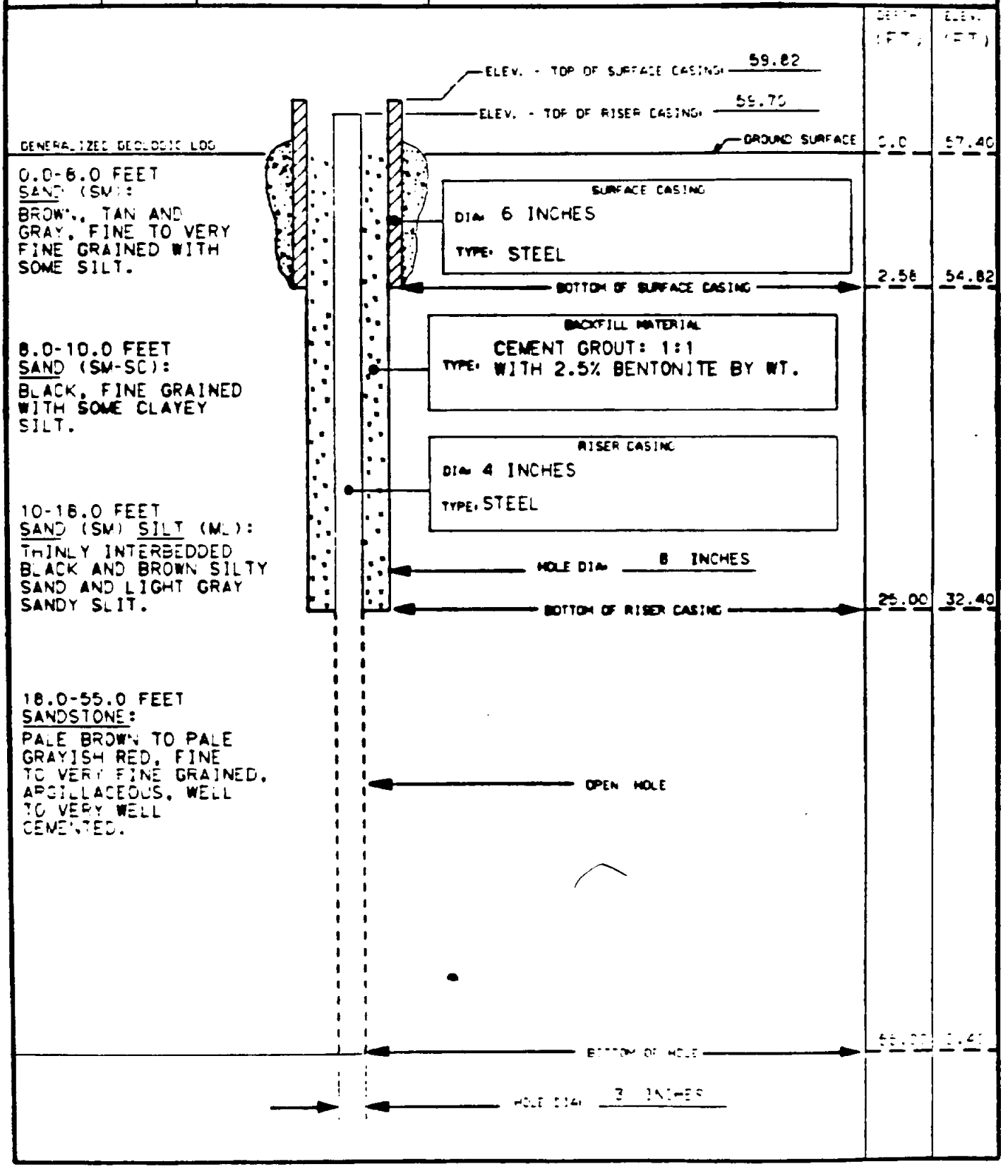
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISC-5B

JOB NO.	SITE	COORDINATES (JOB-FEET)
14501	MAYWOOD I.S.S.	N 9247.48 E 9596.00

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
11-2-84	11-10-84	R. H. NELSON	TOP OF RISER CASING



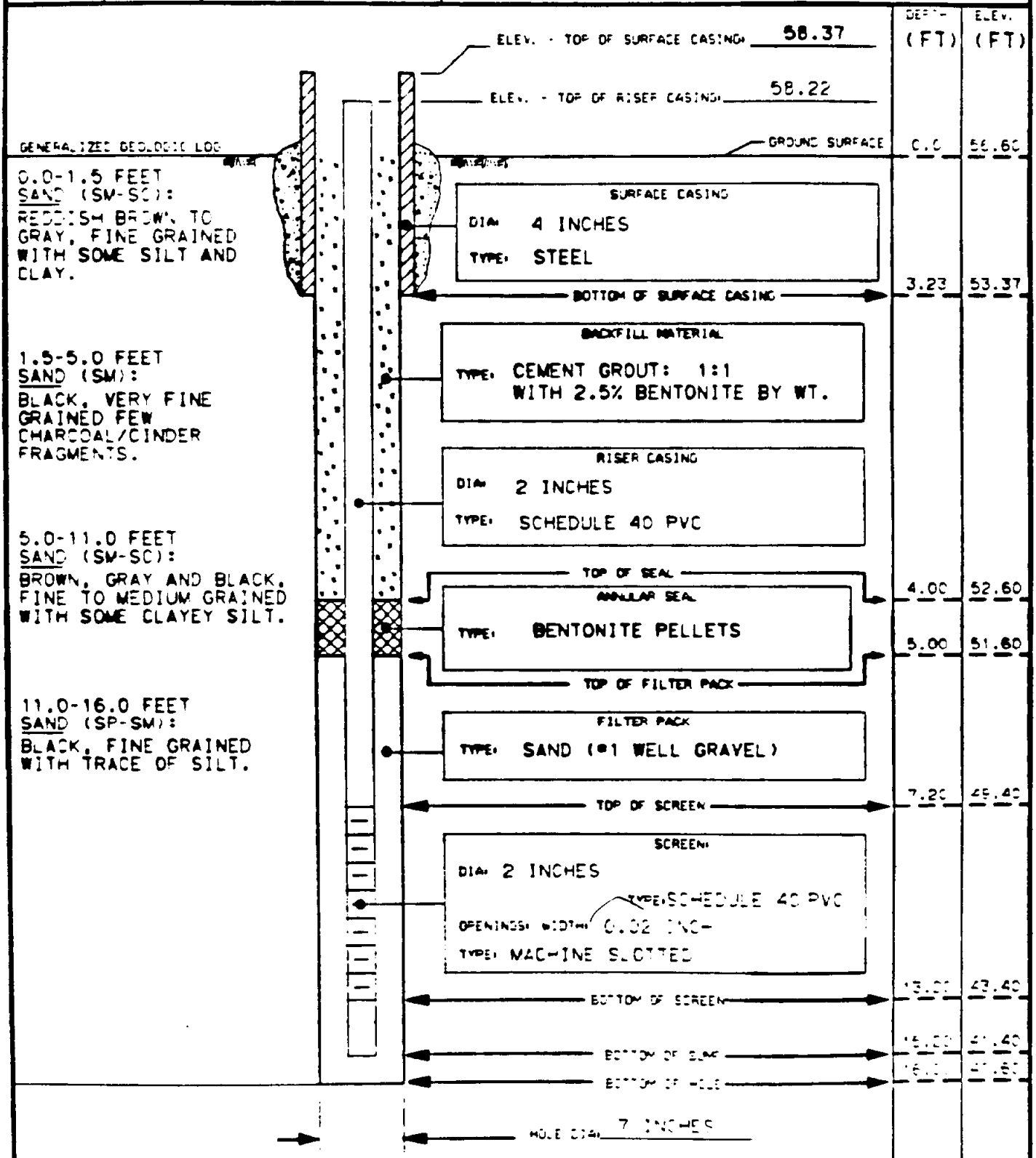
32073

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	MISS-64

JOB NO.	SITE	COORDINATES (IN FEET)
14501	MAYWOOD I.S.S.	N 9570.62 E 9576.40

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-30-84	10-31-84	R.H.NELSON	TOP OF RISER CASING



32073

MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-6S

JOB NO.: 14501

SITE: MAYWOOD I.S.S.

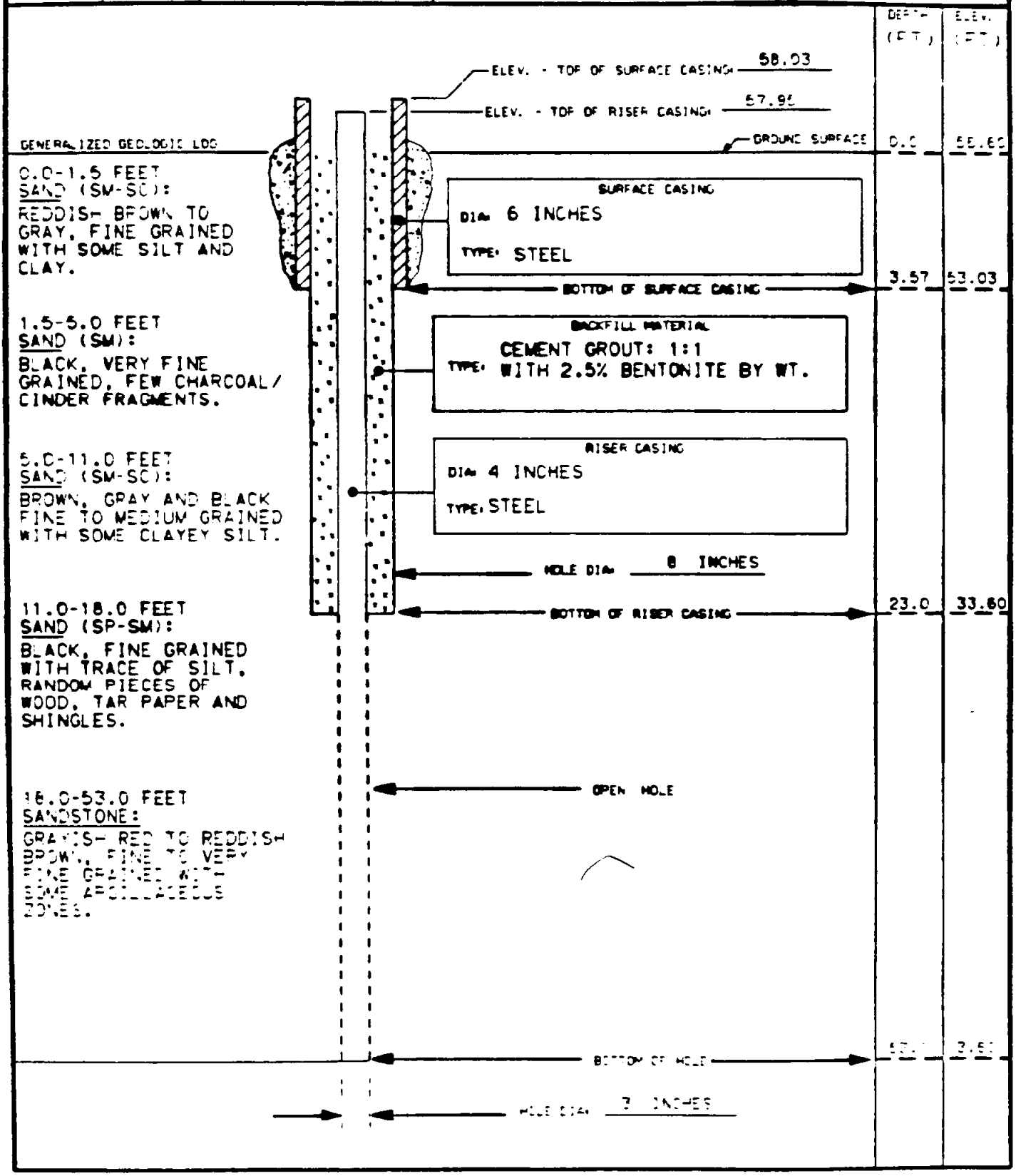
COORDINATES (JOB-FEET): N 9578.31 E 9570.36

BEGUN: [illegible]-64

COMPLETED: [illegible]-3-64

PREPARED BY: R. H. NELSON

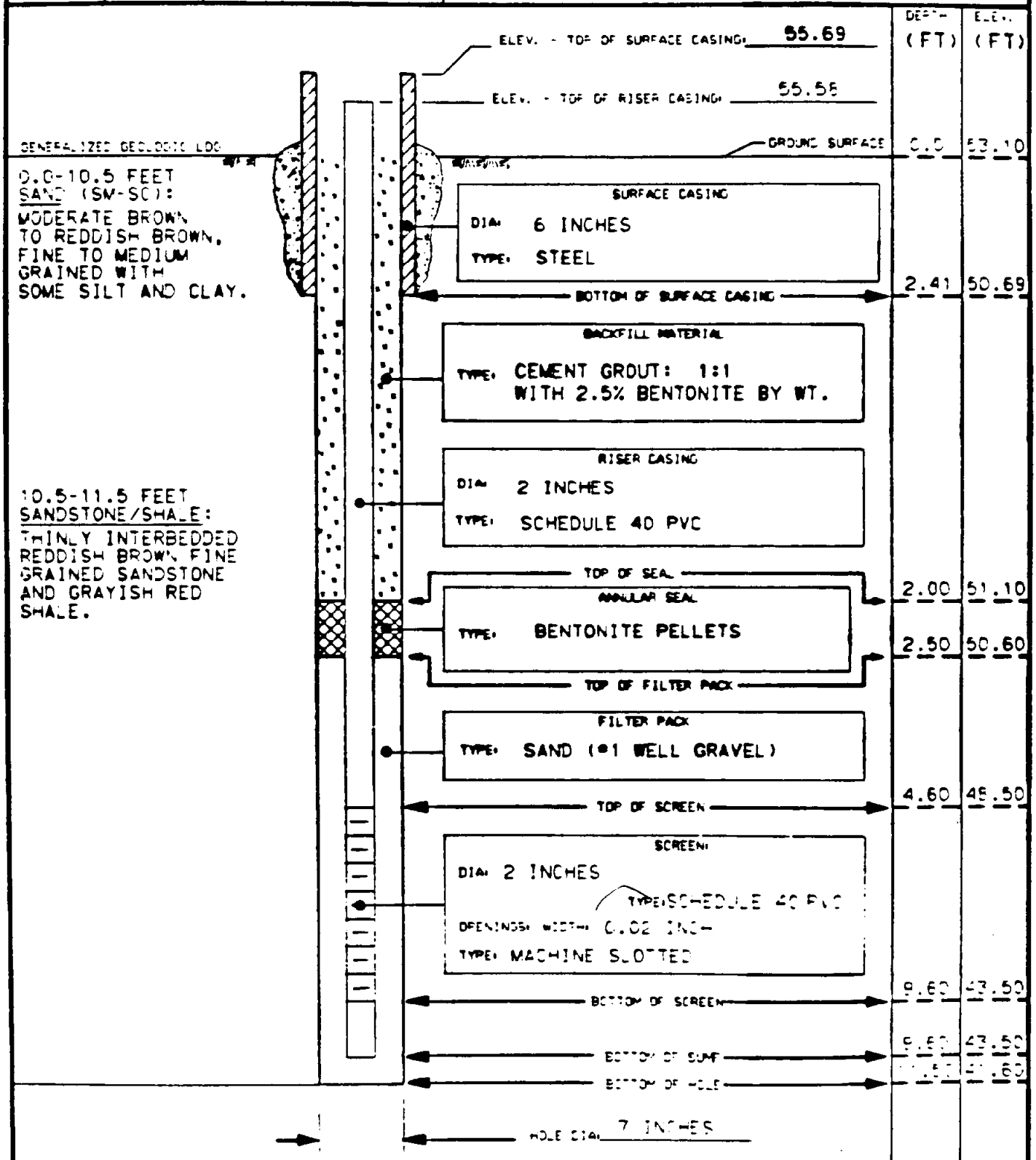
REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING



32073

MONITORING WELL

PROJECT: FUSRAP		WELL NO.: MISS-7A
JOB NO.: 14501	SITE: MAYWOOD I.S.S.	COORDINATES (IN FEET): N 9477.62 E 943[illegible].42
BEGUN: 11-5-84	COMPLETED: 11-5-85	PREPARED BY: R.H.NELSON
REFERENCE POINT FOR MEASUREMENTS: TOP OF RISER CASING		

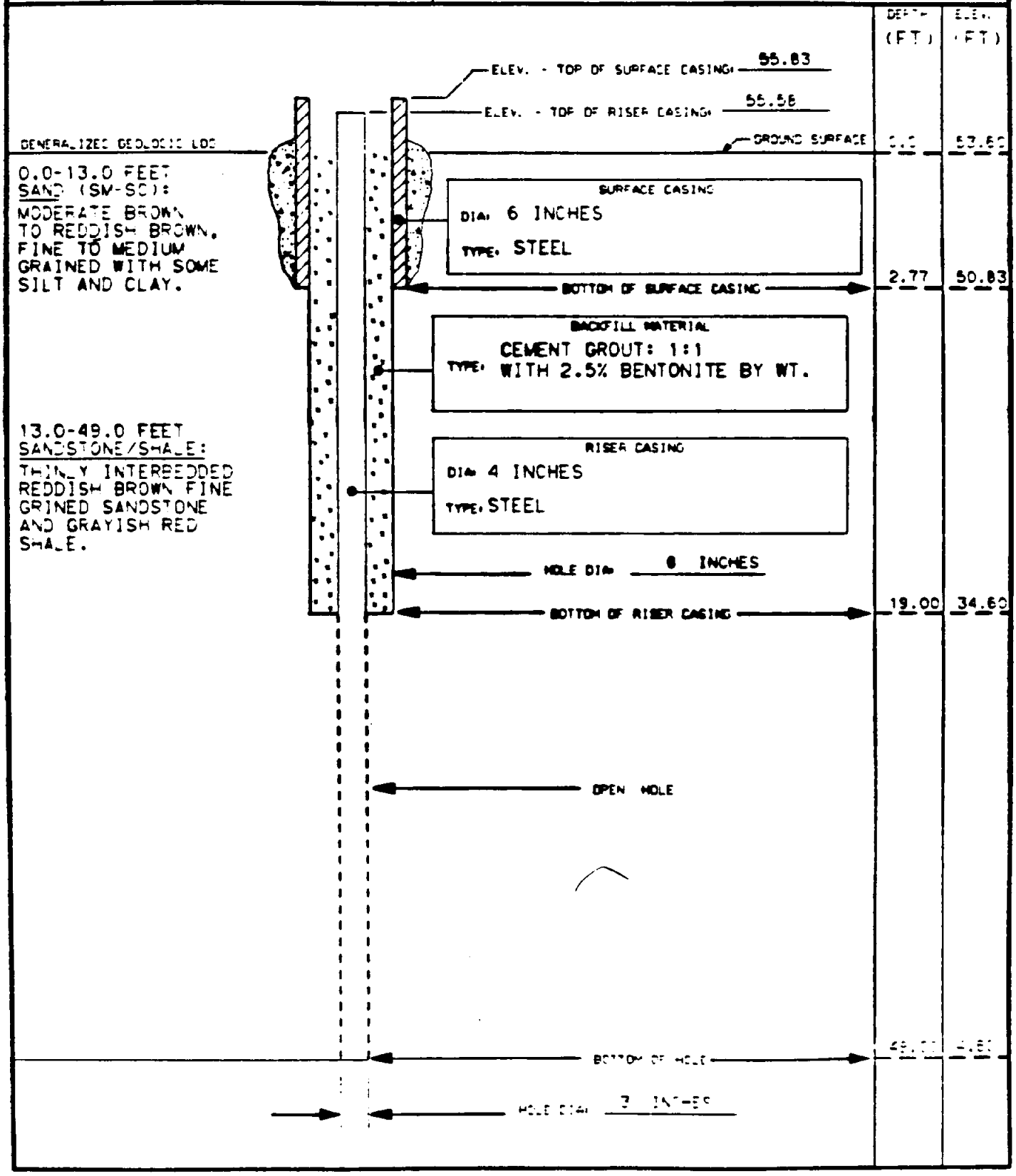


MONITORING WELL

PROJECT	WELL NO.
FUSRAP	MISS-7B

JOB NO.	SITE	COORDINATES (JOB-FEET)
14501	MAYWOOD I.S.S.	N 9471.41 E 9430.72

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
[illegible]-84	11-9-84	P. H. NELSON	TOP OF RISER CASING



APPENDIX B

GEOLOGIC DRILL LOGS

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	MISS-1A

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9745.86 E 9274.65	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11-6-84	11-6-84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN.	12.0	N/A	12 FT.

CORE RECOVERY (FT.)/%	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 61.92 FT STL 62.29 FT	59.8 FT	DRY	N/A

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2 IN/13.52 FT STL 4 IN/5.0 FT	R.H. [illegible]

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH-CORE RUN	SAMPLE RECOVERY FINE RECOVERY	SAMPLE REMARKS "N"	PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER 7-INCH OD								59.8				0.0-3.0 FT.-SAND (SW-SC): MODERATE BROWN (5YR 3/4); FINE GRAINED WITH SOME SILTY CLAY MATRIX.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
													-HOLE DRILLED USING 3 1/2" ID 7 IN OD AUGER.
								56.8	3.0			3.0-6.0 FT.-SAND (SW): YELLOWISH GRAY (5Y8/1) WITH SOME THINLY INTERBEDDED MODERATE BROWN (5YR 3/4); FINE TO VERY FINE GRAINED; SILTY±LOOSE; OCNL COBBLE.	-GAMMA LOGGED TO 11 FEET.
									6.0				-RAN FALLING HEAD TEST AT 11.8 FT.
													-ATTEMPTED CONSTANT HEAD TEST FOR 0-11.8 FT. INTERVAL. COULD NOT KEEP UP WITH TABLE AT 20 GPM (HOSE RES SUPPLY)
								53.3	6.0			6.0-8.0 FT. SILT (ML): WHITE (N9) WITH TRACE OF VERY FINE SAND AND BLACK (N1) ORGANIC INCLUSIONS.	
								51.8	8.0			8.0-12.0 FT. SAND (SW-ML): MODERATE BROWN (5YR 3/4) FINE TO VERY FINE GRAINED WITH LARGE AMOUNT (40-50%) SILT.	-GROUT 4 IN STEEL CASING FOR PERMEABILITY TESTING.
									10.0				*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND SAMPLES FROM MISS-1B.
								47.8	12.0			BOTTOM OF HOLE AT 12.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	-WELL DEVELOPMENT COMPLETED ON 2-4-85.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE — HOLE NO.: MISS-1A

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-1B		
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (USE-FEET): N 9747.02 E 9278.92	ANGLE FROM HORIZ.: 90°	BEARING: N/A		
BEGUN: 11-6-84	COMPLETED: 11-13-84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: MOBILE B61	HOLE SIZE: 8 IN/3 IN	OVERBURDEN (FT.): 18.0
ROCK (FT.): 35.5	TOTAL DEPTH: 53.5 FT.				
CORE RECOVERY (FT./%): 21.4/99.5	CORE BOXES: 3	SAMPLES: 5**	EL. TOP OF CASING: 4IN.-61.46 6IN.-62.28	GROUND EL.: 80.1 FT	DEPTH/EL. GROUND WATER: 15.14 FT./44.96 FT.
DEPTH/EL. TOP OF ROCK: 18.0 FT./62.1 FT.					
SAMPLE HAMMER WEIGHT/FALL: 140 LBS/30 IN.	CASING LEFT IN HOLE: DIA./LENGTH STL 4-IN/24.36 FT STL 6-IN/5.0 FT.	LOGGED BY: R.H. NELSON			

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CONT RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE IN INS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE #	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							80.1				0.0-3.0 FT.-SAND (SM-SC): MODERATE BROWN (5YR 3/4); FINE GRAINED WITH SOME SILTY CLAY MATRIX.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
SS	2.0	0.5	3 -5 -11-13 / 16							1		
AUGER												11-6-84: -SPLIT SPOON SAMPLES TAKEN IN PILOT HOLE DRILLED 6 FT. FROM THIS LOCATION. PILOT HOLE DRILLED WITH 7" OD HOLLOW STEM AUGER. GAMMA LOGGED TO 22 FT. BACKFILLED WITH GROUT.
								3.0			3.0-6.5 FT.-SAND (SM): YELLOWISH GRAY (5Y8/1) WITH SOME THINLY INTERBEDDED MODERATE BROWN (5YR 3/4); FINE TO VERY FINE GRAINED; SILTY; LOOSE; OCNL COBBLE.	
SS	2.0	0.7	13-11-14-14 / 25					6.0		2		
							73.6	6.5			6.5-8.0 FT. SILT (ML): WHITE (N9) WITH TRACE OF VERY FINE SAND AND BLACK (N1) ORGANIC INCLUSIONS.	
							72.1	8.0			8.0-13.5 FT. SAND (SM-SC): MODERATE BROWN (5YR 3/4) FINE TO VERY FINE GRAINED WITH LARGE AMOUNT (40-50%) SILT.	11-7-84: -THIS HOLE DRILLED WITH 8" ROLLER BIT AND BENTONITE TO 23 FT.; SET 4" STEEL CASING TO 23 FT AND GROUTED.
AUGER												
SS	2.0	0.4	7 -3 -3 -3 / 6					10.0		3		
AUGER												
								13.5				* DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-1B

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-13E | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-1B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								15.0			13.5-18.0 SAND (SM-SP): MODERATE REDDISH BROWN (10R4/6) FINE TO MEDIUM GRAINED WITH TRACE OF SILT, BLACK ORGANICS AND DARK REDDISH BROWN (10R3/4) ROCK FRAGMENTS; BECOMING WEAKLY CEMENTED WITH DEPT (WEATHERED BRUNSWICK FM)	
SS	2.0	1.2	8-40-27-25 / 67							4		
ROCK BIT							42.1	18.0			18.0-83.5 FT. SANDSTONE: GRAYISH RED (10R4/2), VERY FINE GRAINED VERY ARGILLACEOUS WITH A FEW SHALE LAYERS; NUMEROUS HIGH ANGLE FRACTURES FROM 23.5-29.5	
								20.0				
NX CORE	3.0	3.0	100% RQD=0.27					25.0	RUN 1 23-28		23.5-29.5 FT.: CORE HIGHLY BROKEN ALONG NUMEROUS HIGH-ANGLE JOINTS WITH FACES STAINED WITH ORANGE OXIDES AND CALCITE COATINGS.	11-7-84 / 11-12-84 23 FT. ** NOTE: SPLIT SPOON SAMPLES TAKEN IN PILOT HOLE 8 FT. FROM THIS LOCATION. BEDROCK NOT ENCOUNTERED IN PILOT HOLE UNTIL 24.5 FT. A FIFTH SAMPLE TAKEN FROM 20-22 FT. GAVE THE FOLLOWING BLOW COUNTS: 39-27-27-29 / 54 PILOT HOLE BACKFILLED WITH GROUT.
NX CORE	6.5	6.5	100% RQD=0.53						RUN 2 26-34.5		27.8-28.3, 28.7-28.9 } SHALE	
								36.6				

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-1B

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	3 OF 4	MISS-1B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE BRN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								26.0			18.0-53.5 FT. SANDSTONE: GRAYISH RED (10R4/2), VERY FINE; GRAINED VERY ARGILLACEOUS WITH A FEW SHALE LAYERS; NUMEROUS HIGH ANGLE FRACTURES FROM 23.5-29.5	23-36 FT: LOST ~80% (~25GPM) WATER WHILE CORING; USED 1000 GALS TO CORE FROM 25-30.5 FT.
										RUN 2 26-34.5	34.0-34.5 FT: CORE HIGHLY BROKEN ALONG NUMEROUS HIGH-ANGLE JOINTS WITH FACES STAINED WITH ORANGE OXIDES AND CALCITE COATINGS.	
								28.0			28.8 FT: TIGHT HORIZONTAL CALCITE STRINGER.	
											37.5-38.2 FT.: CORE BROKEN ALONG NEAR VERTICAL CRESENT SHAPED JOINT, FACE STAINED WITH BLACK OXIDE AND TRACE OF CALCITE.	11-12-84 / 11-13-84 36 FT.
NX CORE	10.0	9.9	99%								38.3 50° FRESH	- CONTINUED LOSING CIRCULATION WHILE CORING.
	9.90-0.55			DOUBLE PACKERS TEST INTERVAL 39.0-50.5 FT.								
								40.0		RUN 3 34.0-44.0	39.0-44.0 FT.: VERY ARGILLACEOUS; SOFTER @ 39-39.1; 39.8-39.9 AND 43.9-44.	
											42.2 FT.: 50° CALCITE FILLED (0.05 FT. THICK)	
				7.5	15	16						
								45.0				

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-1B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 4 OF 4 | HOLE NO.: MISS-1B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH FROM PIN	SAMPLE RECOVERY CORE RETRIEVAL	SAMPLE RUNS IN PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	9.0	9.0	100% REC=0.84					50.0		RUN 4 44.5-53.5	18.0-53.5 FT. SANDSTONE: GRAYISH RED (10R4/2), VERY FINE; GRAINED VERY ARGILLACEOUS WITH A FEW SHALE LAYERS; NUMEROUS HIGH ANGLE FRACTURES FROM 23.5-29.5 47.0 FT: 10° CALCITE 47.5-48.00 FT.: NUMEROUS INTERSECTING JOINTS WITH BLACK OXIDE AND CALCITE. 49.5-50.2 FT.: SLIGHTLY WEATHERED. 52.3-52.9 FT.: 0-10° SHALE WITH SEVERAL 0-10° STAINED JOINTS.	11-13-84
							6.6	53.5			BOTTOM OF HOLE AT 53.5 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	-WELL DEVELOPMENT COMPLETED ON 2-13-85
								60.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-1B

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 2	MISS-2A

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9973.36 E 9875.92	90°	—

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
10-29-84	10-30-84	EMPIRE SOILS INVEST.CO.	CME 550	7 IN	20.0	N/A	20 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 61.82 FT STL 61.88 FT	59.7 FT.	7.55/52.15 FT.	N/A

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2 IN/21.02 FT STL 4 IN/5.0 FT	R.H. NELSON

SAMPLE TYPE AND DIAM. ER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION*	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD							59.7				0.0-3.0 FT.-SAND (SM-SC): DARK GRAY (N3) AND GRAYISH BROWN (5YR3/2) FINE GRAINED IN CLAYEY SILT MATRIX.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE. -HOLE INITIALLY ADVANCED BY DRIVING 4 IN STEEL CASING WITH 300 LB HAMMER THEN REAMED WITH 7 IN OD AUGER.
							56.7	3.0			3.0-10.0 FT.-SILT (ML): LIGHT GRAY (N7-N8); LOW TO MEDIUM PLASTICITY WITH SOME (~20%) VERY FINE SAND; SATURATED AT 8 FT.	-FALLING HEAD PERMEABILITY TESTS RUN FOR INTERVALS: 7.5-10 FT.; 12.5-15 FT.; 17.5-20 FT. -GAMMA LOGGED TO 18.5 FT.
							49.7	10.0			10.0-19.0 FT.-SAND (SP-SM): DARK GRAY (N3); FINE GRAINED WITH SOME ORGANICS; INTERBEDDED CLEAN SAND WITH SILTY, CLAYEY LAYERS; PUNGENT ODOR; SATURATED.	*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND SAMPLES FROM MISS-2B.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-2A

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 2 | HOLE NO.: MISS-24

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD								15.0				
							40.7	19.0			19.0-20.0 FT.- SAND (SW-ML) ; PALE YELLOWISH BROWN (10YR 6/2); FINE GRAINED WITH SOME (20%) SILT.	10-29-84
							39.7	20.0			BOTTOM OF HOLE AT 20.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	10-30-84 INSTALLED MONITORING WELL 2-14-85: COMPLETED WELL DEVELOPMENT.
								25.0				
								30.0				

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-24

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-2B		
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9962.48 E 9888.21	ANGLE FROM HORIZ.: 90°	BEARING: —		
BEGUN: 10/29/84	COMPLETED: 11/12/84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: MOBILE B61	HOLE SIZE: 8/3 IN	OVERBURDEN (FT.): 21.5
ROCK (FT.): 37.0	TOTAL DEPTH: 58.5 FT.				
CORE RECOVERY(FT./%): 29.3/97.7	CORE BOXES: 2	SAMPLES: 6	EL. TOP OF CASING: PVC 61.42 FT STL 61.76 FT	GROUND EL.: 60.2 FT	DEPTH/EL. GROUND WATER: 10.14/50.06 FT
DEPTH/EL. TOP OF ROCK: 21.5/38.7 FT					
SAMPLE HAMMER WEIGHT/FALL: 140 LB/30 IN	CASING LEFT IN HOLE: DIA./LENGTH: PVC 2-IN/29.72 FT STL 6-IN/5.0 FT	LOGGED BY: R. H. NELSON			

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE, LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							60.2				0.0-1.0 FT.-SAND (SM-SC): DARK GRAY (N3) AND GRAYISH BROWN (5YR 3/2) FINE GRAINED IN CLAYEY SILT MATRIX.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
SS	2.0	1.0	10-21-38-45 / 89				59.2	1.0		1		
AUGER											1.0-4.5 FT.-SANDSTONE BOULDER: MODERATE REDDISH BROWN (10R 4/4) FINE GRAINED.	-HOLE DRILLED TO 25 FT WITH 3 IN ID TIN OD AUGER THEN TO 28.5 FEET WITH 8 IN ROCK BIT AND BENTONITE MUD.
							55.7	4.5				
SS	2.0	0.5	8-32-16-18 / 80					5.0		2	4.5-10.0 FT.-SILT (ML): LIGHT GRAY (N7-N8); LOW TO MEDIUM PLASTICITY WITH SOME (W 20%) VERY FINE SAND; SATURATED AT 8 FT.	
AUGER												
							50.2	10.0				
SS	2.0	2.0	2-2-11-15 / 13							3	10.0-18.0 FT.-SAND (SP-SM): DARK GRAY (N3); FINE GRAINED WITH SOME ORGANICS; INTERBEDDED CLEAN SAND WITH SILTY, CLAYEY LAYERS; PUNGENT ODOR; SATURATED.	
AUGER												*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-2B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 1450[illegible]-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-2B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH (CORE RUN)	SAMPLE RECOVERY (CORE RECOVERY)	SAMPLE BLOWS /6" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								15.0				
SS	2.0	2.0	8-12-21-25 / 33							4		
AUGER							41.2	19.0			19.0-21.5 FT.-SAND (SM-ML): PALE YELLOWISH BROWN (10YR 6/2); FINE GRAINED WITH SOME (±20%) SILT.	
								20.0				
SS	2.0	2.0	10-11-16-21 / 27							5		
							38.7	21.5			21.5-58.5 FT.-SANDSTONE: DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YR 3/4) WITH OCCASIONAL LIGHTER COLORED MOTTLING; FINE TO VERY FINE GRAINED; WELL CEMENTED SHOWING THINLY LAMINATED HORIZONTAL TO < 20° BEDDING WITH SOME INTERBEDDED ARGILLACEOUS AND SILTSTONE LAYERS.	-GAMMA LOGGED TO 28 FT.
AUGER												
								25.0				
SS	0.8	0.8	18-100 / 4"							6		
ROCK BIT												
NX CORE											29.6-31.3 FT.: VERTICAL CALCITE FILLED JOINT	10-29-84 / 10-30-84 — 28.5 -SET 4 IN STEEL CASING [illegible] GROUTED.
								33.0				

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-2B

320?3

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-136 | SHEET NO.: 3 OF 4 | HOLE NO.: MISS-2B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE REMARKS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	7.5	7.2	96% RQD-.63					30.0		RUN 1 28.5-36	30.5-32.5 FT: ARGILLACEOUS 34.1-34.5 FT.: ARGILLACEOUS BROKEN WITH VERTICAL AND 45° JOINTS WITH SOME CALCITE AND SOME WHITE AND BLACK NON-REACTIVE COATING ON JOINT FACES.	11-12-84: COPED FROM 28.5-38.5 FT.
				DOUBLE PACKERS TEST INTERVAL 33.0-44.5 FT.				35.0				
NX CORE	7.5	7.4	99% RQD-0.86	10.2	15	21		40.0		RUN 2 36-43.5	37.0-37.2 FT.: MEDIUM GRAINED WITH 45° JOINT WITH DARK GREEN AND RUST WEATHERED SURFACE. 37.2-38.0 FT.: ARGILLACEOUS 38.0 FT.: INTERSECTING 80° JOINTS WITH YELLOWISH GRAY (5Y 7/2) NON-REACTIVE COATING ON FACE; SLICKENSIDE VISIBLE. 40.5-45.0 FT.: NUMEROUS VERTICAL AND NEAR VERTICAL (>45°) CALCITE HEALED JOINTS; SLICKEN SIDES AND YELLOWISH GRAY COATING ON JOINT FACE @ 44.	
								45.0			45.0-48.0 FT.: ARENACEOUS SILTSTONE/SHALE.	

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-2B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 4 OF 4 | HOLE NO.: MISS-2B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH (CORE RUN)	SAMPLE RECOVERY (CORE RECOVERY)	SAMPLE REMKS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				DOUBLE PACKERS TEST INTERVAL 44.5-56.0 FT.								
NX CORE	10.0	10.0	100%	1.8	15	21				RUN 3 43.5-53.5	47.4-48.0 FT.: VERTICAL CALCITE FILLED JOINT 0.01 FT THICK. 48.5-49.0 FT.: RANDOM SUBROUNDED PEBBLES.	
RQD=0.84								50.0			50.05-52.5 FT.: ARENACEOUS SILTSTONE/SHALE.	
NX CORE	5.0	4.7	94%					55.0		RUN 4 53.0-58.0	57.0 FT.: 45° CALCITE WITH BLACK STAINING. 57.5-58.0 FT: VERTICAL CALCITE FILLED JOINT.	11-12-84
RQD=0.86							17.0	58.5			BOTTOM OF HOLE AT 58.5 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	2-14-85: COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.
								60.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-2B

320?3

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 2	HOLE NO.: MISS-3A
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9423.37 E 9952.38	ANGLE FROM HORIZ.: 90°	BEARING: N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
10/25/84	10/25/84	EMPIRE SOILS INVEST. CO	CME 550 ATV	7 IN.	13.5	1.5	15 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 58.59 FT. STL 58.64 FT.	56.2 FT.	5.12 FT./51.08 FT.	13.5 FT./42.7 FT.

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2-IN/15.09 FT STL 4-IN/5.0 FT	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION*	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD		5					56.2				0.0-6.0 FT.-SAND (SM-SC): THINLY INTERBEDDED BROWNISH GRAY (5YR 4/2) DARK REDDISH BROWN (10R 3/4) AND BLACK (N1); FINE GRAINED WITH CLAYEY SILT MATRIX; BLACK STRATIFIED CARBONACEOUS LAYERS BETWEEN 1.5-6.0.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATOR BY EBERLINE. -HOLE DRILLED WITH 7 IN OD AUGER. -GAMMA LOGGED TO 14FT.
								5.0				
							48.2	8.0			6.0-10.5 FT.-SAND (SP-SM): MODERATE YELLOWISH BROWN (10YR 5/2) TO MODERATE REDDISH BROWN (10R 4/4) FINE TO MEDIUM GRAINED WITH SMALL AMOUNT OF CLAYEY SILT AND OCCASIONAL SANDSTONE GRAVEL WITH SOME THINLY INTERBEDDED BLACK CARBONACEOUS MATERIAL.	-FALLING HEAD PERMEABILITY TEST RUN ON INTERVAL BETWEEN 8.0-12.7 FT.
								10.0				
							45.7	10.5			10.5-13.5 FT-SAND (SP-SM): GRAYISH BLACK (N2); FINE GRAINED WITH SMALL AMOUNT OF SILT, SATURATED.	*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND MISS-3B SAMPLES.
								13.5				

SS-SPLIT SPOON; ST-SHELBY TUBE; B-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-3A

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 2 | HOLE NO.: MISS-3A

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE / LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
AUGER							41.2	15			13.5-15.0 FT.-SANDSTONE: DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YRS) FINE TO VERY FINE GRAINED.	10-25-84
											BOTTOM OF HOLE AT 15.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	2-21-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-3A

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 1450[illegible]38	SHEET NO.: 1 OF 4	HOLE NO.: MISS-38		
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9427.50 E 9966.48	ANGLE FROM HORIZ.: 90°	BEARING: —		
BEGUN: 10/25/84	COMPLETED: 11/8/84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: MOBILE B61	HOLE SIZE: 8/3 IN.	OVERBURDEN (FT.): 15.0	ROCK (FT.): 35.0	TOTAL DEPTH: 50 FT.
CORE RECOVERY (FT./%): 32/91	CORE BOXES: 3	SAMPLES: 4	EL. TOP OF CASING: PVC 57.66 FT. STL 57.96 FT.	GROUND EL.: 56.2 FT.	DEPTH/EL. GROUND WATER: 8.59/47.81 FT.	DEPTH/EL. TOP OF ROCK: 15.0/41.2 FT.	
SAMPLE HAMMER WEIGHT/FALL: 140 LB/30 IN	CASING LEFT IN HOLE: DIA./LENGTH: PVC 2"/20.0 FT. STL 6"/5.0 FT.	LOGGED BY: R.H.NELSON					

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH FOR 1 BLOW	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT.)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.6	6-11-13-20 / 24				56.2			1	0.0-6.0 FT.-SAND (SM-SC): THINLY INTERBEDDED BROWNISH GRAY (5YR 4/2) DARK REDDISH BROWN (10R 3/4) AND BLACK (N1); FINE GRAINED WITH CLAYEY SILT MATRIX; BLACK STRATIFIED CARBONACEOUS LAYERS BETWEEN 1.5-6.0.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
AUGER												-HOLE DRILLED TO 15FT WITH 3¼IN OD, 7IN OD AUGER REAMED WITH 8 IN. ROCK BIT AND BENTONITE TO 20 FT.
								5.0				
SS	1.5	1.2	3-4-6 / 10							2		
							48.2	6.0			6.0-10.5 FT.-SAND (SP-SM): MODERATE YELLOWISH BROWN (10YR 5/2) TO MODERATE REDDISH BROWN (10YR 4/4) FINE TO MEDIUM GRAINED WITH SMALL AMOUNT OF CLAYEY SILT AND OCCASIONAL SANDSTONE GRAVEL WITH SOME THINLY INTERBEDDED BLACK CARBONACEOUS MATERIAL.	-CASING LOGGED TO 15 FT.
AUGER								10.0				
								10.5			10.5-15.0 FT-SAND (SP-SM): GRAYISH BLACK (N2); FINE GRAINED WITH SMALL AMOUNT OF SILT, SATURATED.	
SS	2.0	1.0	3-12-18-8 / 30							3		
AUGER												*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-38

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 1450-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-38

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE (FT WITH CORE BBL)	SAMPLE RECOVERY (CORE RECOVERY)	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							41.2	15.0				
SS	0.7	0.7	50-5"/2"-IN							4	15.0-50.0 FT.-SANDSTONE/SILTSTONE: DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YR 3/4) TO LIGHT BROWNISH GRAY (5YR 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE; SLIGHTLY WEATHERED WITH OCCASIONAL FRESH AND HEALED ($CaSO_4$ OR $CaCO_3$) HIGH ANGLED FRACTURES; THINLY LAMINATED NEAR HORIZONTAL BEDDING APPARENT.	
NX CORE	4.8	4.2	88% RQD=0.9								16.5 ~ 17.0 FT: SMALL AMOUNT OF CALCITE AND BLACK OXIDATION.	10-25-84 / 10-26-84 19 FT. -GROUTED 4 IN. STEEL CASING
								20.0			~ 17.5-18.0 FT.: MAXIMUM DIMENSION VUG FILLED WITH FRIABLE MDTLY TO WELL CEMENTED SAND. ~ 19.5-20.0 FT: OPEN VUG (0.1 FT)	10-26-84 / 11-8-84 20 FT.
NX CORE	10.0	9.9	99% RQD=0.87								19.0-24.0 FT: LIGHT BROWNISH GRAY (5YR 5/1) VERY WELL CEMENTED VERY FINE GRAINED ARENACEOUS SILTSTONE. 22.0-22.4 FT: HEALED WITH CALCITE. 22.8-23.3 FT.: FINED GRAINED MDTLY CEMENTED SLIGHTLY FRIABLE ZONE.	
				DOUBLE PACKERS TEST INTERVAL 24.8-35.8 F				25.0			24.0-40.0 FT.: MDT BROWN TO LIGHT BROWNISH-GRAY, VERY FINE GRAINED ARGILLACEOUS.	
				1.3	30.0	12					25.7-30.0: HIGHLY BROKEN ARGILLACEOUS ZONE.	
								30.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-38

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 1450-[illegible]-36 | SHEET NO.: 3 OF 4 | HOLE NO.: MCSS-38

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH (FT) AND PIN	SAMPLE RECOVERY (FT) AND PERCENT	SAMPLE RUN NO. OR PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								0.0				
NX CORE	10.0	8.0	80% RQD=0.63								31.5-31.6 FT.: WEAK, LAMINATED BROKEN "POWER CHIP" ZONE.	
				DOUBLE PACKERS TEST INTERVAL 34.4-45.9 FT.				38.0			15.0-50.0 FT.-SANDSTONE/SILTSTONE: DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YR 3/4) TO LIGHT BROWNISH GRAY (5YR 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE; SLIGHTLY WEATHERED WITH OCCASIONAL FRESH AND HEALED ($CaSO_4$ OR $CaCO_3$) HIGH ANGLED FRACTURES; THINLY LAMINATED NEAR HORIZONTAL BEDDING APPARENT.	
											38.0-39.5 FT.: BROKEN MDTLY CEMENTED ARENACEOUS SILTSTONE.	
								40.0			40.0-45.0 FT.: TRACE OF COURSE SIZES AND SUBROUNDED PEBBLES.	
NX CORE	10.0	5.9	99% RQD=0.77	9.0	14	20						
								45.0			45.0 FT.: 15° CALCITE COATING ON FACE.	

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MCSS-38

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 1450-136 | SHEET NO.: 4 OF 4 | HOLE NO.: MW81-3B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE (LENGTH AND WT.)	SAMPLE RECOVERY (AND RECOVERY)	SAMPLE BLOWS /6" OR PENETRATION RESISTANCE (AND RECOVERY)	WATER PRESSURE TESTS: FLOW IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	5										15.0-50.0 FT.-SANDSTONE/SILTSTONE: DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YR 3/4) TO LIGHT BROWNISH GRAY (5YR 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE; SLIGHTLY WEATHERED WITH OCCASIONAL FRESH AND HEALED ($CaSO_4$ OR $CaCO_3$) HIGH ANGLED FRACTURES; THINLY LAMINATED NEAR HORIZONTAL BEDDING APPARENT.	11-8-84
							6.2	50.0			BOTTOM OF HOLE AT 50.0 FEET. HOLE CONVERTED TO OBSERVATION WELL. SEE OBSERVATION WELL LOG FOR CONSTRUCTION DETAILS.	2-15-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.

SS=SPLIT SPOON; ST=SHELBY TUBE; OD=DIAMOND; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MW81-3B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 1	HOLE NO.: MISS-4A
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9216.49 E 9996.87	ANGLE FROM HORIZ.: 90°	BEARING: N/A
BEGUN: 10/26/84	COMPLETED: 10-26-84	DRILLER: EMPIRE SOILS INVEST CO.	DRILL MAKE AND MODEL: CME 550 ATV
HOLE SIZE: 7 IN	OVERBURDEN (FT.): 98.0 FT	ROCK (FT.): N/A	TOTAL DEPTH: 10 FT.
CORE RECOVERY (FT./%): N/A	CORE BOXES: N/A	SAMPLES: N/A	EL. TOP OF CASING: PVC 57.14 FT, STL 57.23 FT
GROUND EL.: 55.0 FT.	DEPTH/EL. GROUND WATER: 5.0 FT./50.0 FT.	DEPTH/EL. TOP OF ROCK: N/A	
SAMPLE HAMMER WEIGHT/FALL: N/A	CASING LEFT IN HOLE: DIA./LENGTH: PVC 2"/9.84 FT, STL 4"/5.0 FT	LOGGED BY: R.M.NELSEN	

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE, LENGTH CORE RUN	SAMPLE RECOVERY, CORE RECOVERY	SAMPLE BLOWS "N", PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7 INCH OD		4					55.0				0.0-4.0 FT.-SAND (SM-SC): MODERATE REDDISH BROWN (10R 4/4) FINE GRAINED WITH SOME CLAYEY SILT CONCRETE FRAGMENTS BETWEEN 0.5-1.0.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
												-HOLE DRILLED WITH 7 IN OD AUGER.
								4.0			4.0-10.0 FT.-SAND (SM)/CLAYEY SILT (ML) GRAYISH RED (5R 4/2) FINE GRAINED SILTY SAND WITH INTERBEDDED BLACK (N1) CLAYEY LOW PLASTIC SILTY MATRIX CONTAINING CHARCOAL LIKE FRAGMENTS AND FINE FILAMENTS.	-GAMMA LOGGED TO 10 FT.
								5.0				
							45.0	10.0			BOTTOM OF HOLE AT 10.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND SAMPLES FROM 98.
												10-25-84
												2-21-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-4A

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-4B		
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9208.18 E 10,008.36	ANGLE FROM HORIZ.: 90°	BEARING: N/A		
BEGUN: 10/26/84	COMPLETED: 11/10/84	DRILLER: EMPIRE SOILS INVEST CO.	DRILL MAKE AND MODEL: MOBILE B61	HOLE SIZE: 8 IN/3 IN	OVERBURDEN (FT.): 11.5
ROCK (FT.): 6.5	TOTAL DEPTH: 47 FT.				
CORE RECOVERY (FT./%): 28.5/95	CORE BOXES: 2	SAMPLES: 3	EL. TOP OF CASING: 4"-STL 56.39 FT; 6"-STL 56.76 FT	GROUND EL.: 55.3 FT	DEPTH/EL. GROUND WATER: 9.24 FT./46.06 FT
DEPTH/EL. TOP OF ROCK: 11.5 FT./43.8 FT					
SAMPLE HAMMER WEIGHT/FALL: 140 LB/30-IN	CASING LEFT IN HOLE: DIA./LENGTH: 4" STL 2-IN/17.0 FT 18.09 FT.; 6" STL 6-IN/5.0 FT	LOGGED BY: R. H. NELSON			

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	1.0	9 -3 -10-7 / 23				55.3			1	0.0-4.0 FT.-SAND (SM-SC): MODERATE REDDISH BROWN (10R 4/4) FINE GRAINED WITH SOME CLAYEY SILT CONCRETE FRAGMENTS BETWEEN 0.0-1.0.	SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
AUGER												HOLE DRILLED TO 10 FT. WITH 8 IN. ID 7 IN. OD AUGER. REAMED AND DRILLED TO 17 FT. WITH 6 IN. ROCK BIT AND BENTONITE.
								4.0			4.0-11.5 FT.-SAND (SM)/CLAYEY SILT (ML) GRAYISH RED (5R 4/2) FINE GRAINED SILTY SAND WITH INTERBEDDED BLACK (N1) CLAYEY LOW PLASTIC SILTY MATRIX CONTAINING CHARCOAL LIKE FRAGMENTS AND FINE FILAMENTS.	LOST ~100 GALS BENTONITE DRILLING MUD.
SS	2.0	1.0	1 -1 -1 -4 / 2					6.0		2		GAMMA LOGGED HOLE TO 15 FT. SET AND GROUTED 4 IN. STEEL CASING TO 17 FT.
AUGER												
SS	1.5	1.0	14-5 -7 -17 / 12					10.0		3		
ROCK BIT							43.8	11.5			11.5-17.0 FT.-SANDSTONE: PALE BROWN (5YR 5/2) TO GRAYISH RED (10R 4/2) FINE TO VERY FINE GRAINED; WELL TO VERY WELL CEMENTED; ARGILLACEOUS; SOME LAMINATED BEDDING APPARENT BUT GENERALLY APPEARS MASSIVE; MOST BREAKS ARE FRESH AND HORIZONTAL.	

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-4B

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-4B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE / LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
ROCK BIT								15.0			11.5-47.0 FT.-SANDSTONE: PALE BROWN (5YR 5/2) TO GRAYISH RED (10R 4/2) FINE TO VERY FINE GRAINED; WELL TO VERY WELL CEMENTED; ARGILLACEOUS; SOME LAMINATED BEDDING APPARENT BUT GENERALLY APPEARS MASSIVE; MOST BREAKS ARE FRESH AND HORIZONTAL.	10-26-84 / 11-10-84 — 17 FT.
								17.0				
NX CORE	10.0	9.3	93%								19.8 FT.: FRESH 55°	
	RQD = 0.81							20.0			19.7-20.0 FT. [illegible] SHALE	
				DOUBLE PACKERS TEST INTERVAL 23.2-24.7 FT.						RUN 1 17-27		
								25.0			24.4-24.7 FT.: ARGILLACEOUS SHALE WITH FEW FINE MEDIUM SAND SIZES.	
				13.7	15	19					26.5 FT.: FRESH 55°	

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-4B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 3 of 4 | HOLE NO.: MISS-4B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	10.0	5.5	95% ROD = 0.78	DOUBLE PACKERS TEST INTERVAL 33.2 - 44.7 FT.						RUN 2 27-37	11.5-47.0 FT.- SANDSTONE: PALE BROWN (5YR 5/2) TO GRAYISH RED (10R 4/2) FINE TO VERY FINE GRAINED; WELL TO VERY WELL CEMENTED; ARGILLACEOUS; SOME LAMINATED BEDDING APPARENT BUT GENERALLY APPEARS MASSIVE; MOST BREAKS ARE FRESH AND HORIZONTAL. 34 FT.: FRESH 45° 34.5 FT.: FRESH 30°	
								36.0				
							18.3	37.0			37-37.2 FT.: SHALE WITH GREENISH GRAY (5GY 6/1) MOTTLING	
				8.0	15	12						
NX CORE	10.0	9.7	97% ROD = 0.9					40.0		RUN 3 37-47	41.1-41.8 FT.: BROKEN SHALE	
								45.0				

SS-SPLIT SPOON; ST-SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-4B

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-136	4 OF 4	MISS-4B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE / LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS / N' / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
												11-10-84
							8.3	47.0			BOTTOM OF HOLE AT 47.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	02-21-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE MAYWOOD INTERIM STORAGE SITE

HOLE NO. MISS-4B

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 2	MISS-5A

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9234.38 E 9602.57	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11/1/84	11/1/84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN.	15.0	N/A	15 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 58.66 FT. STL 58.89 FT.	57.4 FT.	10.61 FT./46.79 FT.	N/A

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2-IN./15.86 FT. STL 4-IN./5.0 FT.	R.H.NELSON

SAMPLE TYPE AND DIAMETER: FLIGHT AUGER, 7-INCH OD

SAMPLER ADVANCE LENGTH CORE BIN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERTINENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I	TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						57.4				0.0-6.5 FT.-SAND (SM): MODERATE BROWN (5YR 4/4) WITH THINLY INTERBEDDED BROWN, TAN AND LIGHT GREY; FINE TO VERY FINE GRAINED WITH SOME SILT AND TRACE OF MEDIUM GRAINS; BLACK (N1) WITH MORE SILTY INTERBEDDING BELOW 5 FT; TRACE OF ORGANICS.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE. -HOLE DRILLED WITH 7 IN OD AUGER. -GAMMA LOGGED TO 15 FT.
							5.0				
						50.9	6.5			6.5-8.0 FT.-CINDERS: BLACK (N1)	
						49.4	8.0			8.0-10.0 FT.-SAND (SM-SC): BLACK (N1) FINE GRAINED WITH SOME CLAYEY SILT; LOW PLASTICITY DAMP.	
							10.0				

*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND SAMPLES FROM MISS-5B.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; F-FITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO. MISS-5A

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	2 OF 2	MISS-5A

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
											10.0-15.0 FT.-SAND (SM) SILT (ML):	
											THINLY INTERBEDDED BLACK (N1) AND DARK YELLOWISH BROWN (10YR 4/2) SILTY SAND AND LIGHT GRAY (N7) SANDY SILT; LOW TO NO PLASTICITY.	11-1-84
							42.4	15.0			BOTTOM OF HOLE AT 15.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	2-23-85 COMPLETED WELL DEVELOPMENT.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-FITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-5A

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-136	1 OF 1	MISS-SA-1

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9235.52 E 9604.72	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11/1/84	11/1/84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN.	8.0	N/A	8 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 59.57 FT. STL 59.71 FT.	57.4 FT.	DRY	N/A

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2-IN./10.17 FT STL 4-IN./5.0 FT	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS 'N' / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD							57.4				0.0-2.0 FT.-SAND (SW-SC): BLACK (N1), FINE GRAINED W/CLAYEY SILT MATRIX; MOIST.	SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
								2.0			2.0-8.0 FT.-SAND (SW-SC): DARK YELLOWISH BROWN (10YR 4/2) AND LIGHT GRAY; FINE GRAINED W/CLAYEY SILT MATRIX.	-GAMMA LOGGED TO 8 FT. ENTIRE DEPTH OF WELL WAS IN RADIO-ACTIVELY CONTAMINATED MATERIAL.
								5.0				* DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHOD OF CUTTINGS AND MISS-SB SAMPLES.
							49.4	8.0				11-1-84
											BOTTOM OF HOLE AT 8.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	11-12-84 FALLING HEAD PERMEABILITY TEST RUN.
								10.0				2-22-85 NO WELL DEVELOPMENT: DRY HOLE-WELL FLUSHED WITH WATER TO ENSURE OPERATION.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO. MISS-SA-1

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-5B
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9243.48 E 9596.00	ANGLE FROM HORIZ.: 90°	BEARING: N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11/2/84	11/10/84	EMPIRE SOILS INVEST.CO.	MOBILE B61	8/3 IN.	18.0	37.0	55 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
29.5/98	3	4	6-IN STL 59.83 FT. 4-IN STL 59.70 FT.	57.4 FT.	13.67 FT./43.73 FT.	18.0 FT./39.4 FT.

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 LB/30-IN.	STL 4-IN./25.0 FT. STL 6-IN./5.0 FT.	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT.)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	2.0	0.7	1 -2 -4 -7 / 6				57.4			1	0.0-8.0 FT-SAND (SM): MODERATE BROWN (5YR 4/4) WITH THINLY INTERBEDDED BROWN, TAN AND LIGHT GREY; FINE TO VERY FINE GRAINED WITH SOME SILT AND TRACE OF MEDIUM GRAINS; BLACK (N1) WITH MORE SILTY INTERBEDDING BELOW 6 FT; TRACE OF ORGANICS.	SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE. SAMPLE BLOWS AND SOIL SAMPLES TAKEN IN PILOT HOLE 12 FT. FROM THIS BORING. PILOT WAS DRILLED WITH 3¾ IN ID 7 IN. OD AUGER TO 15 FT. WHEN GAMMA LOGGED TO 14.5 FT. AND BACKFILLED WITH GROUT. THIS BORING DRILLED WITH 6 IN. ROCK BIT AND BENTONITE MUD TO 25 FT. THEN CORED WITH CLEAR WATER TO 55 FT. AFTER 4 IN. STEEL CASING SET TO 25 FT. AND GROUTED. * DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.
AUGER												
SS	2.0	1.4	4 -4 -7 -8 / 11					5.0		2		
AUGER								8.0			8.0-10.0 FT.-[illegible] (SM-SC): BLACK (N1) FINE GRAINED WITH SOME CLAYEY SILT; LOW PLASTICITY DAMP.	
SS	2.0	1.4	11-30-36-50 / 66					10.0		3	10.0-18.0 FT.-SAND (SM) SILT (ML): THINLY INTERBEDDED BLACK (N1) AND DARK YELLOWISH BROWN (10YR 4/2) SILTY SAND AND LIGHT GRAY (N7) SANDY SILT; LOW TO NO PLASTICITY.	
AUGER												

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-5B

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-5B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SS	0.8	0.8	45-50 / 4-INCH					15.0		4	10.0-18.0 FT.-SAND (SM) SILT (ML): THINLY INTERBEDDED BLACK (N1) AND DARK YELLOWISH BROWN (10YR 4/2) SILTY SAND AND LIGHT GRAY (N7) SANDY SILT; LOW TO NO PLASTICITY.	
ROCK BIT							39.4	18.0			18.0-55.0 FT.-SANDSTONE: PALE BROWN (5YR 5/2) TO PALE GRAYISH RED (10R 5/2); FINE TO VERY FINE GRAINED; ARGILLACEOUS WITH A FEW SHALE LENSES; WELL TO VERY WELL CEMENTED EXCEPT WEATHERED AND BROKEN FROM 18-20.	11-2-84 — 22 FT. — 11-5-84 SET 4 IN. STEEL CASING TO 25 FT. AND GROUTED.
								25.0			25.0-33.5 FT.: CORE BROKEN ALONG EXTENSIVE VERTICAL TO NEAR VERTICAL JOINTING; ORANGE AND BLACK OXIDIZED STAINING ON FACES; OCCASIONAL CALCITE DEPOSITES.	11-6-84 — 25 FT. — 11-10-84
NX CORE	10.0	10.0	100% RQD=0.12							RUN 1 25-35		LOST ALL CIRCULATION AT 25 FT.; USED 1000 GALS WATER TO CORE FROM 25-55 FT.
				DOUBLE PACKERS TEST INTERVAL 26.8-40.3FT.				30.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-5B

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14801-138	3 OF 4	MISS-58

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				17.2	15	19		30.0			18.0-55.0 FT.-SANDSTONE: PALE BROWN (5YR 5/2) TO PALE GRAYISH RED (10R 5/2);FINE TO VERY FINE GRAINED; ARGILLACEOUS WITH A FEW SHALE LENSES; WELL TO VERY WELL CEMENTED EXCEPT WEATHERED AND BROKEN FROM 18-20.	
				DOUBLE PACKERS TEST INTERVAL 31.0-43.3 FT.							33.5-35.5 FT.: VERY FINE GRAINED; GRADATIONAL CONTACT WITH SHALE BELOW.	
				11.8	15	21		35.0			35.5~39 FT. SHALE: ARENACEOUS (VERY FINE GRAINED);LIGHT GRAY MOTTLING FROM 38-38.3 FT.	
NX CORE	10.0	9.5 RED=0.88	95%								39-43 FT.: CORE GENERALLY SOLID WITH FEW BREAKS.	
								40.0			39.5-40 FT.; 42.3-42.8 FT.; 54.4-54.5 FT. BROKEN SHALE LENSES.	
				DOUBLE PACKERS TEST INTERVAL 41.0-53.3 FT.							42.1 FT.: 42.3 FT.: } JOINT FACES	
									RUN 2 35-45		SLIGHTLY WEATHERED WITH BLACK OXIDE AND SOME CALCITE.	
				8.5	15	21		45.0				

SS-SPLIT SPOON; ST-SHELBY TUBE; O-OSTERBERG; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO. MISS-58

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	4 OF 4	MISS-5B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	50.0	9.6	96% REC=.94					50.0		RUN 3 40-55	18.0-55.0 FT.-SANDSTONE: PALE BROWN (5YR 5/2) TO PALE GRAYISH RED (10R 5/2);FINE TO VERY FINE GRAINED; ARGILLACEOUS WITH A FEW SHALE LENSES; WELL TO VERY WELL CEMENTED EXCEPT WEATHERED AND BROKEN FROM 18-20.	11-10-84
							2.4	55.0			BOTTOM OF HOLE AT 55.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	11-22-86 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.
								60.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWARD INTERIM STORAGE SITE

HOLE NO. MISS-5B

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 2	HOLE NO.: MISS-6A		
SITE: MAYBARD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9570.62 E 9576.40	ANGLE FROM HORIZ.: 90°	BEARING: N/A		
BEGUN: 10/30/84	COMPLETED: 10-31-84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: CME 550 ATV	HOLE SIZE: 7 IN.	OVERBURDEN (FT.): 16.0
ROCK (FT.): N/A	TOTAL DEPTH: 16 FT.				
CORE RECOVERY (FT./%): N/A	CORE BOXES: N/A	SAMPLES: N/A	EL. TOP OF CASING: PVC 58.22 FT. STL 58.37 FT.	GROUND EL.: 56.6 FT.	DEPTH/EL. GROUND WATER: 9.2 FT./47.4 FT.
DEPTH/EL. TOP OF ROCK: N/A					
SAMPLE HAMMER WEIGHT/FALL: N/A	CASING LEFT IN HOLE: DIA./LENGTH: PVC 2"/16.82 FT. STL 4"/5.0 FT.	LOGGED BY: R.H.NELSON			

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD							56.6				0.0-1.5 FT.-SAND (SM-SC): MODERATE REDDISH BROWN (10R 4/4) BECOMING VARICOLORED GRAY @ 0.5 FT. FINE GRAINED WITH SOME SILT AND CLAY.	SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
								1.5			1.5-5.0 FT.-SAND (SM): BLACK (N1);VERY FINE GRAINED WITH SOME SILT AND FINE SAND SIZES AND A FEW COARSE SAND SIZE CEMENTED PARTICLES; CONTAINS ORGANIC (CINDER/CHARCOAL) FRAGMENTS.	HOLE DRILLED WITH 7 IN.OD. AUGER. GAMMA LOGGED TO 13.5 FT.
							51.6	5.0			5.0-11.0 FT.-SAND (SM-SC): VARICOLORED MODERATE REDDISH BROWN (10R 4/4),LIGHT GRAY (N-7) AND BLACK (N1); FINE TO MEDIUM GRAINED WITH SILTY CLAY STRINGERS AND TRACE OF FINE GRAVEL.	
								10.0				
							45.6	11.0			11.0-16.0 FT.-SAND (SP-SM): BLACK (N-1);FINE GRAINED WITH TRACE OF SILT,BECOMING THINLY INTERBEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15;MOIST.	* DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND MISS 6B SAMPLES.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-6A

320073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	2 OF 2	MISS-6A

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE (LENGTH CORE RUN)	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
AUGER								15.0			11.0-16.0 FT.-SAND (SP-SM)# BLACK (N-1);FINE GRAINED WITH TRACE OF SILT,BECOMING THINLY INTERBEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15;MOIST.	10-30-84
							41.6	16.0			BOTTOM OF HOLE AT 16.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	10-31-84. INSTALLED MONITORING WELL 2-23-85 COMPLETED DEVELOPMENT OF WELL.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-6A

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 1450-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-68
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB FEET): N 9578.31 E 9570.36	ANGLE FROM HORIZ.: 90°	BEARING: N/A
BEGUN: 11/1/84	COMPLETED: 11/13/84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: MOBILE B61 CME 550 ATV
HOLE SIZE: 8 IN./3 IN.	OVERBURDEN (FT.): 18.0	ROCK (FT.): 35.0	TOTAL DEPTH: 53 FT.
CORE RECOVERY (FT./%): 26.1/87	CORE BOXES: 2	SAMPLES: 5**	EL. TOP OF CASING: 6' STL 58.03' 4' STL 57.95'
GROUND EL.: 56.6 FT.	DEPTH/EL. GROUND WATER: 10.05 FT./46.56 FT.	DEPTH/EL. TOP OF ROCK: 18.0 FT./38.6 FT.	
SAMPLE HAMMER WEIGHT/FALL: 140 LB/30 IN.	CASING LEFT IN HOLE: DIA./LENGTH STL 4-IN./24.4 FT. STL 6-IN./5.0 FT	LOGGED BY: R.H.NELSEN	

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MINUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							56.6				0.0-1.5 FT.-SAND (SW-SC): MODERATE REDDISH BROWN (10R 4/4) BECOMING VARICOLORED GRAY @ 0.5 FT. FINE GRAINED WITH SOME SILT AND CLAY.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
SS	2.0	2.0	6 -7 -11-10 / 18							1		
AUGER											1.5-5.0 FT.-SAND (SM): BLACK (N1); VERY FINE GRAINED WITH SOME SILT AND FINE SAND SIZES AND A FEW COARSE SAND SIZE CEMENTED PARTICLES; CONTAINS ORGANIC (CINDER/CHARCOAL) FRAGMENTS.	-INITIAL ATTEMPT TO DRILL 68 WAS ABANDONED @28 FT WHEN 8 IN ROLLER BIT BROKE OFF. BEDROCK IN THIS HOLE HAD BEEN ENCOUNTERED AT 23 FT AND ALL CIRCULATION OF DRILLING MUD (60 GPM) WAS LOST AT DEPTH OF 8 FT WHEN REAMING THE HOLE WITH THE 8 IN ROLLER BIT. INITIAL ATTEMPT BACK-FILLED WITH GROUT. REPLACEMENT HOLE DRILLED 20 FT FROM FIRST ATTEMPT.
								5.0			5.0-11.0 SAND (SW-SC): VARICOLORED MODERATE REDDISH BROWN (10R 4/4), LIGHT GRAY (N-7) AND BLACK (N1); FINE TO MEDIUM GRAINED WITH SILTY CLAY STRINGERS AND TRACE OF FINE GRAVEL.	
SS	2.0	0.5	1 -1 -2 -3 / 3							2		
AUGER								10.0				
SS	2.0	1.1	6 -8 -11-13 / 19				45.6	11.0		3	11.0-16.0 SAND (SP-SM): BLACK (N-1); FINE GRAINED WITH TRACE OF SILT, BECOMING THINLY INTERBEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15; MOIST; PIECES OF WOOD, TAR PAPER AND SHINGLES.	
AUGER												

*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-68

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-6B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS 'N' / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								15.0			11.0-18.0 SAND (SP-SM): BLACK (N-1); FINE GRAINED WITH TRACE OF SILT, BECOMING THINLY INTERBEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15; MOIST; RANDOM PIECES OF WOOD, TAR PAPER AND SHINGLES THROUGHOUT.	**INITIAL ATTEMPT TO DRILL 6B TOOK A 5TH SAMPLE FROM 20-22 FT WITH FOLLOWING BLOWS AND RECOVERY: 26-30-31-42 / 6" R=1.5/2.0 MATERIAL RECOVERED WAS A REDDISH BROWN FINE SAND (IIE) WEATHERED BEDROCK.
SS	1.2	1.1	16-35-50 / 2-IN.							4		
ROCK BIT							38.6	18.0			18.0-53.0 FT.-SANDSTONE: GRAYISH RED (10R 4/2?) TO PALE REDDISH BROWN (10R 5/4) FINE TO VERY FINE GRAINED WITH SOME ARGILLACEOUS ZONES; WELL TO VERY WELL CEMENTED, THINLY BEDDED TO LAMINATED STRUCTURE.	11-1-84 / 11-2-84 22.5 FT.
								20.0				
											23.0-38.0 FT.: VERY HARD, FINE GRAINED LAMINATED BEDDING DIPS ~20°; MOST BREAKS ARE HORIZONTAL AND APPEAR CAUSED BY DRILLING.	11-2-84 / 11-3-84 23.0 FT.
NX CORE	4.0	3.0	75% REC=0.1					28.0		RUN 1 23-27		-ONE BOX CORED FROM 23-32 FT. WITH DIFFICULTY REAMED HOLE WITH 2⅞ IN ROCK BIT TO 32 FT.
											26.00 FT.: 20° WITH SLIGHT CALCITE COATING	
										RUN 2 27-32		
								38.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-6B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 1450-138 | SHEET NO.: 3 OF 4 | HOLE NO.: MISS-6B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE / LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I	TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	5.0	3.7	74% RQD=0.32					30.0		RUN 1 27-32		11-9-84 / 11-13-84 32 FT.
NX CORE	5.5	5.2	95% RQD=0.38					35.0		RUN 3 32-37.6	33.5 FT.: 25° TRACE CALCITE AND DARK OXIDIZED FACE. ~ 35FT: 80° WITH FEW FINE TO MEDIUM SAND SIZE GYPSUM XLS.	MOBILE 86' CORED FROM 32-53 FT; 28-32 FT WAS OVER-CORED BY MOBILE. THIS OVER-CORE WAS NOT KEPT IN CORE BOX.
NX CORE	10.0	9.0	90% RQD=0.78					40.0		RUN 4 37.6-47.6	18.0-53.0 FT.-SANDSTONE: GRAYISH RED (10R 4/29) TO PALE REDDISH BROWN (10R 5/4) FINE TO VERY FINE GRAINED WITH SOME ARGILLACEOUS ZONES; WELL TO VERY WELL CEMENTED, THINLY BEDDED TO LAMINATED STRUCTURE. ~42.0 FT: 85°0 THIN CALCITE STRINGER 43.0 FT.: 50° FRESH 44.0-48.0 FT: MORE ARGILLACEOUS. 45.5 FT.: 45° TRACE BLACK OXIDATION	
								45.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-6B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 4 OF 4 | HOLE NO.: MISS-6B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE / LENGTH CORE RUN	SAMPLE RECOVERY / CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE	5.5	5.2	85%					50.0			48.0-53.0 FT.: SIMILAR TO 23-35; VERY HARD; VERY WELL CEMENTED. 18.0-53.0 FT.-SANDSTONE: GRAYISH RED (10R 4/2) TO PALE REDDISH BROWN (10R 5/4) FINE TO VERY FINE GRAINED WITH SOME ARGILLACEOUS ZONES; WELL TO VERY WELL CEMENTED, THINLY BEDDED TO LAMINATED STRUCTURE.	11-13-84
							3.6	53.0			BOTTOM OF HOLE AT 53.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	11-15-84: WASHED HOLE TO BOTTOM 3 TIMES PRIOR TO ATTEMPTING DOUBLE PACKER TESTS, EACH TIME HOLE CAVED BACK UP TO ~40 FT. DID NOT ATTEMPT PRESSURE TEST FOR FEAR OF LOOSING PACKERS. BOTTOM SEEMED SOFT LIKE SAND. 02-23-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-6B

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 1	MISS-7A

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9477.82 E 9431.42	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11/5/84	11/5/84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN.	10.5	1.5	11.5 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	N/A	PVC 55.58 FT. STL 55.69 FT.	53.1 FT.	5.72 FT./47.38 FT.	10.5 FT./42.6 FT.

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
N/A	PVC 2"/12.08 FT. STL 6"/9.0 FT.	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS 'N' / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION •	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER, 7-INCH OD							53.1				0.0-10.5 FT.-SAND (SM-SC): MODERATE BROWN (5YR 3/4) TO DARK REDDISH BROWN (10R 3/4); FINE TO MEDIUM GRAINED WITH SOME SILT AND CLAY; SLIGHT PLASTICITY; OCCASIONAL SANDSTONE CABLE, WHITE SILTY AND BLACK CINDER FRAGMENTS.	SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE. HOLE DRILLED WITH 7 IN.OD. AUGER. GAMMA LOGGED TO 7.5 FT.
								5.0				GROUT PLUG PLACED IN BOTTOM OF HOLE FROM 9.6-11.5 FT.
								10.0				• DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS OF CUTTINGS AND MISS 6B SAMPLES.
							42.6	10.5			10.5-11.5 FT.-SANDSTONE: THINLY INTERBEDDED FINE TO VERY FINE GRAINED MODERATE REDDISH BROWN (10R 4/4) ARGILLACEOUS SANDSTONE AND GRAYISH RED (10R 4/2) ARENACEOUS SHALE; SOME LAMINATED BEDDING APPARENT (0-10°DIP); GENERALLY WELL CEMENTED.	11-5-84
							41.6	11.5			BOTTOM OF HOLE AT 11.5 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTR. DETAILS	11-10-84 RAN CONSTANT HEAD PERMEABILTY TEST FOR INTERVAL FROM 2.5-9.6 FT. 2-21-85 COMPLETED DEVELOPMENT OF WELL.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO. MISS-7A

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP	JOB NO.: 14501-138	SHEET NO.: 1 OF 4	HOLE NO.: MISS-7B
SITE: MAYWOOD INTERIM STORAGE SITE	COORDINATES (JOB-FEET): N 9471.41 E 9430.72	ANGLE FROM HORIZ.: 90°	BEARING: N/A
BEGUN: 11/6/84	COMPLETED: 11/9/84	DRILLER: EMPIRE SOILS INVEST.CO.	DRILL MAKE AND MODEL: MOBILE B61
HOLE SIZE: 8 IN/3 IN.	OVERBURDEN (FT.): 13.0	ROCK (FT.): 36.0	TOTAL DEPTH: 49 FT.
CORE RECOVERY (FT./%): 27.1/90	CORE BOXES: 2	SAMPLES: 3	EL. TOP OF CASING: 4" STL 55.58; 6" STL 55.83
GROUND EL.: 53.6 FT.	DEPTH/EL. GROUND WATER: 6.22 FT./47.38 FT.	DEPTH/EL. TOP OF ROCK: 13.0 FT./40.6 FT.	
SAMPLE HAMMER WEIGHT/FALL: 140 LB/30 IN.	CASING LEFT IN HOLE: DIA./LENGTH: STL 4-IN./20.98 FT.; STL 6-IN./5.0 FT.	LOGGED BY: R.H. NELSON	

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION (FT.)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							53.6				0.0-13.0 FT.-SAND (SM-SC): MODERATE BROWN (5YR 3/4) TO DARK REDDISH BROWN (10R 3/4); FINE TO MEDIUM GRAINED WITH SOME SILT AND CLAY; SLIGHT PLASTICITY; OCCASIONAL SANDSTONE COBBLE, WHITE SILTY AND BLACK CINDER FRAGMENTS.	-SITE CHECKED FOR RADIOACTIVE CONTAMINATION BY EBERLINE.
SS	1.8	1.1	4 -8 -16-30 / 24 / 4"							1		
AUGER												-PILOT HOLE FOR TW AUGERED AND SAMPLED TO 14.5 FT.~7 FT FROM THIS WELL; TW PILOT HOLE GAMMA LOGGED TO 14 FT THEN BACKFILLED WITH GROUT.
								8.0				
SS	2.0	1.8	3 -12-12-5 / 24							2		THIS HOLE DRILLED WITH 8 IN ROLLER BIT AND BENTONITE MUD TO 19 FT. THEN CORED WITH CLEAR WATER FROM 19-49 FT.
AUGER												
								10.0				
SS	2.0	0.5	2 -3 -11-12 / 14							3		
AUGER												
							40.6	13.0			13.0-14.5 FT: WEATHERED SANDSTONE.	

*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-7B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 4 | HOLE NO.: MISS-7B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS 'N' / PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES
ROCK BIT						
NX CORE	7.0	6.9	99% RQD=0.65			
				DOUBLE PACKERS TEST INTERVAL 24.8-36.1 FT.		
NX CORE	7.0	7.0	100% RQD=0.43	14.4	15	15

ELEVATION | DEPTH | GRAPHIC LOG | SAMPLE

15.0
20.0
25.0
30.0
RUN 1 19-28
RUN 2 26-33

DESCRIPTION AND CLASSIFICATION . .

13.0-45.0 FT.-SANDSTONE/SHALE:
THINLY INTERBEDDED FINE TO VERY FINE GRAINED MODERATE REDDISH BROWN (10R 4/4) ARGILLACEOUS SANDSTONE AND GRAYISH RED (10P 4/2) ARENACEOUS SHALE; SOME LAMINATED BEDDING APPARENT (0-10°DIP); GENERALLY WELL CEMENTED.

19.8 FT: —— 70°
TIGHT BOTH THIN CALCITE FILLING

23.0 FT: —— 18°
BLACK OXIDE COATING ON FACES.

24.8 FT. —— 18°
0.08 FT. CALCITE FILLED JOINT INTERSECTED BY TIGHT VERTICAL JOINT.

NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.

-SET 4 IN STEEL CASING TO 19 FT AND GROUTED.
11-6-84 / 11-8-84 19.0 FT

11-8-84 / 11-9-84 26.0 FT.

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-7B

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 3 OF 4 | HOLE NO.: MISS-7B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								30.0			31.2 FT.: 80° FRESH	
											33.1 FT.: 10° CALCITE FILLED	
											33.5-33.7 FT.: BROKEN, LAMINATED.	
											13.0-40.0 FT.- SANDSTONE/SHALE: THINLY INTERBEDDED FINE TO VERY FINE GRAINED MODERATE REDDISH BROWN (10R 4/4) ARGILLACEOUS SANDSTONE AND GRAYISH RED (10R 4/2) ARENACEOUS SHALE; SOME LAMINATED BEDDING APPARENT (0-10° DIP); GENERALLY WELL CEMENTED.	
NX CORE	10.0	9.1	91%					35.0			37.4 FT.: 30° FRESH	
		RQD=0.67										
				DOUBLE PACKERS TEST INTERVAL 34.0-46.1 FT.								
				7.0	15	20		40.0			41.3 FT.: 40° FRESH	
										RUN 3 33-43	41.9 FT.: 10° CALCITE	
											42.7-43.6 FT.: 80° CALCITE	
NX CORE	6.0	4.1	68%					45.0			44.7-44.8 FT.: BROKEN, LAMINATED.	
		RQD=0.51										

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE | HOLE NO.: MISS-7B

320?3

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	4 OF 4	MISS-7B

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
NX CORE		4					4.6	49.0		RUN 4 43-49	13.0-49.0 FT.-SANDSTONE/SHALE: THINLY INTERBEDDED FINE TO VERY FINE GRAINED MODERATE REDDISH BROWN (10R 4/4) ARGILLACEOUS SANDSTONE AND GRAYISH RED (10R 4/2) ARENACEOUS SHALE; SOME LAMINATED BEDDING APPARENT (0-10°DIP); GENERALLY WELL CEMENTED.	11-9-84
								50.0			BOTTOM OF HOLE AT 49.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	02-22-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.
								60.0				

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO: MISS-7B

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 of 1	MISS-BG

SITE	COORDINATES (JOB-FEET)	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9700 E 9700 NOMINAL	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11/7/84	11/7/84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN	1.8	5.2	7 FT.

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A	N/A	2	N/A	57.5 FT.±	DRY	1.8 FT.±/ 57.7 FT.±

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 LBS./30 IN.	N/A-GROUTED	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION *	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER 7-INCH OD	2.0	0.7	5 -7 -15-21 / 82				57.5±				0.0-1.8 FT.-SAND (SM-SC): DUSKY BROWN (5YR 2/2), FINE TO VERY FINE GRAINED WITH SOME CLAYEY SILT AND GRAVEL.	NOTE: BORING DRILLED TO DETERMINE OVERBURDEN THICKNESS. GAMMA LOGGED TO 5 FT. BACKFILLED WITH CEMENT/ BENTONITE GROUT. -COORDINATES AND ELEVATION NOT SURVEYED. VALUES INTERPOLATED FROM BECHTEL DWG. 28-DD-7-C-01. *DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS. 11-7-84
							57.7±	1.8		1	1.8-5.0 FT.-SANDSTONE: PALE BROWN (10YR 8/2) TO PALE GRAYISH RED (10R 5/2), WEATHERED, BROKEN WITH FINE SILTY SAND AND ROCK FRAGMENTS.	
	1.0	0.8	37.40				52.5±			2		
								5.0			5.0-7.0 FT.-SANDSTONE: ARGILLACEOUS, COMPETENT.	
							50.5±	7.0			BOTTOM OF HOLE AT 7.0 FEET.	

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=FITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-BG

32073

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
FUSRAP	14501-138	1 OF 2	MISS-9G

SITE	COORDINATES	ANGLE FROM HORIZ.	BEARING
MAYWOOD INTERIM STORAGE SITE	N 9910 E 9590 NOMINAL	90°	N/A

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH
11-7-84	11-7-84	EMPIRE SOILS INVEST.CO.	CME 550 ATV	7 IN.	11.5	4.5	16 FT.

CORE RECOVERY(FT./%)	CORE BOXES	SAMPLES	EL. TOP OF CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
N/A		4	N/A	59 FT. ±	MOIST @ 3 FT.	11.5 FT.*/ 47.50 FT.*

SAMPLE HAMMER WEIGHT/FALL	CASING LEFT IN HOLE: DIA./LENGTH	LOGGED BY:
140 LBS/30 IN.	N/A-GROUTED	R.H.NELSON

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION*	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER 7-INCH OD	2.0	0.5	1 -1 -2 -5 / 3				59 ±			1	0.0-6.5 FT.-SAND/SILT (SM-ML): VERY LIGHT GRAY (N8) TO WHITE (N-9) FINE SILTY SAND AND SANDY SILT WITH SCATTERED BLACK ORGANIC PIECES.	NOTE: BORING DRILLED TO DETERMINE OVERBURDEN THICKNESS. -GAMMA LOGGED TO 14.5 FT. BACKFILLED WITH CEMENT/ BENTONITE GROUT. -COORDINATES AND ELEVATION NOT SURVEYED. VALUES INTERPOLATED FROM BECHTEL DWG 38-D007-C-01.
	2.0	0.9	4 -2 -2 -2 / 4					5.0		2	GRADATIONAL CONTACT	
							52.5±	6.5			~ 6.5-11.5 FT.-SAND (SW): DARK GRAY (N2), FINE GRAINED WITH SOME (~20%) SILT.	*DESCRIPTION AND CLASSIFICATION BY VISUAL FIELD METHODS.
	2.0	1.1	7 -10-13-30 / 23					10.0		3		
							47.5±				11.5-15.5 FT.-SANDSTONE: DARK REDDISH BROWN (10R 3/4) WEATHERED, FINE GRAINED, ARGILLACEOUS, BECOMING MORE CEMENTED WITH DEPTH.	

SS=SPLIT SPOON; ST=SHELBY TUBE; D=DENNISON; P=PITCHER; O=OTHER

SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-9G

32073

GEOLOGIC DRILL LOG

PROJECT: FUSRAP | JOB NO.: 14501-138 | SHEET NO.: 2 OF 2 | HOLE NO.: MISS-90

SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERY	WATER PRESSURE TESTS: LOSS IN G.P.M.	WATER PRESSURE TESTS: PRESSURE P.S.I.	WATER PRESSURE TESTS: TIME IN MINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
FLIGHT AUGER								15.0				
	1.0	0.5	46-60/6"				43.0 ±	16.0		4	15.5-16.0 FT.-COMPETENT SANDSTONE	11-7-84
											BOTTOM OF HOLE AT 16.0 FT.	

SS-SPLIT SPOON; ST-SHELBY TUBE; D-DENNISON; P-PITCHER; O-OTHER

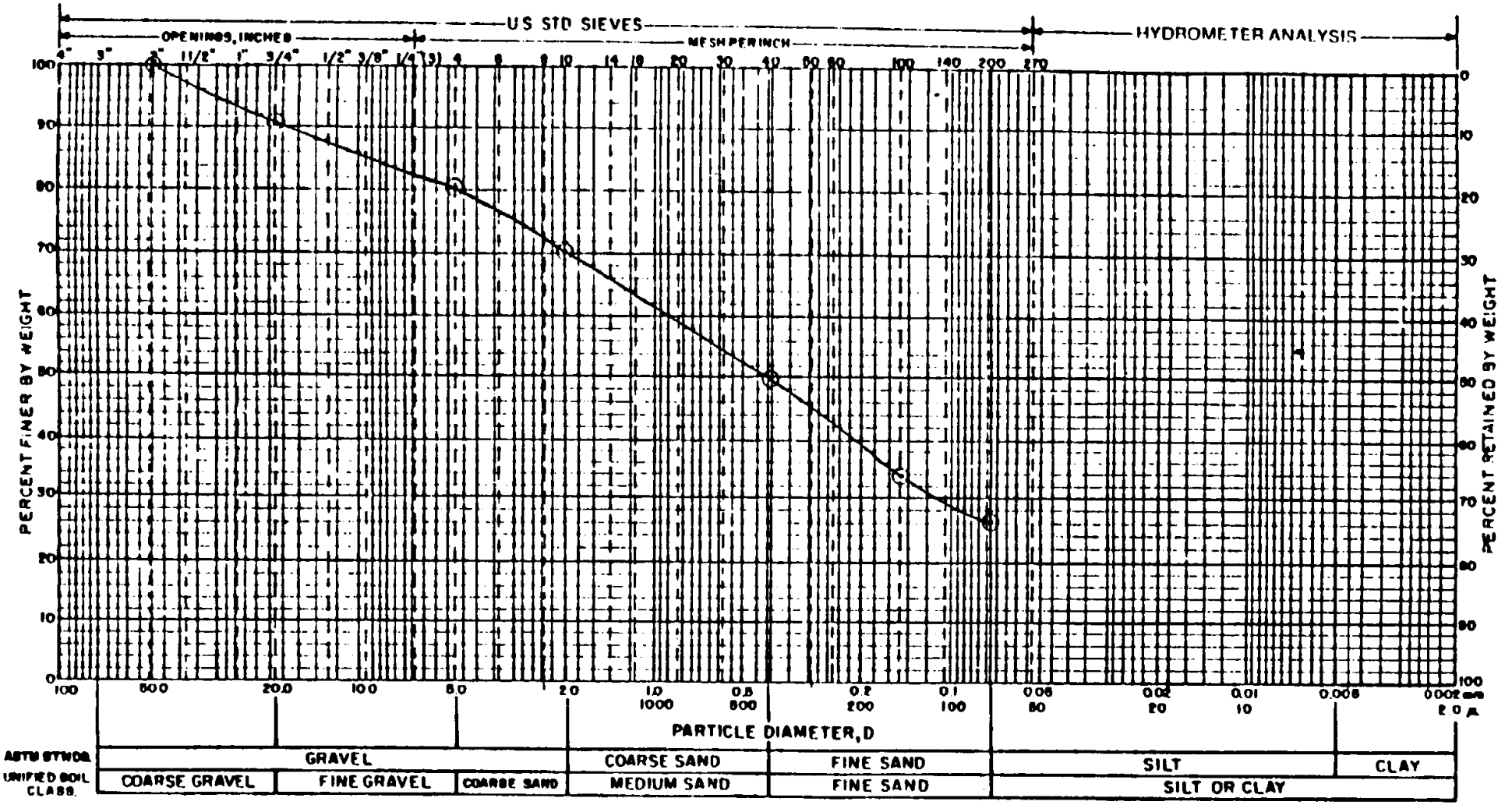
SITE: MAYWOOD INTERIM STORAGE SITE

HOLE NO.: MISS-90

APPENDIX C

SOIL CLASSIFICATION TESTS

GRAIN SIZE DISTRIBUTION CURVE



C-1

SAMPLE INFORMATION:

⊙ - Boring MISS-6B, Sample S-2; Depth 5-7'
FILL: Brown & Black fine to coarse SAND, Some Silt, little fine to coarse gravel & brick frags, trace cinders & organic material

NOTE: VISUAL SOIL CLASSIFICATIONS ON E.B.I. SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

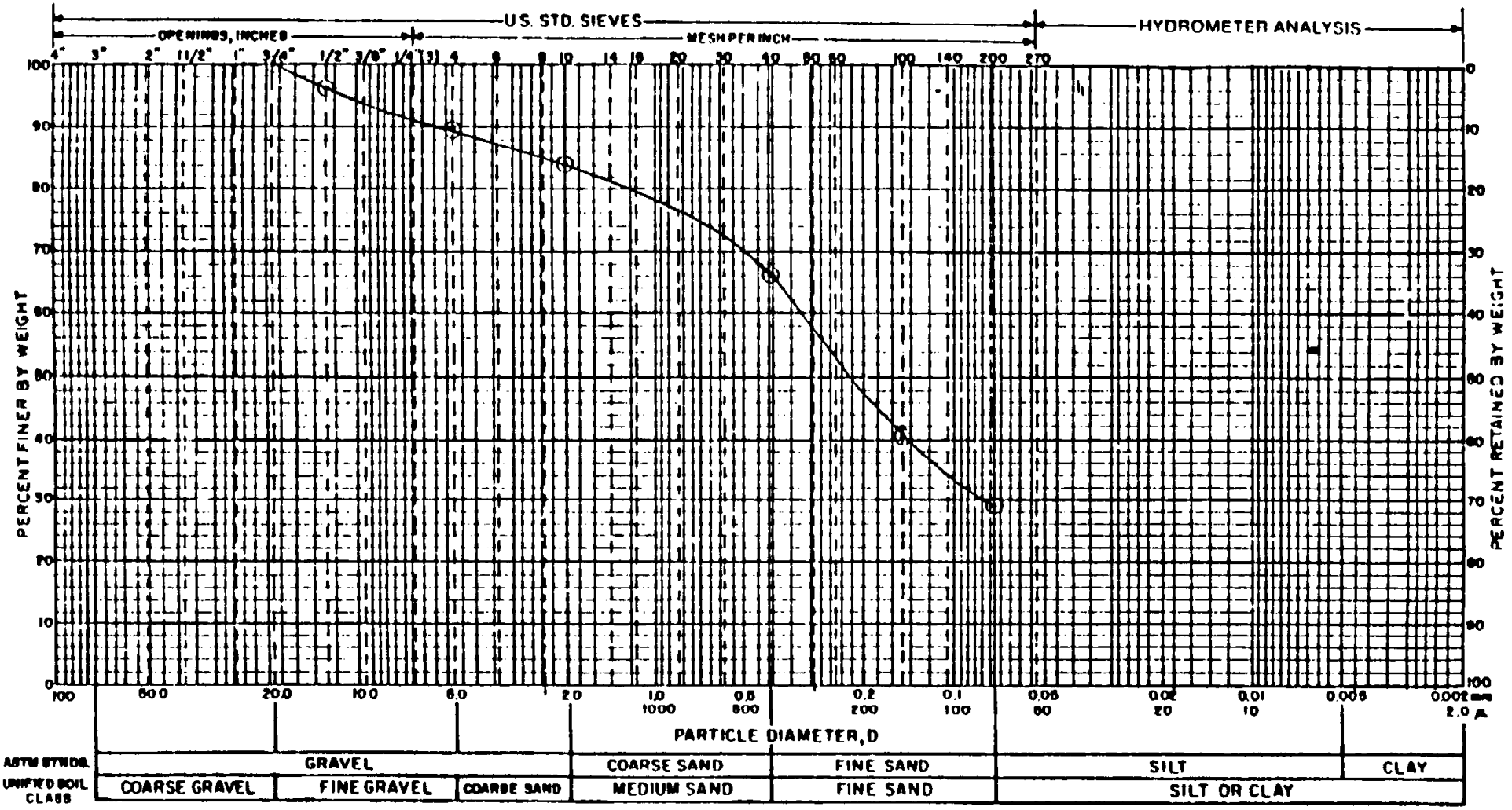
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY: RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

320.3

GRAIN SIZE . RIBUTION CURVE



C-2

SAMPLE INFORMATION:

⊙ - Boring MISS-7B, Sample S-2; Depth, 5-7'
Reddish-brown fine to coarse SAND, Some Silt, little fine gravel

NOTE: VISUAL SOIL CLASSIFICATIONS ON E & I SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

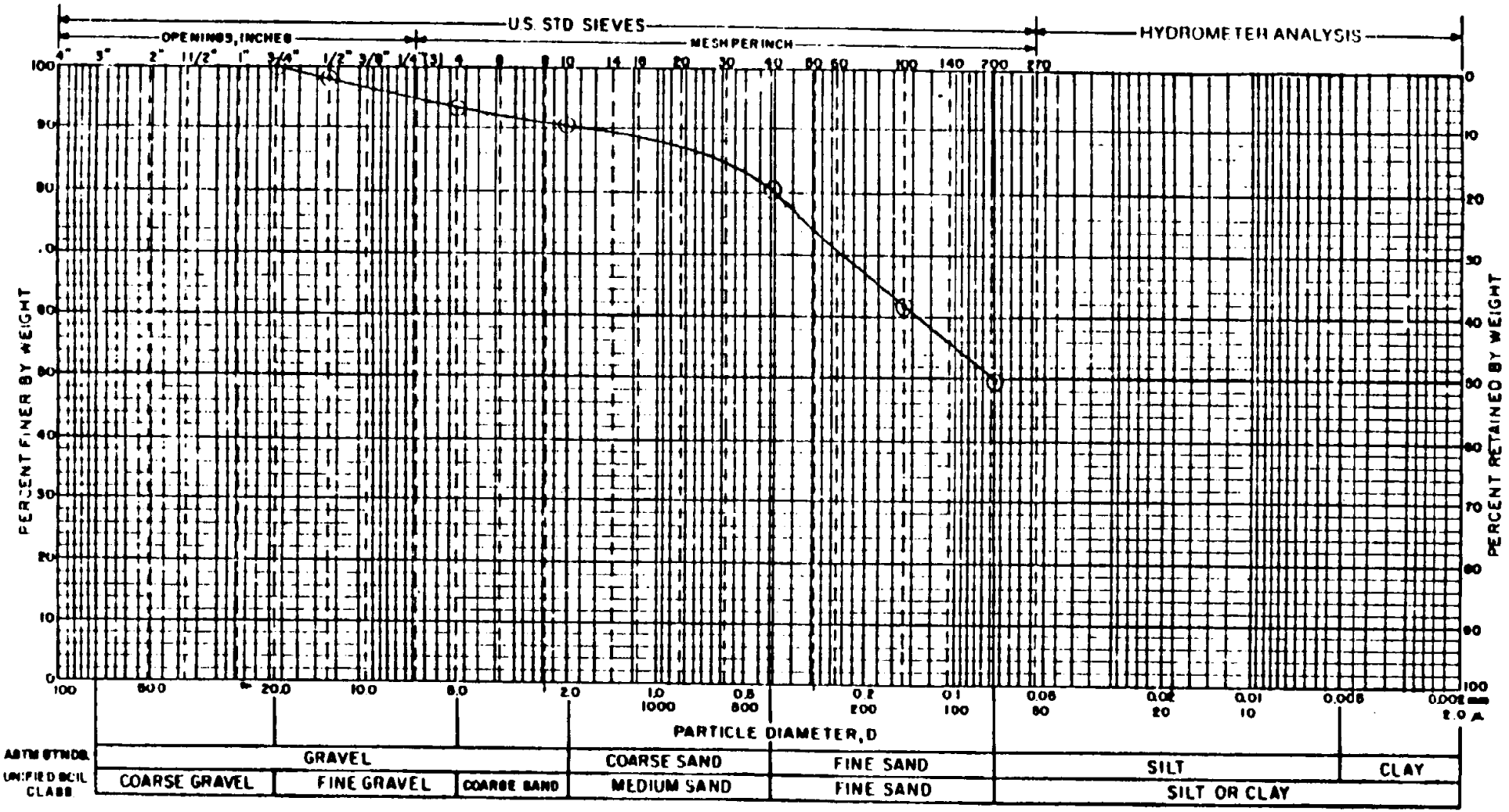
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

32073

GRAIN SIZE DISTRIBUTION CURVE



C-3

SAMPLE INFORMATION:

⊙-Boring MISS-4B, Samples S-2 & 3A combined; Depths 5-7' and 10-12' Respectively

FILL: Brown SILT & fine to coarse SAND, trace fine gravel, trace organic material & fibers

Results of Liquid & Plastic Limits Testing (ASTM D-4318-83) as follows:

Liquid Limit=24.0%
Plastic Limit=23.0%
Plasticity Index=1.0%

NOTE: VISUAL SOIL CLASSIFICATIONS ON E.S.I. SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

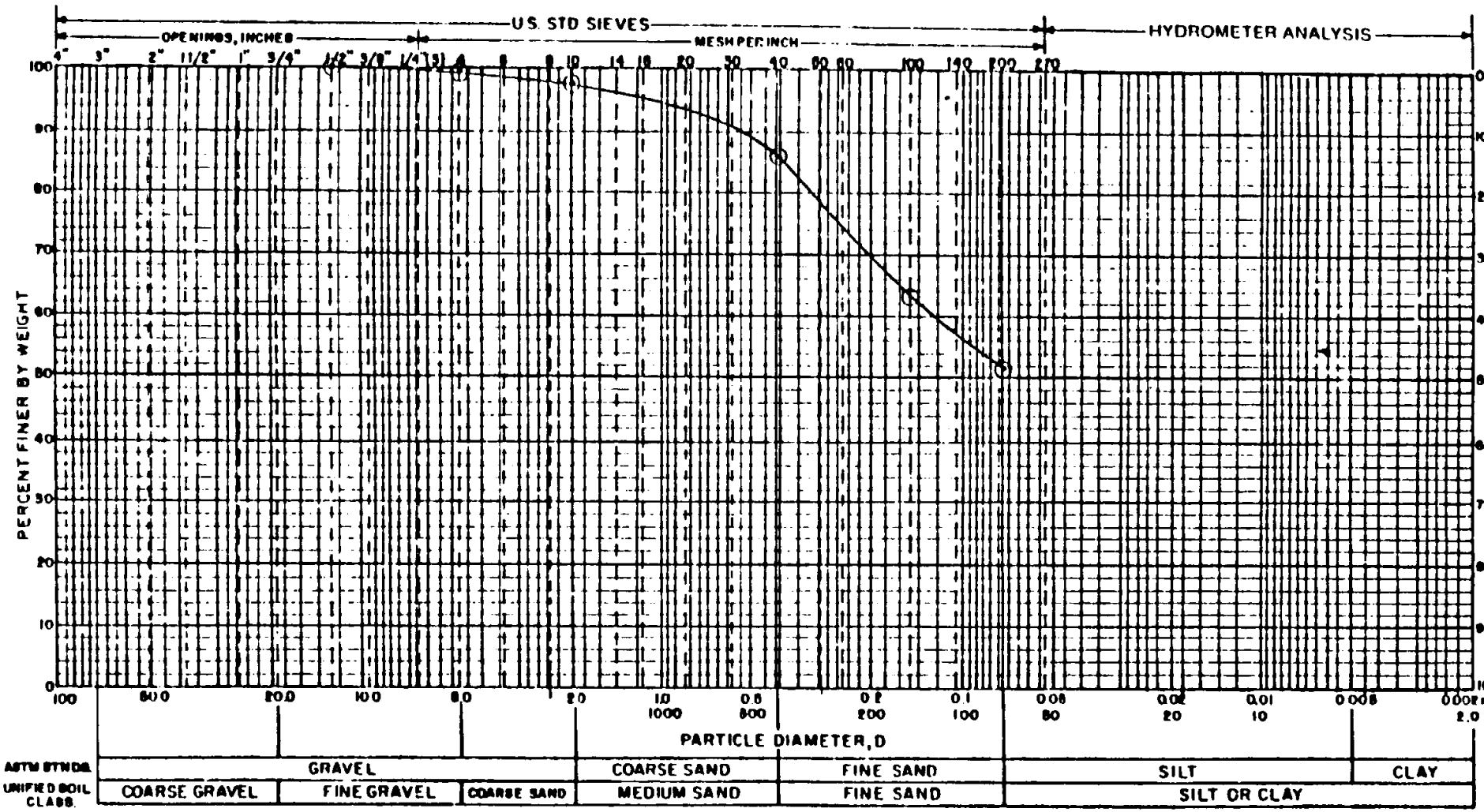
EMPIRE SOILS INVESTIGATIONS INC

MECHANICAL ANALYSIS

DR. BY: RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

32073

GRAIN SIZE RIBUTION CURVE



C-4

SAMPLE INFORMATION:

⊙ - Boring MISS-1B, Sample S-3; Depth, 10-12'
Brown SILT & fine SAND, trace fine gravel
Results of Liquid & Plastic Limits Testing (ASTM D-4318-83) as follows:
Liquid Limit-25.0%
Plastic Limit-24.0%
Plasticity Index-1.0%

NOTE: VISUAL SOIL CLASSIFICATIONS ON E.S.I. SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

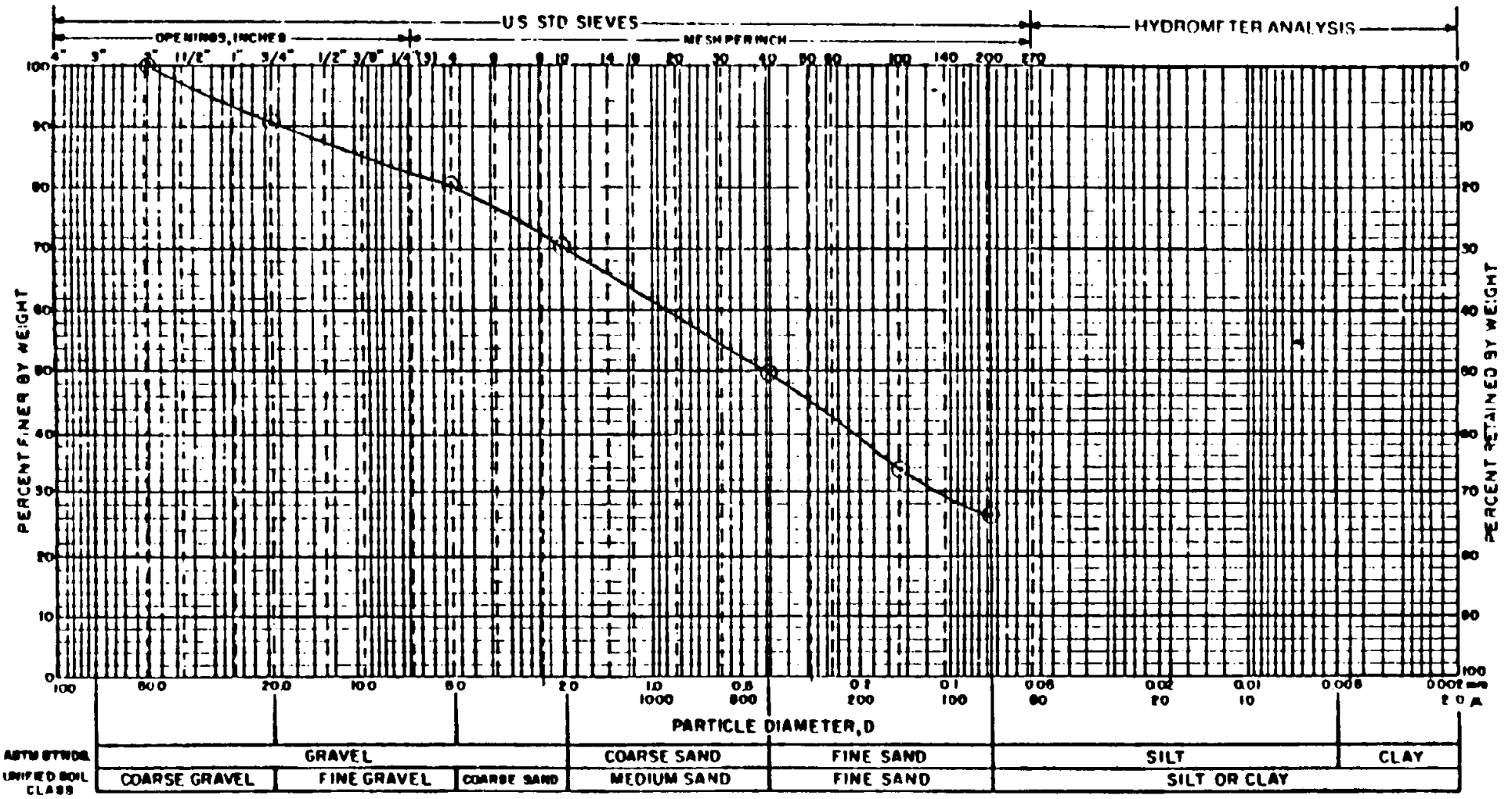
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY: RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

320-3

GRAIN SIZE DISTRIBUTION CURVE



C-1

SAMPLE INFORMATION:

⊙ - Boring MISS-6B, Sample S-2; Depth 5-7'
FILL: Brown & Black fine to coarse SAND, Some Silt, little fine to coarse gravel & brick frags, trace cinders & organic material

NOTE: VISUAL SOIL CLASSIFICATIONS ON E & I SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

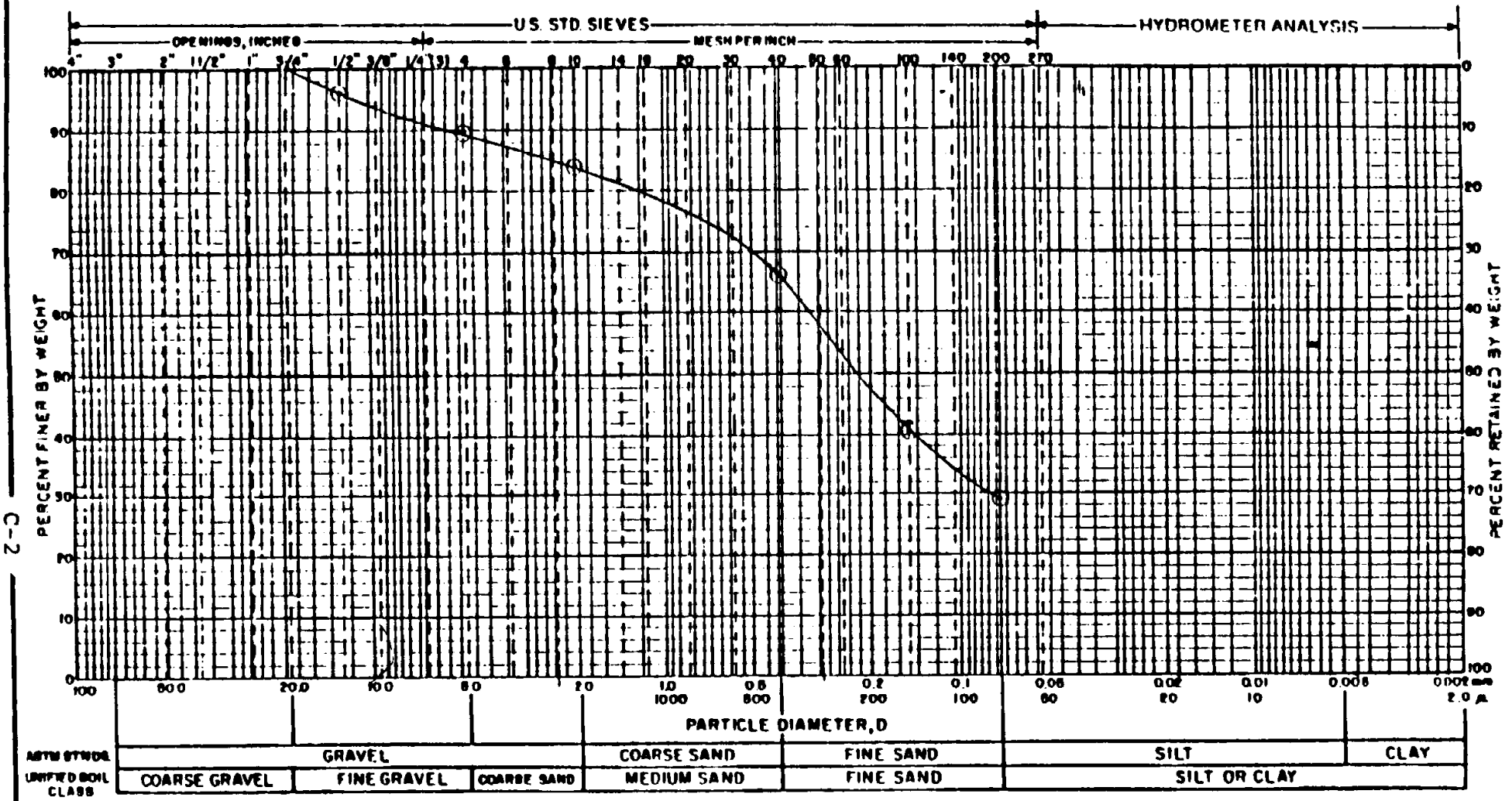
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY: RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

3203

GRAIN SIZE /RIBUTION CURVE



C-2

SAMPLE INFORMATION:

⊙ – Boring MISS-7B, Sample S-2; Depth, 5-7'
Reddish-brown fine to coarse SAND, Some Silt, little fine gravel

NOTE: VISUAL SOIL CLASSIFICATIONS ON E 0 1 SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

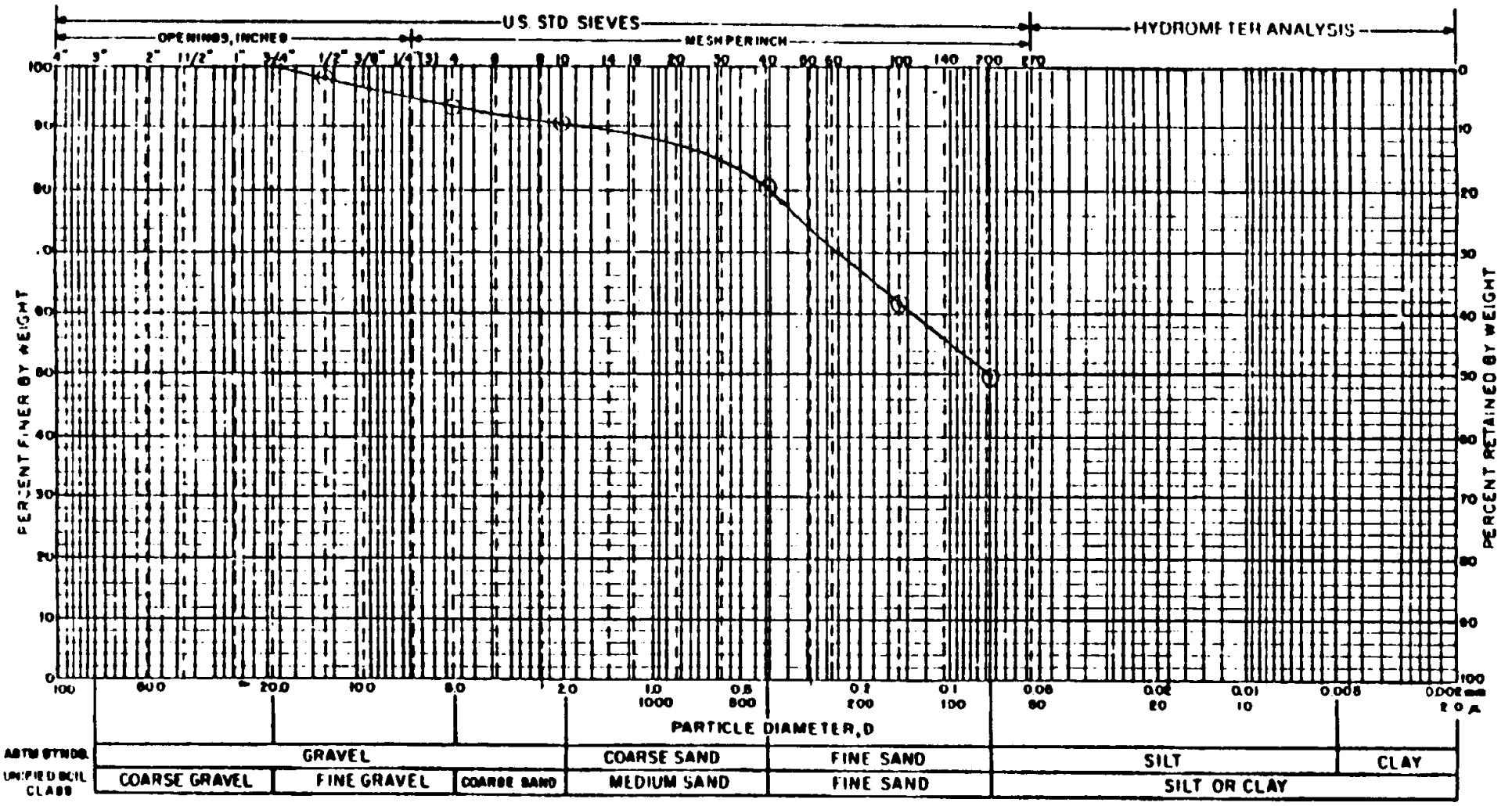
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

32073

GRAIN SIZE DISTRIBUTION CURVE



C-3

SAMPLE INFORMATION:

⊙-Boring MISS-48, Samples S-2 & 3A combined; Depths 5-7' and 10-12' Respectively

FILL: Brown SILT & fine to coarse SAND, trace fine gravel, trace organic material & fibers

Results of Liquid & Plastic Limits Testing (ASTM D-4318-83) as follows:

Liquid Limit=24.0%
Plastic Limit=23.0%
Plasticity Index=1.0%

NOTE: VISUAL SOIL CLASSIFICATIONS ON E & I SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

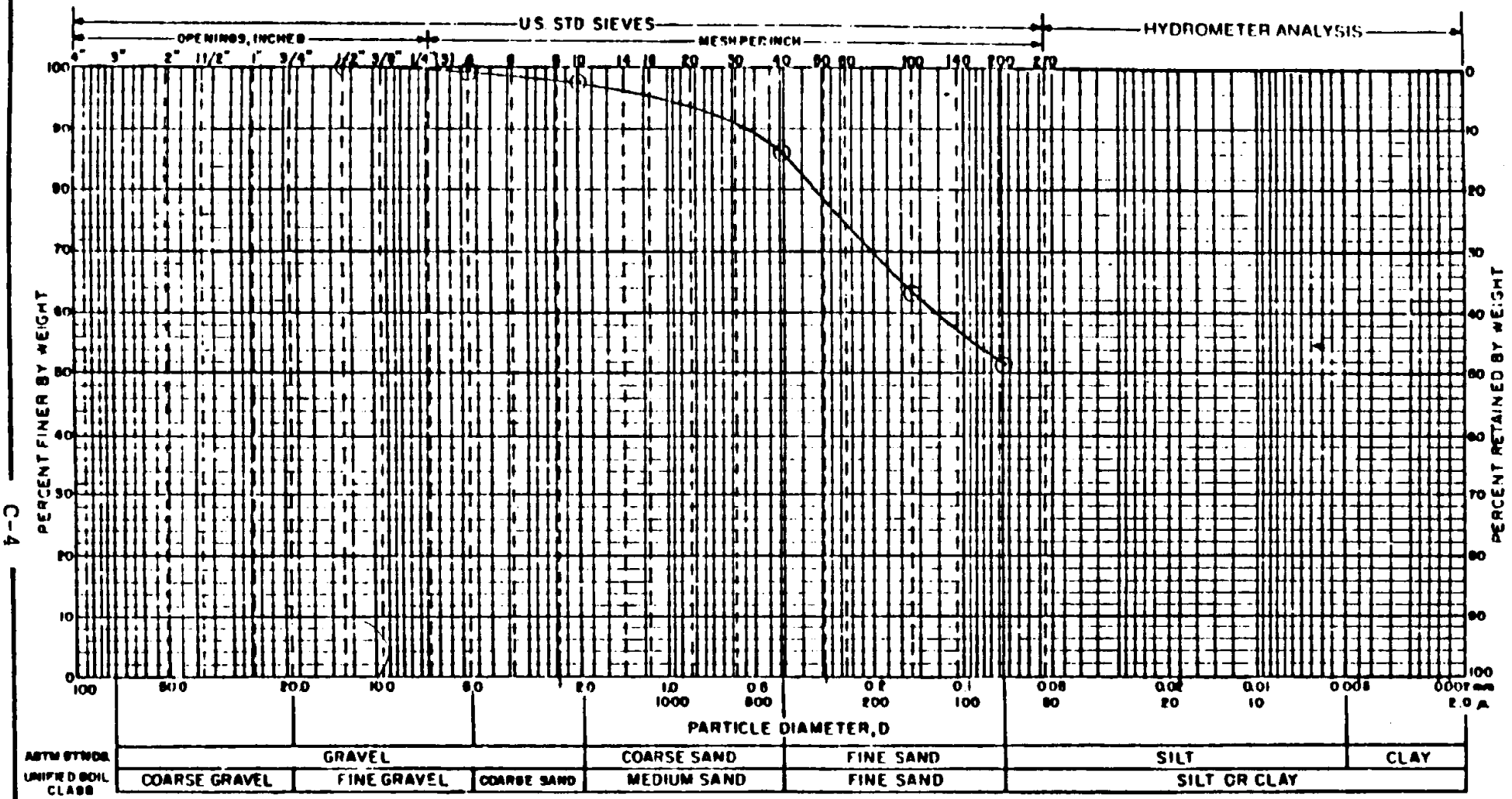
EMPIRE SOILS INVESTIGATIONS, INC.

MECHANICAL ANALYSIS

DR. BY: RWD	CH'D.	DATE: 1/16/85	PROJ. NO.

32073

GRAIN SIZ. TRIBUTION CURVE



C-4

SAMPLE INFORMATION:

⊙ - Boring MISS-1B, Sample S-3; Depth, 10-12'
Brown SILT & fine SAND, trace fine gravel
Results of Liquid & Plastic Limits Testing (ASTM D-4318-83) as follows:
Liquid Limit-25.0%
Plastic Limit-24.0%
Plasticity Index-1.0%

NOTE: VISUAL SOIL CLASSIFICATIONS ON E 0 I SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

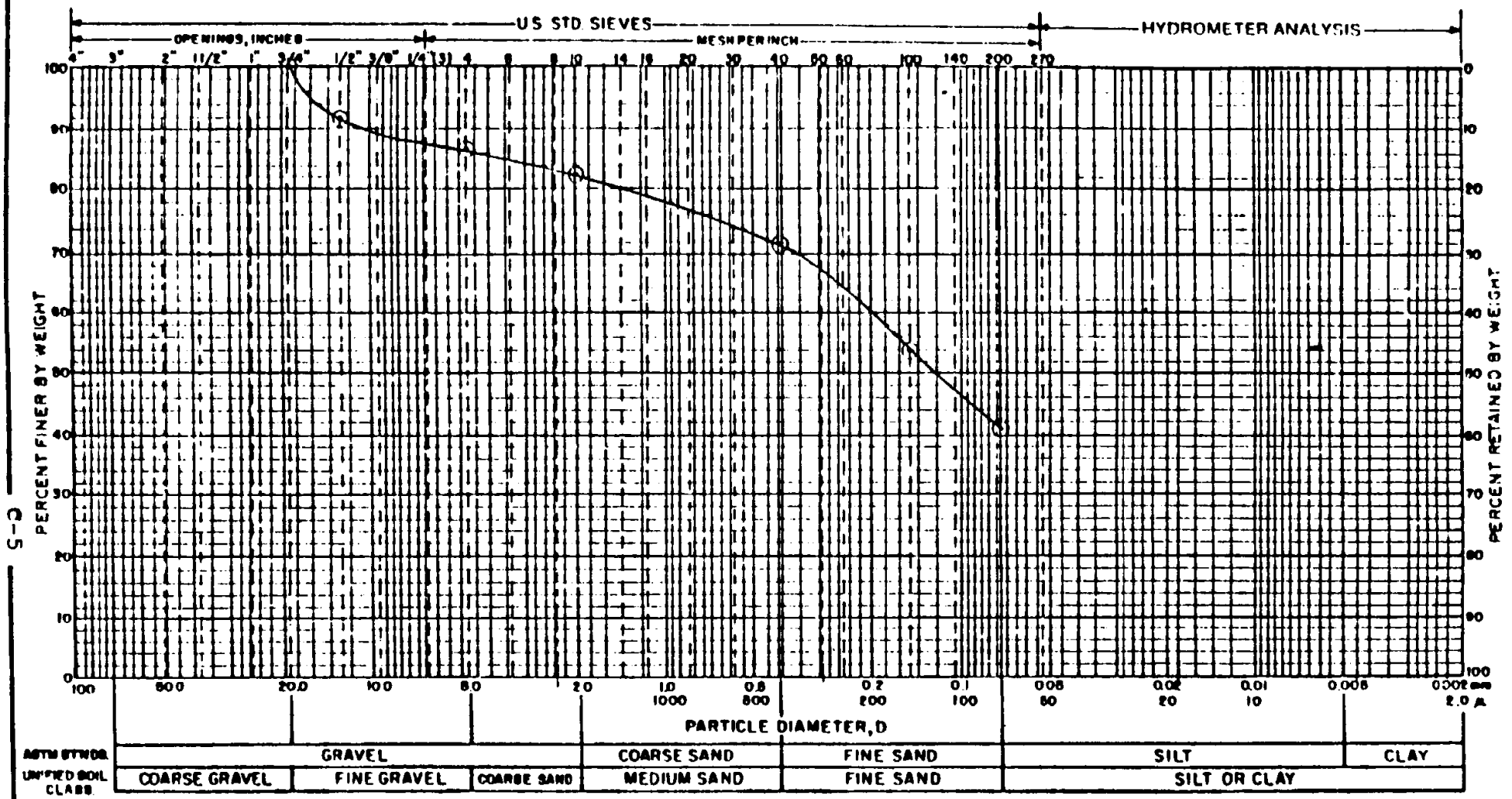
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY: RWD	CK'D.	DATE: 1/16/85	PROJ. NO.

32073

GRAIN SIZE DISTRIBUTION CURVE



C-5

SAMPLE INFORMATION:

⊙ - Boring MISS-1B, Sample S-4; Depth, 15-17'
Reddish-brown fine to coarse SAND & SILT, little fine gravel

NOTE: VISUAL SOIL CLASSIFICATIONS ON E.B.I. SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

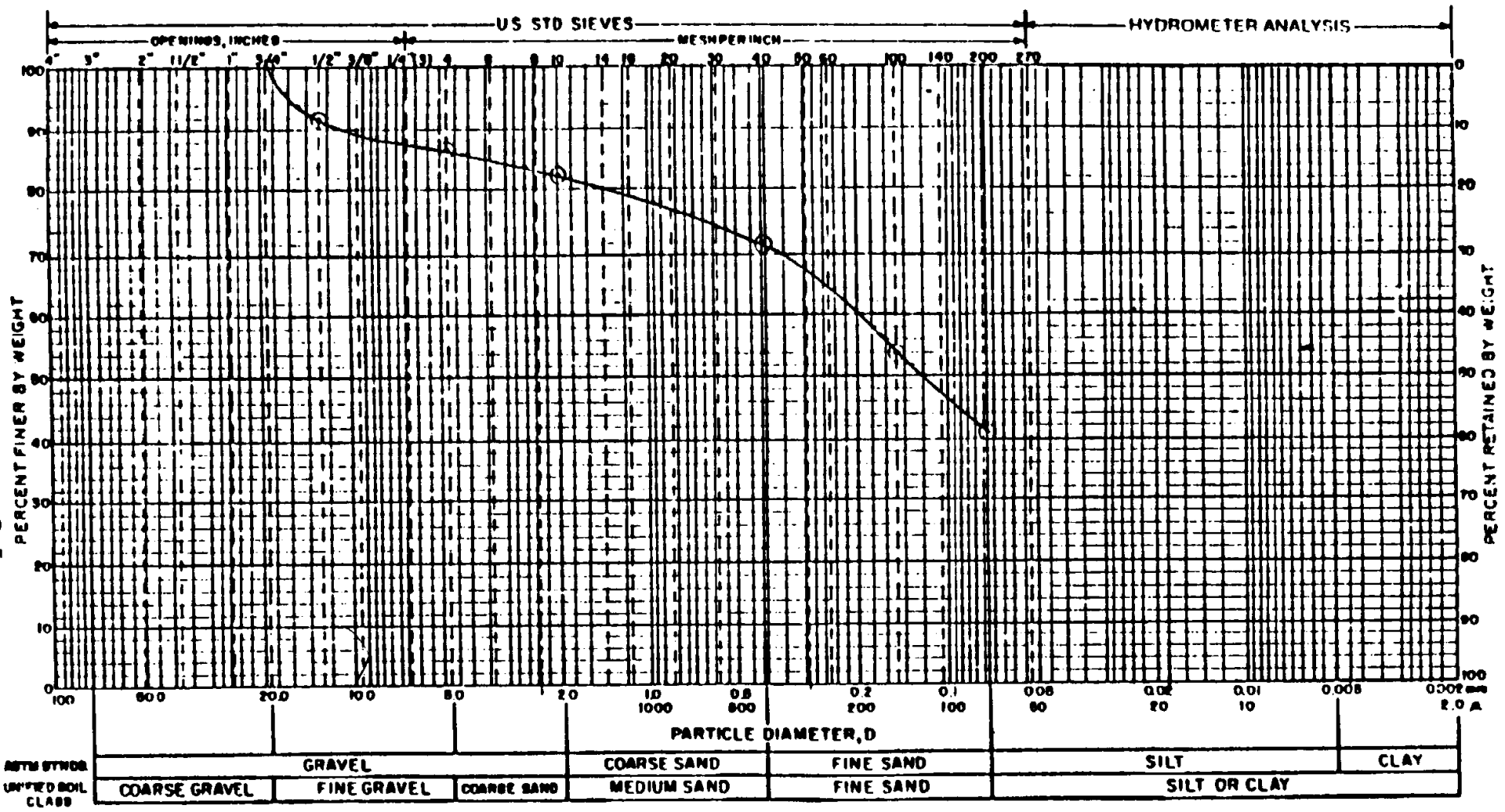
EMPIRE SOILS INVESTIGATIONS INC.

MECHANICAL ANALYSIS

DR. BY RWD	CK'D.	DATE 1/16/85	PROJ. NO.

3203

GRAIN SIZE DISTRIBUTION CURVE



C-5

SAMPLE INFORMATION:

⊙ - Boring MISS-1B, Sample S-4; Depth, 15-17'
Reddish-brown fine to coarse SAND & SILT, little fine gravel

NOTE: VISUAL SOIL CLASSIFICATIONS ON E & I SUBSURFACE LOGS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM.

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