DOE/OR/20722-75 032073-01 M-019 Formerly Utilized Sites Remedial Action Program (FUSRAP) Contract No. DE-AC05-810R20722 **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

OCTOBER 1985

Prepared for

UNITED STATES DEPARTMENT OF ENERGY OAK RIDGE OPERATIONS OFFICE Under Contract No. DE-AC05-610R20722

Ву

Bechtel National, Inc. Advanced Technology Division Oak Ridge, Tennessee

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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
- o Install ground-water monitoring wells
- o 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 overburgen 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 overburgen and begrock aquifers flows generally southwest

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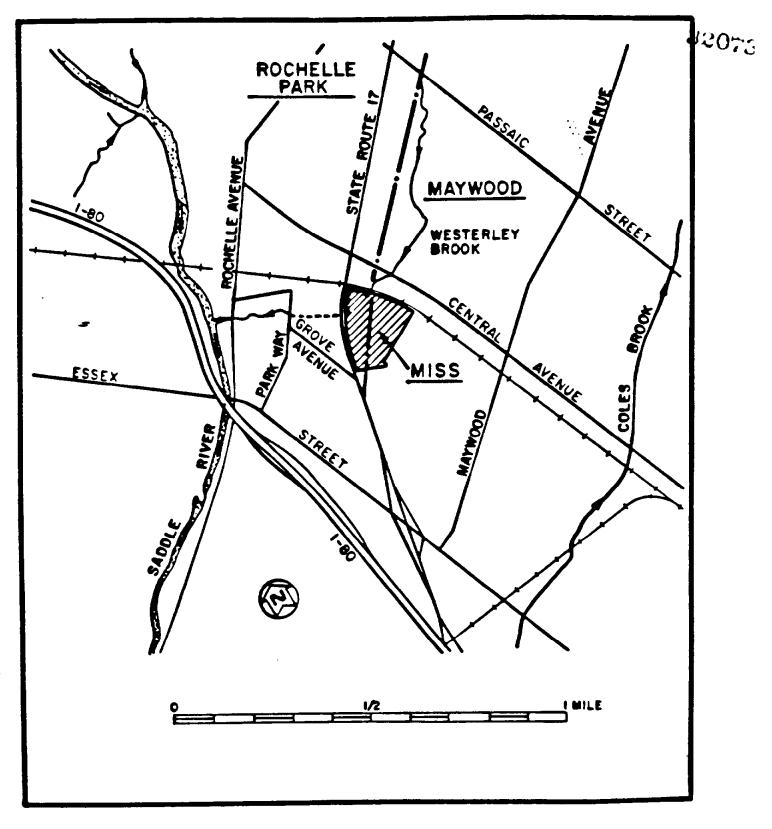
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1.0 INTRODUCTION

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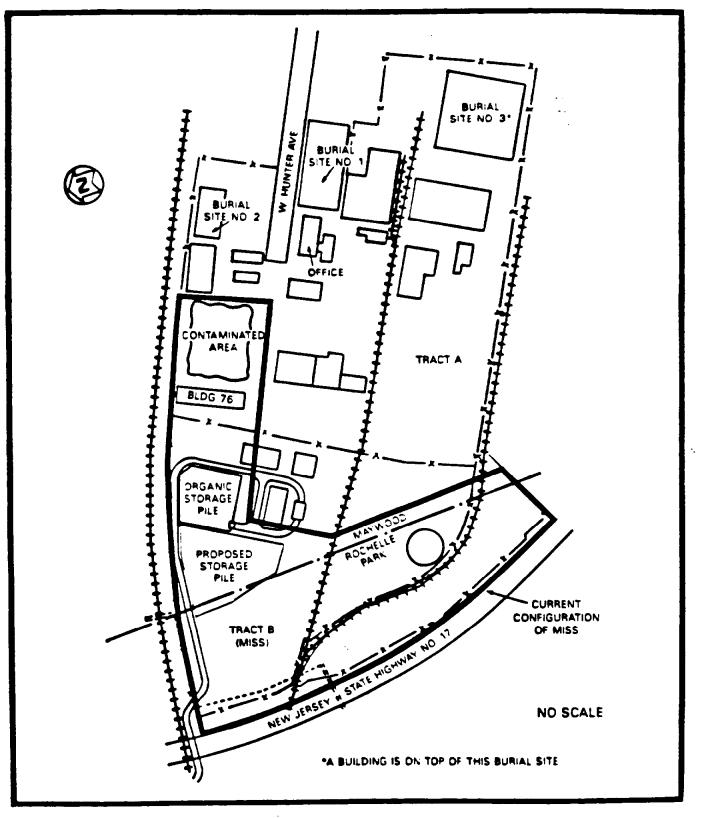
This report documents the procedures used and results obtained during the subsurface investigation and monitoring well-installation program conducted at the Maywood Interim Storage Site (MISS) between October 25 and February 12, 1985 (Figure 1-1). The work was conducted as a part of the Department of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



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FIGURE 1-1 MISS LOCATION





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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.

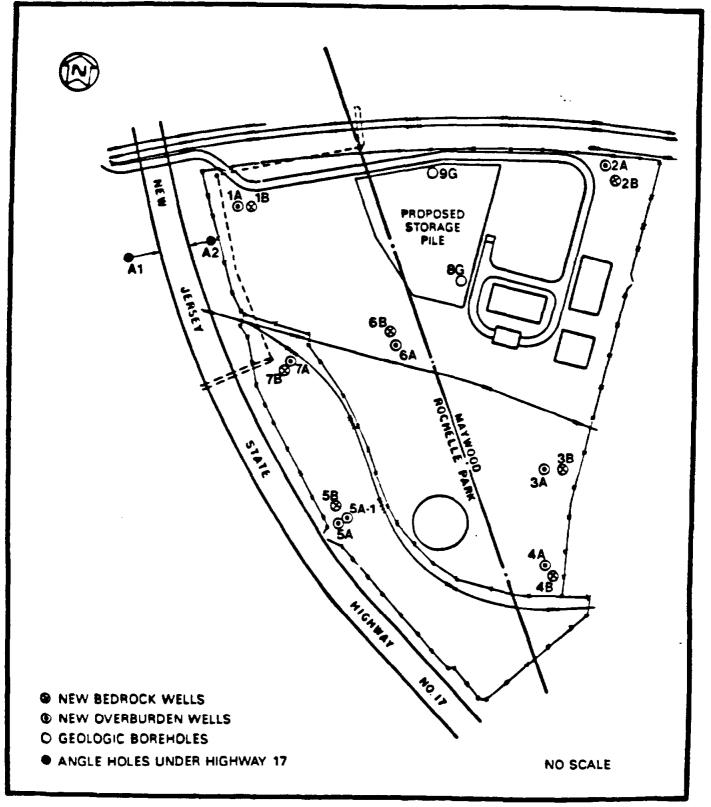


FIGURE 2-1 GENERAL LOCATION OF MONITORING WELLS AT MISS

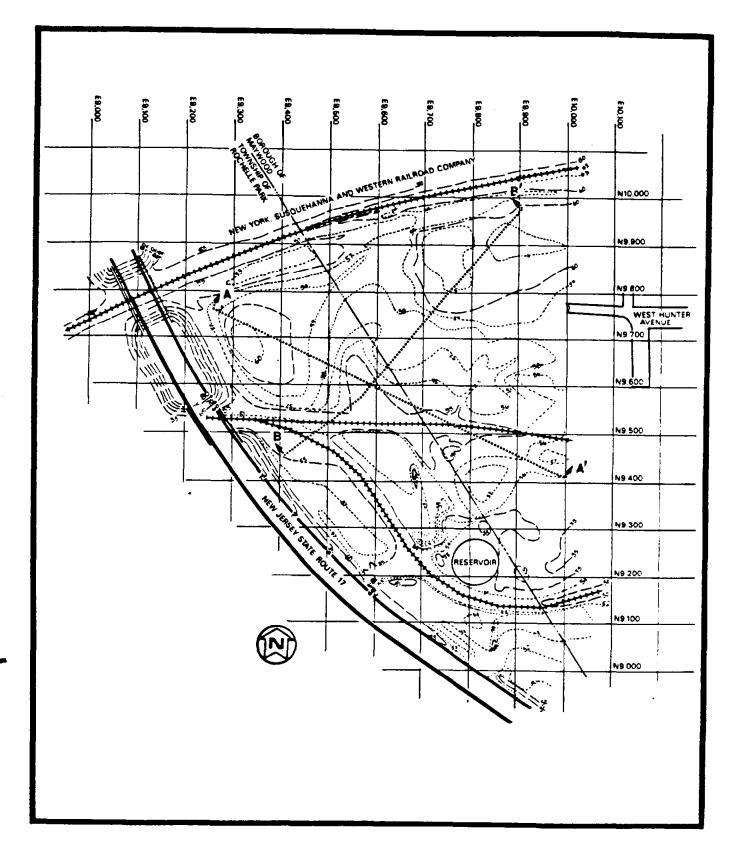
3.0 SITE GEOLOGY

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 ocorous sludge (site 2), construction backfill (wood, shingles, and tar paper at site 6), and surface dumping (thinly interbeacea, multicolored silty sand at site 5). Overburgen thickness varies 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.





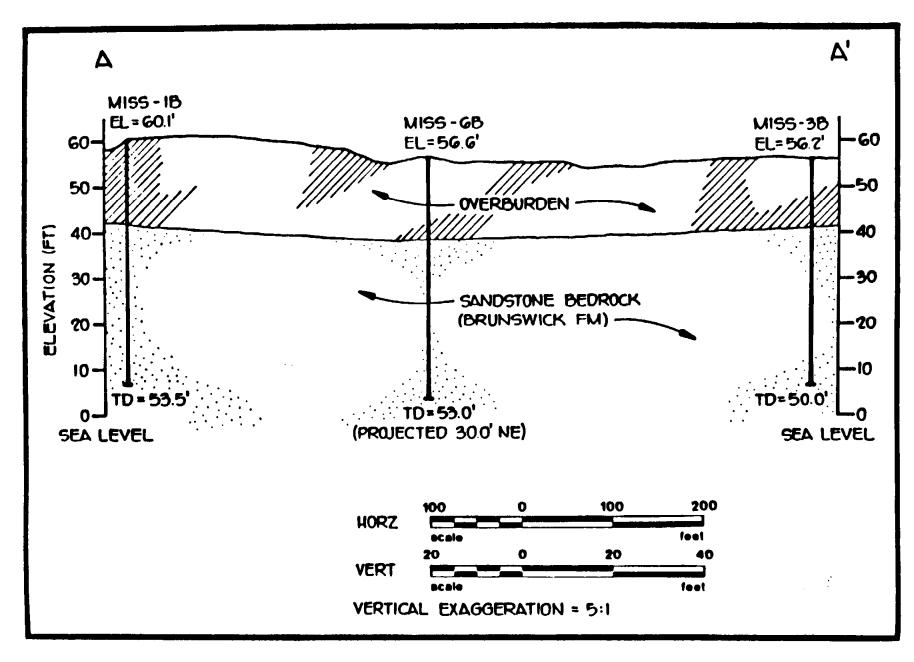


FIGURE 3-2 GEOLOGIC CROSS SECTION A - A'

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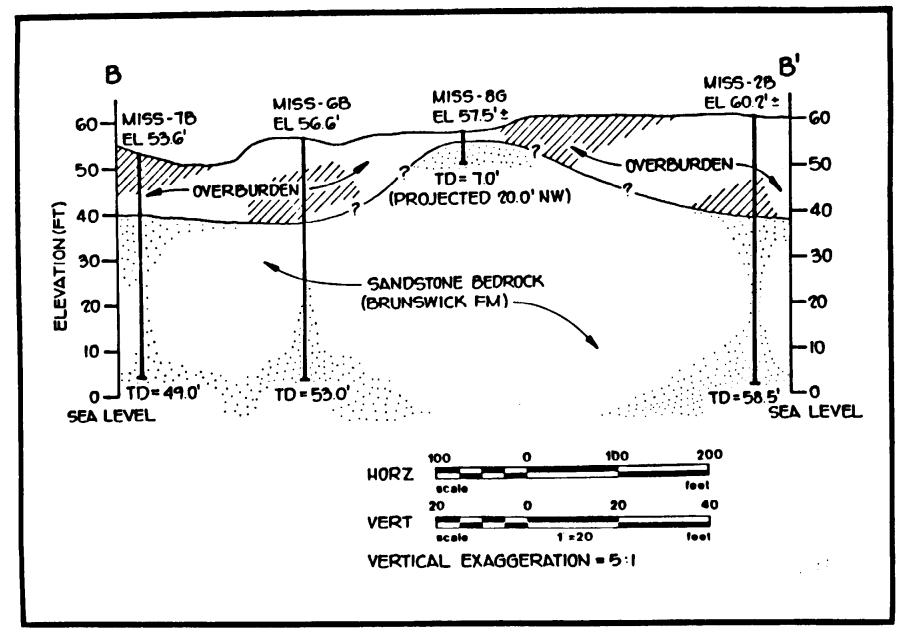


FIGURE 3-3 GEOLOGIC CROSS SECTION B - B'

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, tresh to slightly weathered, open fractures. The storage and movement of grouno water within the bedrock appears to be confined to these secondary openings.

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4.0 WELL DESIGN

The monitoring wells were designed to monitor ground-water levels and water quality in the overburgen 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 overburgen 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 orilled 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.

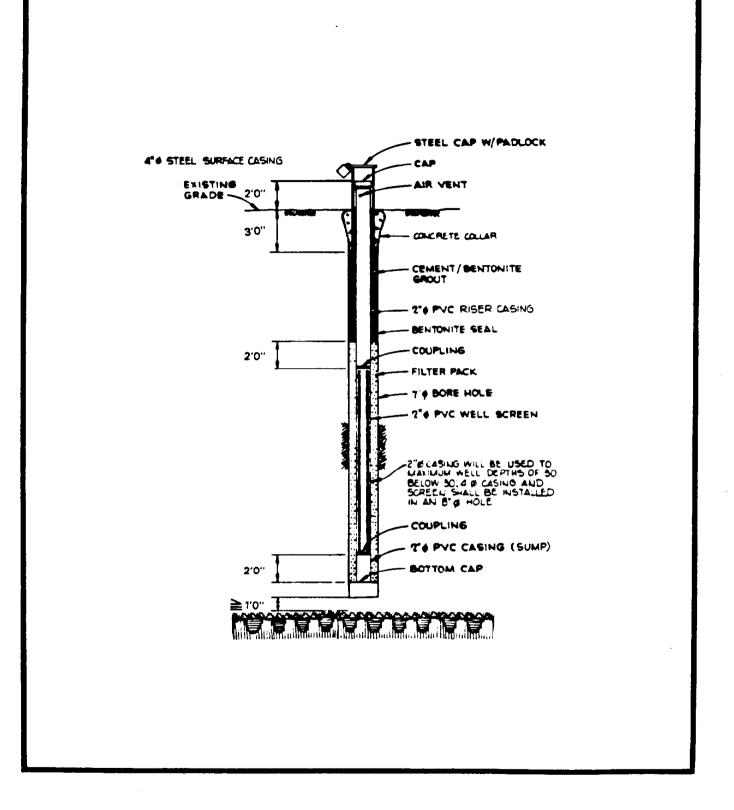


FIGURE 4-1 TYPICAL OVERBURDEN MONITORING WELL

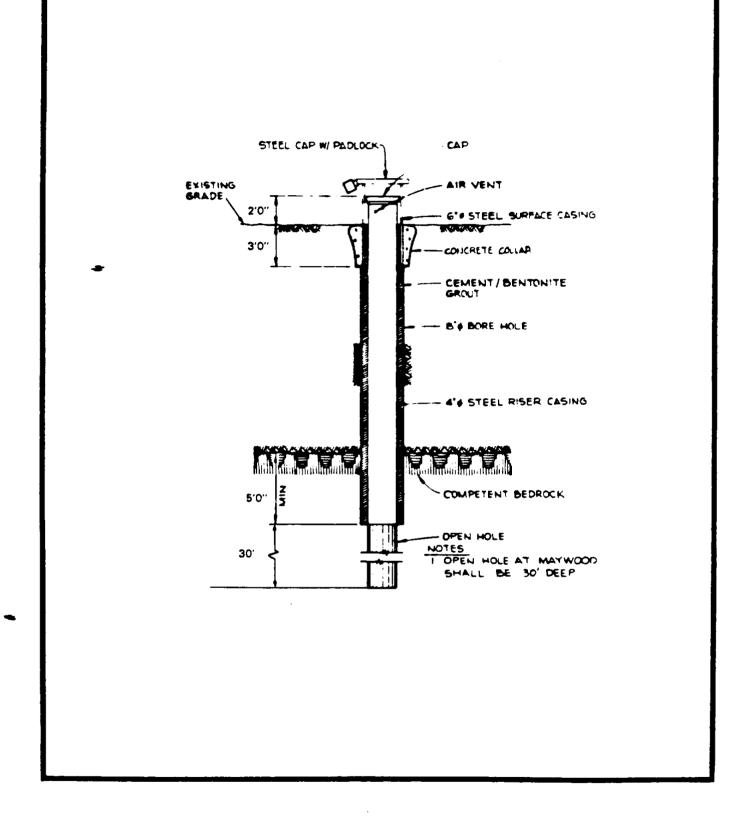


FIGURE 4-2 TYPICAL BEDROCK MONITORING WELL

5.0 GEOLOGIC BORINGS

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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.

6.1 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

	Depth	Geologic	Test	Coefficient or Permeability	
Hole No.	(ft)	Unit	Method	ft/min	Clin/SEC
MISS-lA	4.0-11.4	Overburden	chg	5.1 x 10^{-2}	2.6 x 10 ⁻²
MISS-1A	4.0-11.4	Overburden	fh	3.2×10^{-2}	1.63 x 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 x 10^{-3}	1.3 x 10 ⁻³
MISS-1B	23.0-53.5	Bedrock	rec	3.02×10^{-3}	1.53 x 10 ⁻³
MISS-2A	7.5-10.0	Overburden	fh ^a	1.04×10^{-5}	5.3 x 10 ⁻⁶
MISS-2A	12.5-15.0	Overburden	fh ^a	6.7 x 10^{-5}	3.4×10^{-5}
MISS-2A	17.5-20.0	Overburden	fh ^a	1.3×10^{-4}	6.6 x 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 x 10-3
MISS-2B	44.5-56.0	Bedrock	chp	3.58×10^{-4}	1.82 x 10-4
MISS-2B	28.5-58.5	Bedrock	rec	1.98×10^{-4}	1.01 x 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 x 10 ⁻³
MISS-3B	24.4-35.9	Bedrock	chp	1.55×10^{-4}	7.89 x 10 ⁻⁵
MISS-3B	34.4-45.9	Bedrock	chp	2.18×10^{-3}	i.1 x 10 ⁻⁵
MISS-3B	20.0-50.0	Bedrock	fh	7.40 x 10^{-4}	3.8 x 10-4
MISS-3B	20.0-50.0	Bedrock	rec	6.09 x 10^{-4}	3.09×10^{-4}
MISS-4A	3.8-9.7	Overburden	rec	5.22 x 10^{-5}	2.65 x 10 ⁻⁵
MISS-4B	23.2-34.7	Bedrock	chp	2.65×10^{-3}	1.35 x 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 x 10^{-2}	1.36 x 10 ⁻³
MISS-4B	17.0-47.0	Bedrock	rec	1.3 x 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 x 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 x 10^{-4}
MISS-6B ^b	23.0-38.0	Bedrock	fh	1.6×10^{-4}	8.3 x 10 ⁻⁵
MISS-7A	2.5-9.6	Overburden	chg	9.62 x 10^{-4}	4.89×10^{-4}
MISS-7B	24.6-36.1	Bedrock	chp	2.75 x 10^{-3}	1.39 x 10 ⁻³
MISS-7B	34.6-46.1	Bedrock	chp	1.56×10^{-3}	7.91 x 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 x 10-3	4.02 x 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

^aDenotes test conducted during drilling operations; all others conducted after wells installed.

^bA permeability test was not done on MISS-6A because the well recovered so slowly.

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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.

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7.0 DRILLING

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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 nollowstem flight augers and installed all of the overburden wells. At the first three locations (sites 2, 3, and 4), the ATV orilled 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 arilled the overburgen wells so they would not penetrate to begrock. 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 bearock well through the overburgen using a roller bit and bentonite drilling fluid. Only talcum powder, vegetable shortening, or string were used to facilitate connecting and disconnecting orill rods. All drilling fluids were recirculated to a mud tub on the surface. After the overburgen grilling was completed, the remaining drilling mud and cuttings were either pumped back to the decontamination pad at the site or directly to storage drums. lu∈. 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 orilling equipment used below ground by either rig was steam cleaned at the decontamination pac before being used again at another well site. No significant problems were encountered during either rotary or auger drilling operations.

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8.1 OVERBURDEN WELLS

Overburden wells were drilled with 7-in. oa, (3-1/2-in. ia) hollowstem 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 arilled through the overburgen 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

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WELL FILTER SAND

ANALYSES

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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	. 6
.500	35	99.8	.6	.2
.420	40	100.0	.2	
		Typical Chemic	al Analyses	
		Si0 ₂	99.390	
		Fe ₂ Õ ₃	.240	
		A1203	.190	
		TiŪ ₂	.120	
		CaÚ	.010	
		MgO	.004	
		L.O.I.	.046	

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. Bearock 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 Dottom 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 overburgen 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 85 to 100 psi using nitrogen gas. Bedrock well MISS-1B, -2B, -3B, -4B, -5B, and -7B were tested successfully in this manner.

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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

	Depth to Water Below Ground	Elevation of Ground Water
Well No.	(ft)	(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

MISS GROUND-WATER LEVELS AS OF NOVEMBER 21, 1984

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hole and cement/bentonite grout was pumped through orill rods placed to the bottom of the hole along the outside of the casing. Pumping continued until grout displaced all the orilling 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 befofe 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.

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TABLE 9-1

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Well Number	Uranium-238	Radium-226 (pCi/g)	Thorium-232
18	<4.7-13.0	0.4-0.8	2.0-10.4
2 B	<4.7	<0.5-1.4	0.6-1.2
33	<3.8	0.4-0.9	<1.5
43	30.0	<1.9	80.9
53	<5.0	0.4-2.6	1.2-8.2
6 B	<5.1	<0.7-1.7	0.9-4.9
73	<6.7	0.9-1.0	2.5-6.2

RANGE OF RADIONUCLIDE VALUES IN MAYWOOD WELLS

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 oifficulty 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.

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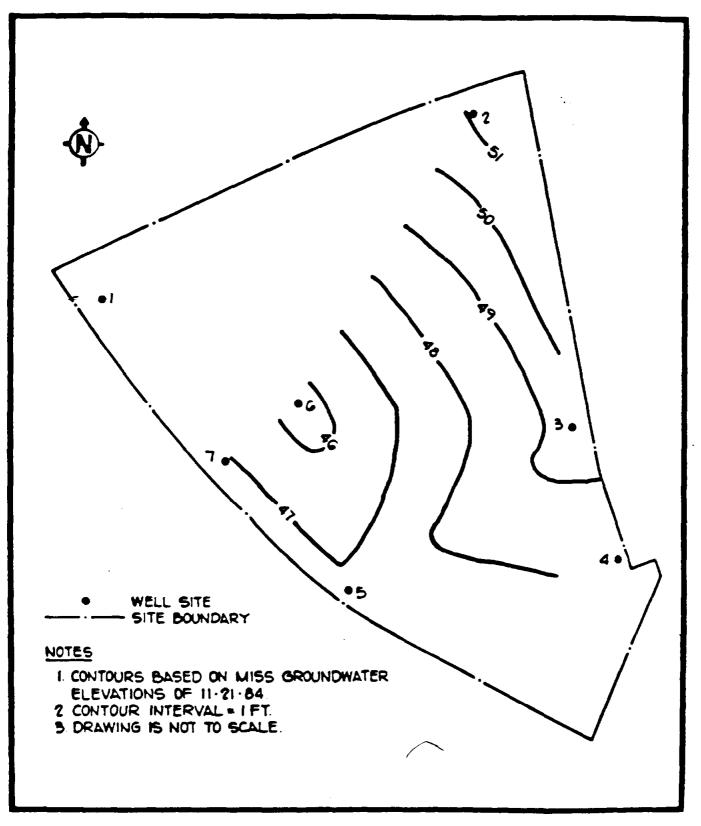


FIGURE 10-1 POTENTIOMETRIC SURFACE - OVERBURDEN AQUIFER

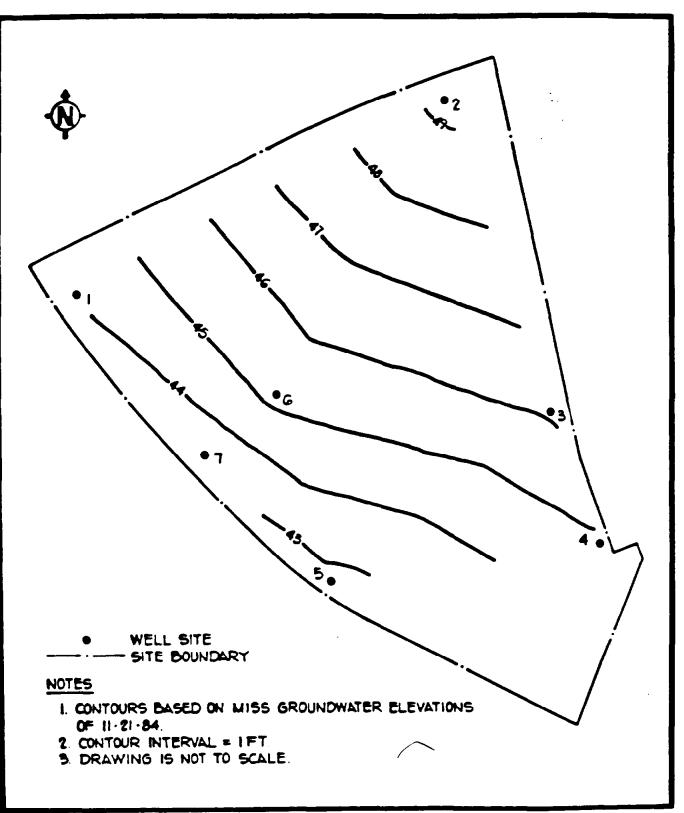


FIGURE 10-2 POTENTIOMETRIC SURFACE - BEDROCK AQUIFER

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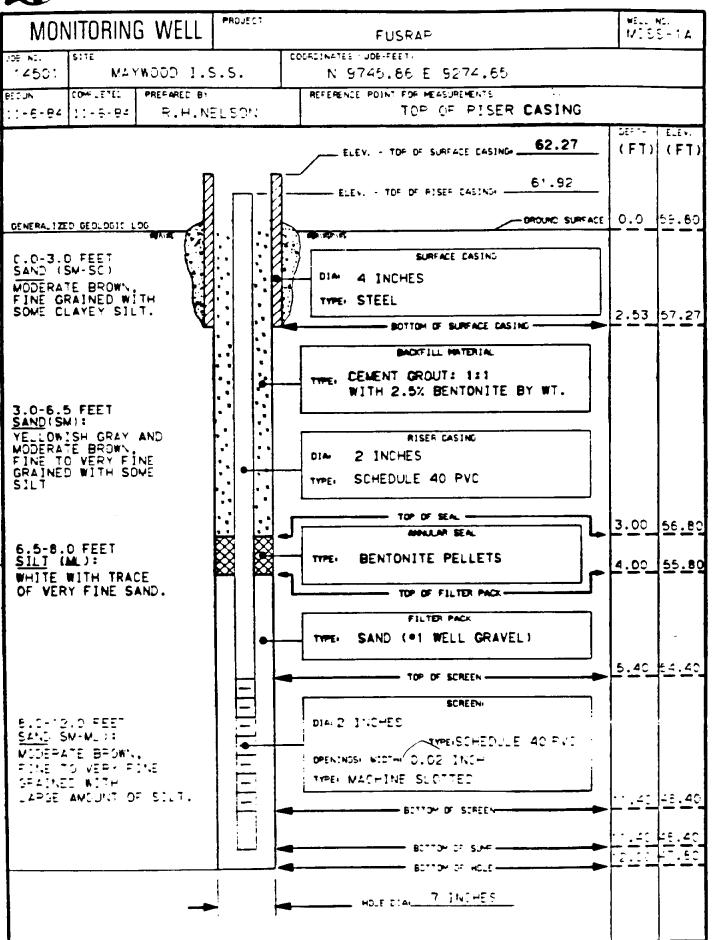
APPENDIX A

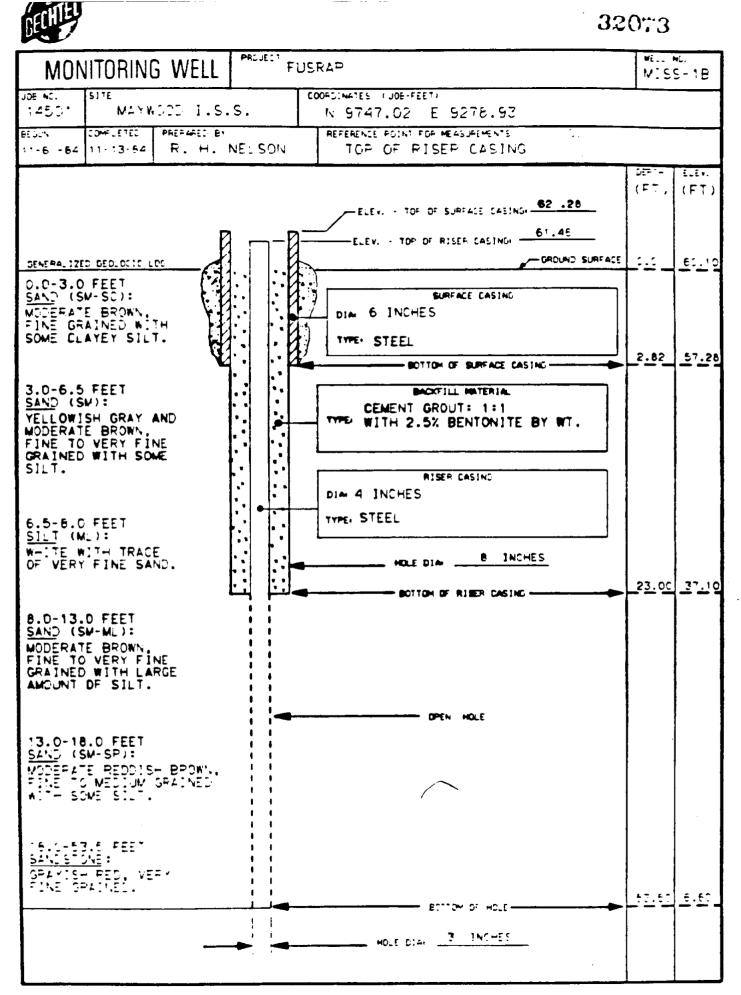
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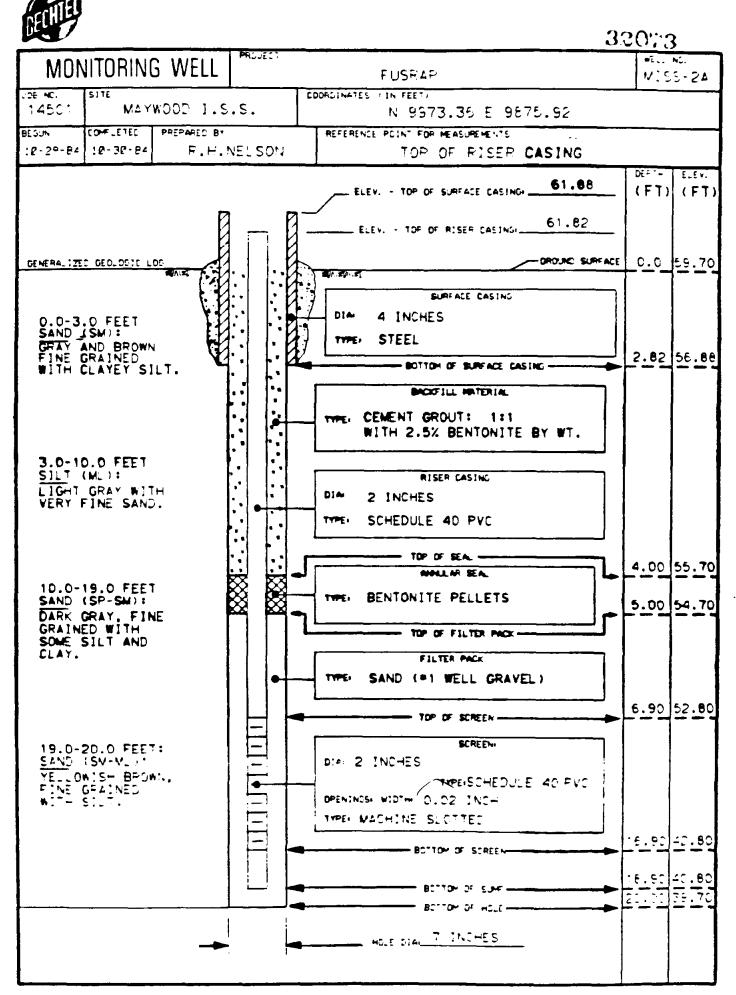
MONITORING WELL

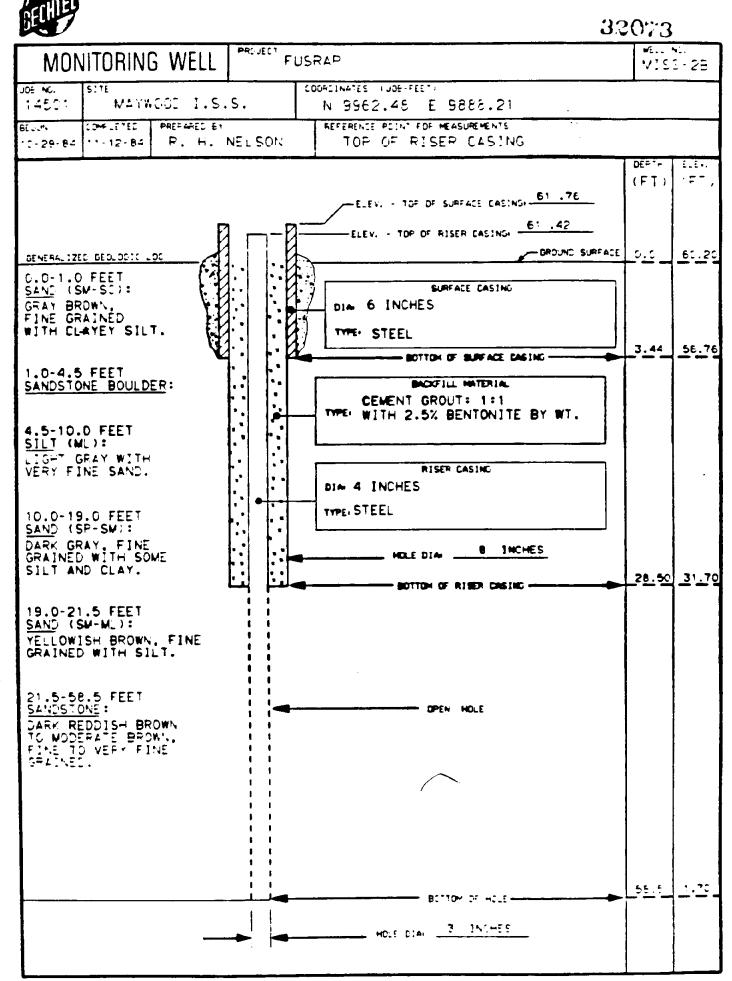
INSTALLATION LOGS

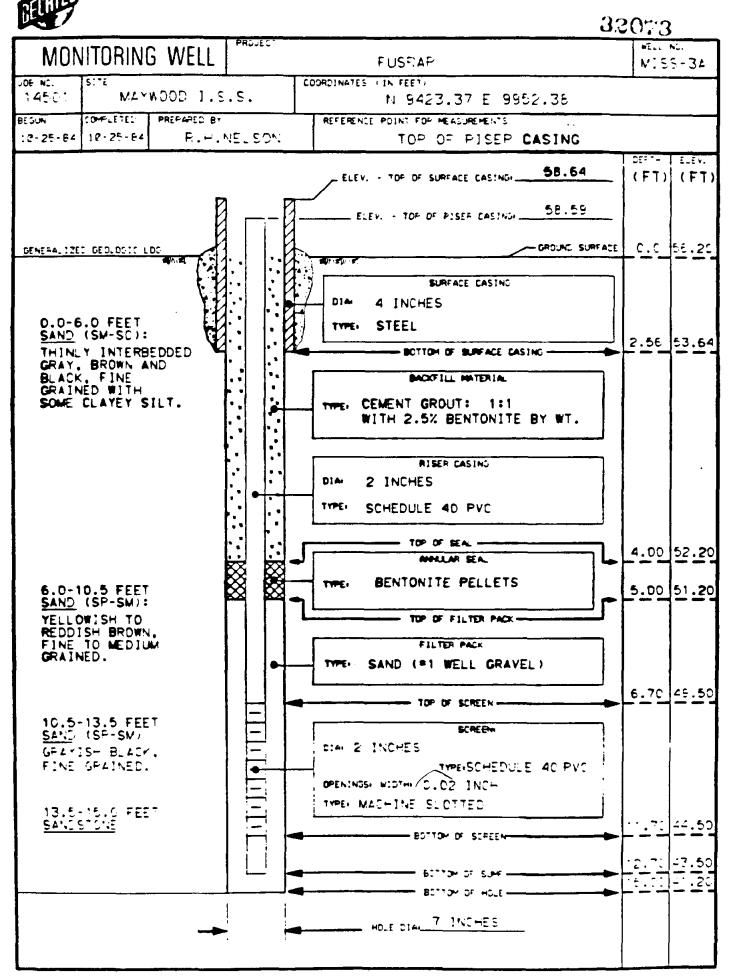
BECHIEL

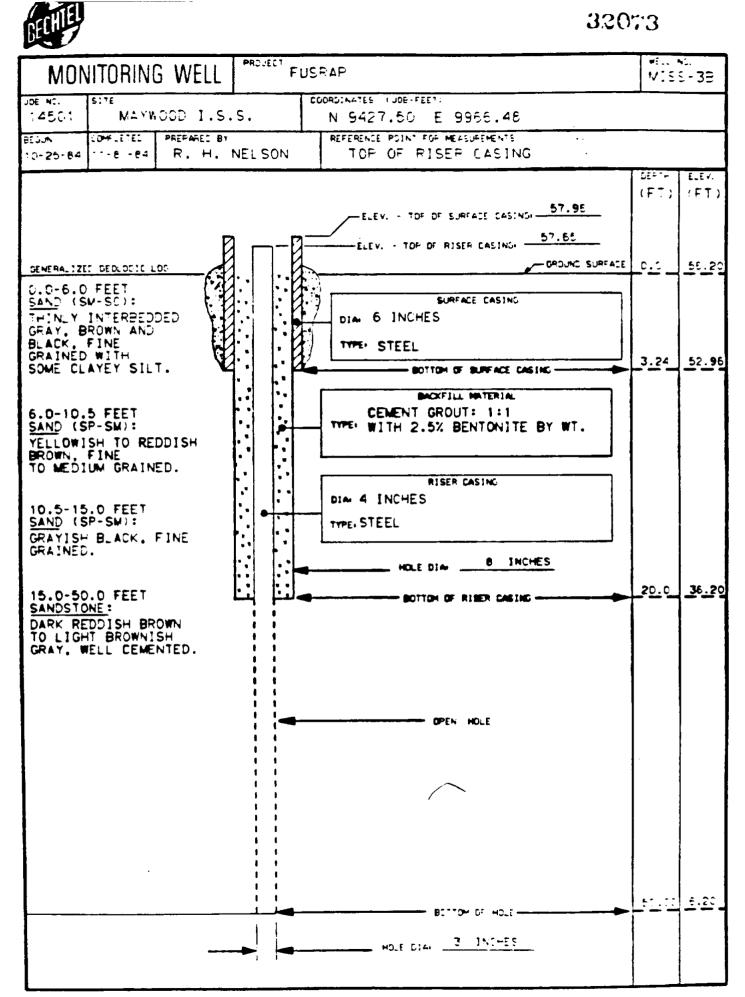


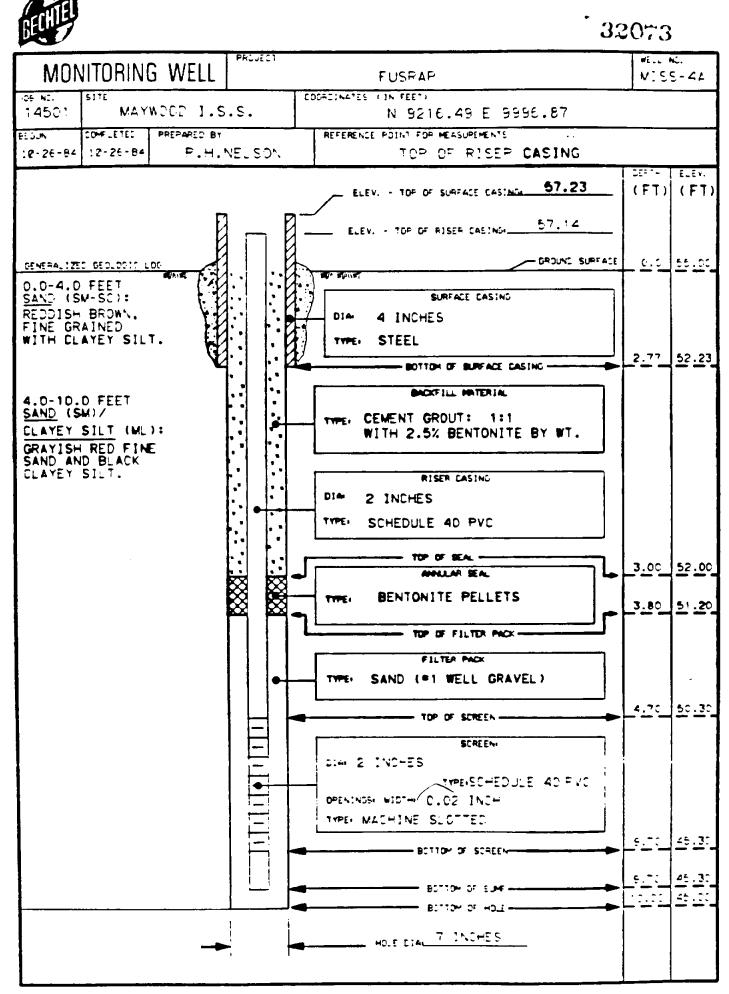




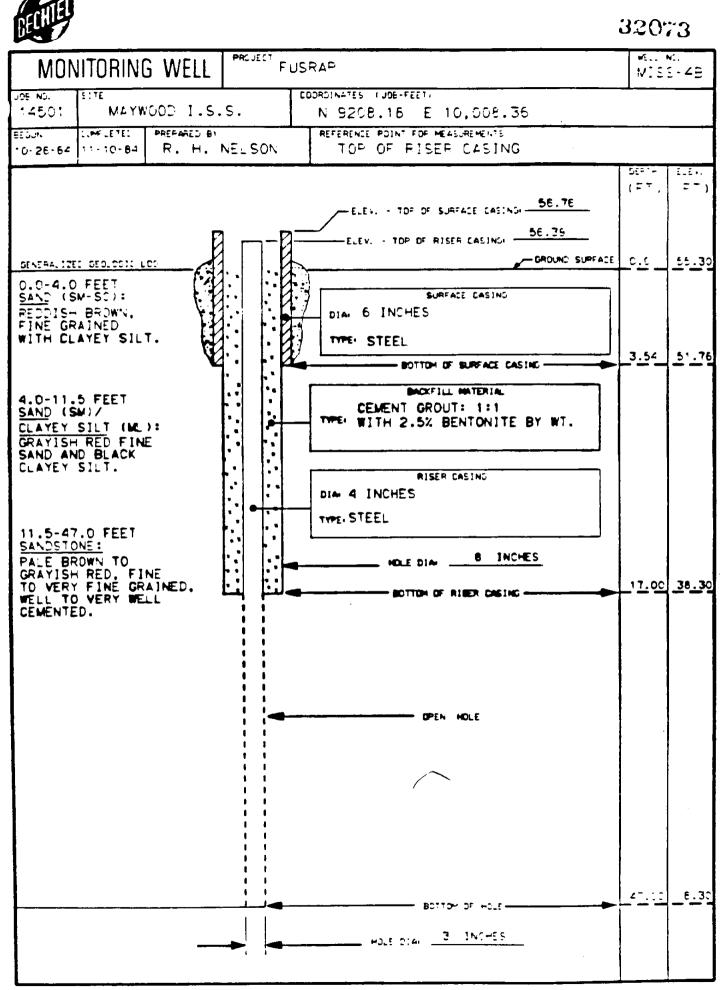


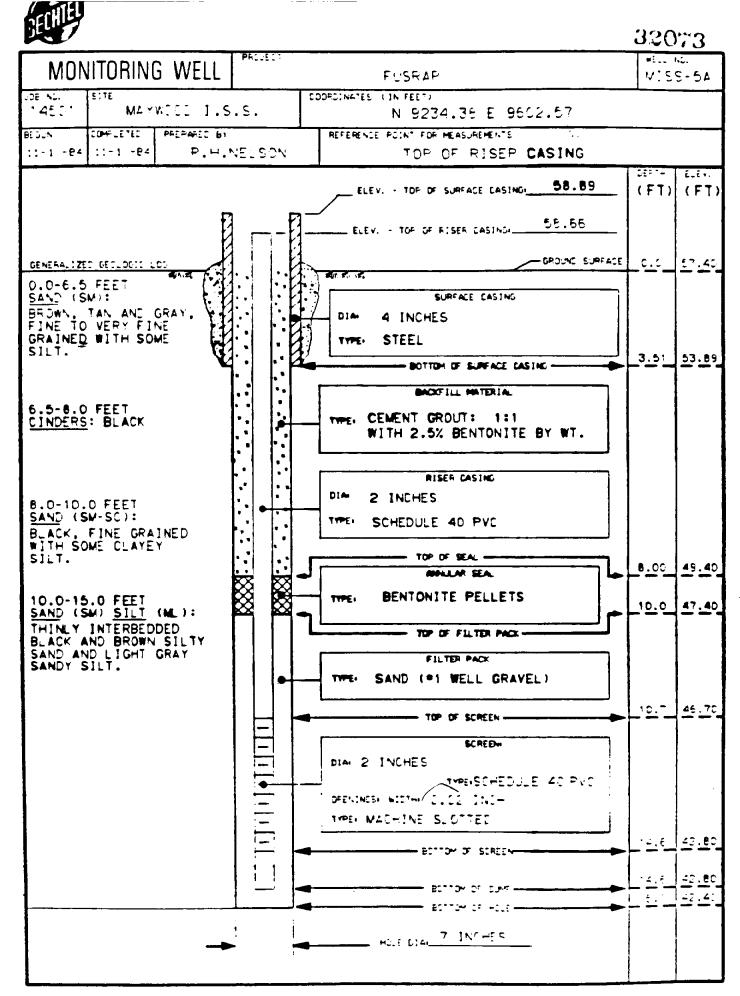


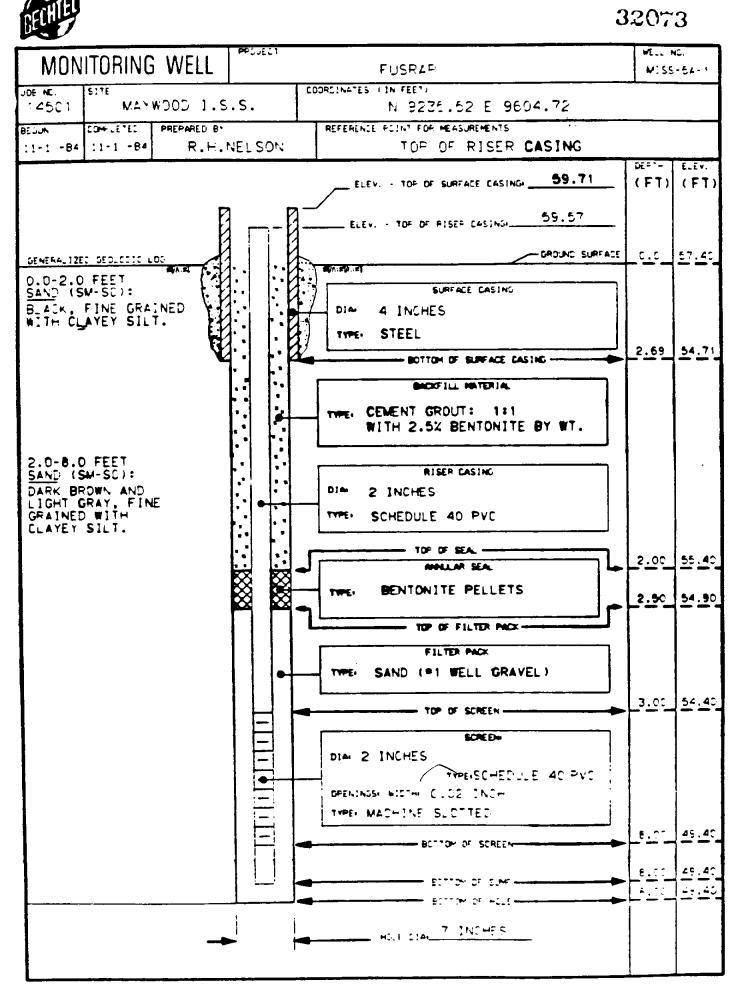




A-7

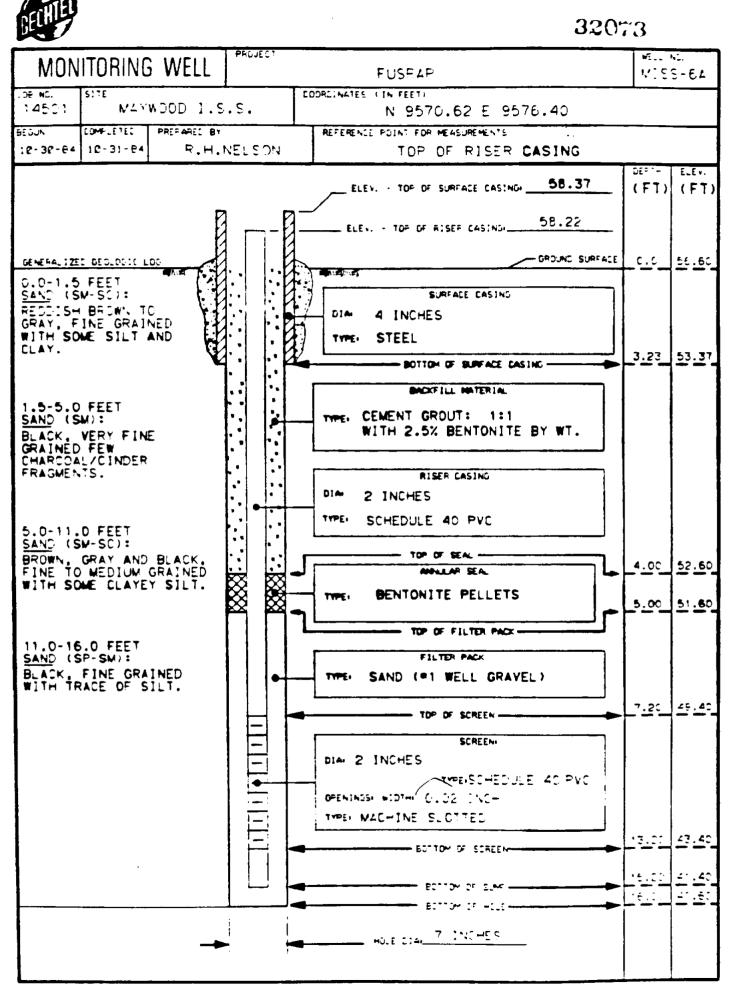






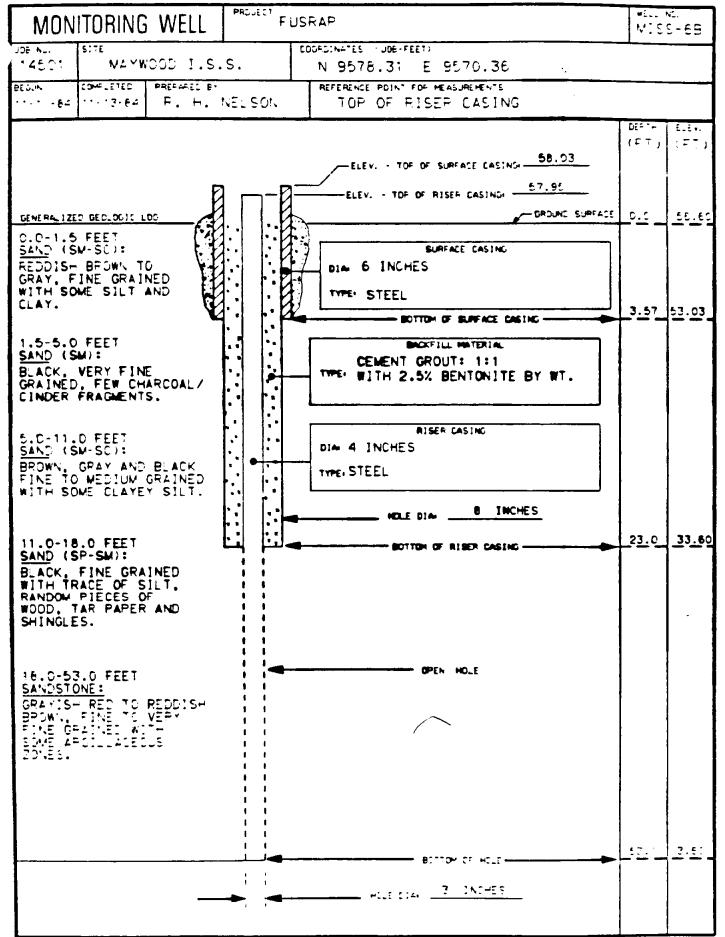


32073 PROJECT WELL NUT MONITORING WELL FUSRAP WIE1-58 SITE COF NO. COORDINATES (UDE-FEET) MAYWOOD I.S.S. 14501 N 9247.48 E 9596.00 CO-FLETED BEGUN PREPARED BY REFERENCE PLINT FOR MEASUREMENTS R. H. NELSON 1-2 -84 11-10-64 TOP OF RISER CASING 244 £.114. (=+) :==; -ELEV. - TOP OF SUFFACE CASING 59.82 55.70 -ELEV. - TOP OF RISER CASING --DROUND SURFACE 5.0 57.40 BENERALIZED BECODELE LOG 0.0-8.0 FEET <u>SAND</u> (SM): SURFACE CASING BROW', TAN AND GRAY, FINE TO VERY FINE GRAINED WITH SOME SILT. DIA 6 INCHES TYPE STEEL 2.58 54.82 BOTTOM OF SUPFACE CASING -. ۰. BACKFILL MATERIAL . 8.0-10.0 FEET CEMENT GROUT: 1:1 è SAND (SM-SC): TYPE WITH 2.5% BENTONITE BY WT. BLACK, FINE GRAINED WITH SOME CLAYEY . SILT. . • • RISER CASING • . DIA 4 INCHES TYPE STEEL 10-16.0 FEET SAND (SM) SILT (ML): THINLY INTERBEDDED B INCHES BLACK AND BROWN SILTY . HOLE DIA . SAND AND LIGHT GRAY 25.00 32.40 SANDY SLIT. - BOTTON OF RISER CASING l 8 1 4 18.0-55.0 FEET SANDSTONE: PALE BROWN TO PALE GRAYISH RED, FINE TO VERY FINE GRAINED. APGILLACEOUS. WELL TO VERY WELL CEMENTED. - OPEN HOLE 1 1 1 1 1 . ŧ 1 <u>tt</u> 27 :.4 1 BITTOM OF HOLE --- HOLE 114 3 INTHES

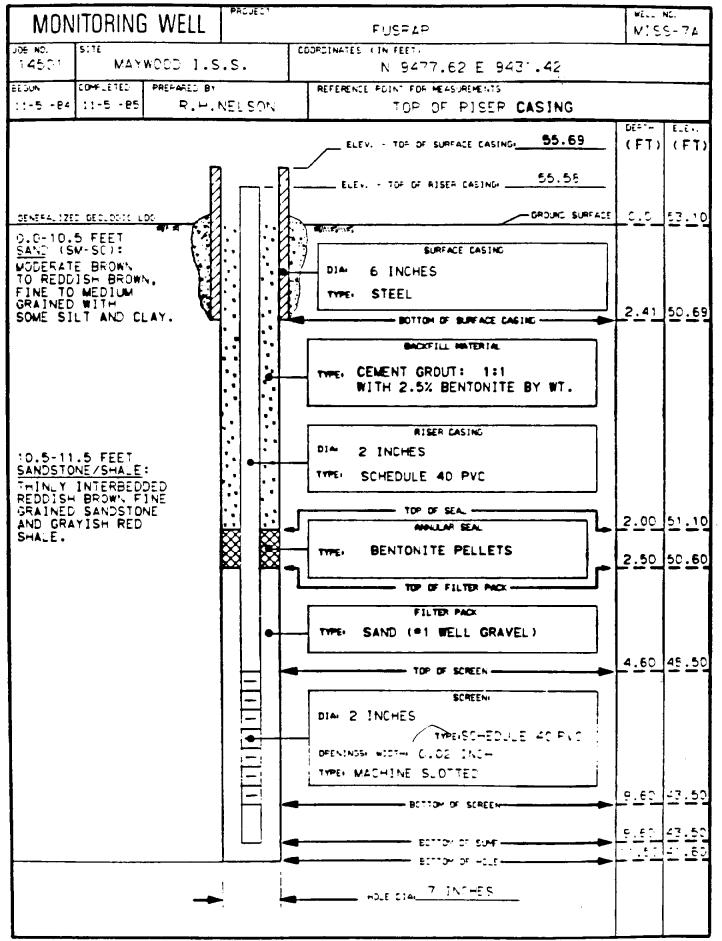




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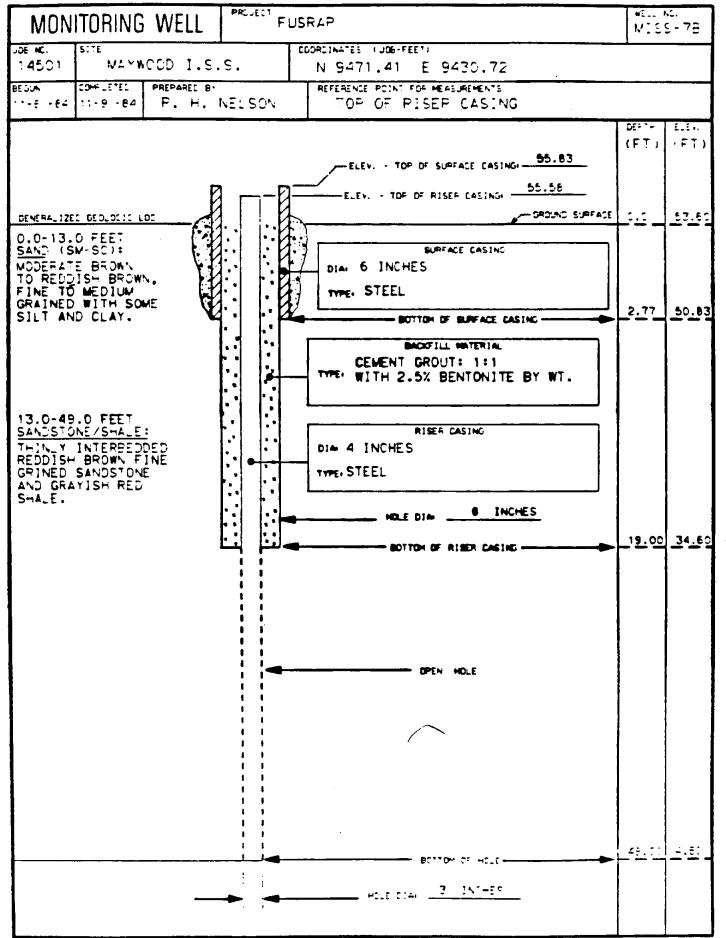








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APPENDIX B

GEOLOGIC DRILL LOGS



	G	EO	LOGI	C I	DRIL)G	PROJECT		F	USRAF			JD8 HK. 1.4501		SHEE . N		MOLE NC.
<u>5:7</u>		wood	INTERI	N 57	ORAGE S	3 TE	COOPCINAT	25 (JO			86 E 92	74.65		<u>.</u>	MC .[FRON HO 901	F17.	EARTHE N/A
ية: E	. 6 - 84		PLETE:	DF	ULLER EMF IRE	SCIL S	INVEST.C	1			AND MODEL		HOLE SIZE	OVEDBLADEN	483.1	ROCH OF	-	TOTAL DEFTH
	RECOV	<u>।</u> इस्रार	<u>.a</u>	- CC	RE BOXES	- E	Bur	D∓ DF CA 61.92	AS INC 0	ROUP	¢ E		. GROUNE I	TER	1		. TOF	12 FT. DF RQL+
545-		47.8 MER 18	Eligni" /FA.				STL STL	62.27 DIA./LE	• F*]	55	1.8 FT	17:	DR			l	h/s	
	iu:z	N F:	/ A	i	MATER	F): 2 5 . 4	IN/13.52 IN/5.0 F		1	r -	1			R.H. (ELS				
ASI ANTIA DAN ANI STANS	THE HEAD HISMEET	CINE RECOVER	SAMPLE IN THE No. PARCENT CONF	1024 1024	TESTS	T TMF 14 BrfmUTES	ELEVATION	Niab	CRAPHIC LOC	SAMPLE		DESCRIP	100 ME C.	ASSIFICATIO	•		94 T 94 T	ES ON: EF LEVELS, EF METURN, RACTEF DF LLING, ETC.
AUDER 7. INCH OB							11 .2	3.0			MODER GRAIN 3.0-6.5 VELLO THIML (SYR	FT <u>-</u> ED UIT UID4 U Y INTE 3/4);	AND (BM): Bay (SYD- REDOED (FILE TO Y	3/41;FIN ILTV GLAV /13 WITH 1 ROBERATE (MAA TR	IX. THE THE FOFFO	05 RA 04 TAM 7 EDE 5146 3 34 46 5146 3 5146 3 34 46 5146 3 5146 3 514516 3 5146 3 516 516 316 516 316 516 316 516 316 516 316 516 3161	ALLING EST B FT. MT HEAD ME NAL. ME NAL.
							\$1.0	10.0			BITE SMD BELU BELU SEDER VERT (40-9 BOT HOL WEL	CONT OF CONT	HOLE AT	ITH LARGE	7 . NG			CASING NEAGLITY G. ASSIFI- BY FIELD S OF S FROM
┝			9700h; 5 94: FrF33			<u> </u> 8	: TE		- •••• 790	 مد	INTERIM	STORAG	E SITE			15	····	N)56-18



	(GEO)L	OGI	10	DR	RIL	LL	OG		PROJECT	1		FUSRAF JOE NC. 14601-136	SHEET	NC. 0F 4	WELE NO.
SITE	-	YWOO	5 1	NTER	14 ST	OFA	JE S	ITE	C004	CINAT	ES (JG6				90°		MISS-18 BEAFING
BEGU 11	N -6-8	L		ETEL 13-8		R)	-	SULL	5 INV	EST.				AND MODEL HOLE SIZE OVERBLEDEN (FT.)	1	-	TCTA DEPTH
CORE	RECO	WER				OPE	BOXES		ES	EL . T:	× 0r C	ASING	SRDU	C EL. DEPTH/EL. OROUNC WATER		2.5 E TOP	53.5 FT.
SAMP				3+17 /F #	<u> </u>	<u> </u>		ING LEF	1 7 IN H	61N	62. DIA./LE	26	6	LOOGED BY:	18	.6 **	./42.1 FT.
	14(1		5/3: i	IN.			1 147EF		4-]N 6-IN 1		36 F~	<u>.</u>	1	R.H. NELSON			
BBL MAVIO DAV BALL JIGANS	10.1		Sann In Junes	-N- DECONE DV	LOSS IN	PR	ESSURE ESTS	T LINE IN MENDIES		ATION FTI	DEPTH	CRAMMIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION +		TA TA Du	TES DN: TEP LEVELS. TEP RETURN, ARACTEF DF JULING, ETC.
55	2.0	0.1	3	-5 -	<u></u> .,	3			6 C	. 1			1	0.0-3.0 FT <u>SAND</u> (SM-SC): MODERATE BROWN (SYR 3/4);FINE GRAINED WITH SOME SILTY CLAY MATR	IX.	RADIO. Contai	CHECKED FOR LCTIVE MINATION ERLINE.
AUGEN											3.0			3.0-8.5 FT <u>SAND</u> (BM): VELLOWISH GRAY (BYD/1) WITH SOME THINLY INTERBEDDED MODERATE GROWN (SYR 3/4); FINE TO VERY FINE GRAINED; SILTY;LOOSE;OCNL COBMLE,		SAMPLE IN PIL PRILLE TROW T DCATI CLE D FITH 7 FOLLOW LUGEP.	ISPOON IS TAKEN DT HOLE DD & FT. HIS DON. PILOT WILLED 'OO ISTEM GAMMA TO 22 FT. LLED WITH
23	2.0	0.7	<u>1</u>	<u>3-11-</u> 25	 • <u>14</u> -1 	4			63	.6	8 .5		2	6.5-8.0 FT. <u>SILT</u> (ML): WHITE (MS) WITH TRACE OF WERY FINE			
AUDER									82	2.1				SARD AND BLACK (N1) BRGANIC INCLUSIONS. B.O-13.5 FT. <u>SAND</u> (SM-SC): MODERATE BROWN (SYR 3/4) FINE TO VERY FINE GRAINED WITH LARGE AMOUNT (40-50%) SILT.		NO 80.	MOLE D WITH LER BIT NTONITE FT.:SEY EL CASING FT AND
55	2.0	c.4	7	-3-	<u>3</u> -3					1	0.0 0 1 1 1 1 1 1 1 1 1 1 1 1		3	\sim			
AIKIFR										1	- - - - - - - - - - - - - - - - - - -				•		LASSIFICATION SUAL FIELD
					• SHEL!			51	TE			MAYW(000	INTERIN STORAGE SITE	Î MD ,	iE ∾i.	WISS-16

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	<u>م</u>	FOI	OGI	C DI	RTII	10)6	RUJECT		FUSRAP	JGG NG. SHEE	
SAMPLE TYPE AND DIANFIER	LENSTH CORE MIN	21	FILLENT CONE	1	BATER PRESSUR TESTE		E.EVATION	DEPTH	ORAPHIC LOO	DESCRIPTION AND CLASS	14501-13E 2	DF 4 MISS-18 NOTE: DN: WATEF .FVE.S. WATEF #FJBN, GRAFACTEF OF DR:LINC, ETC.
SS 2	2.0	1.2	<u>8 -40</u>	-27-25				5.0		13.5-18.0 <u>SAND</u> (SM-SP): MODERATE REDDISH BROWN FINE TO MEDIUW GRAINED DF SILT.BLACK ORGANICS REDDISH BROWN (10R3/4) FRAGMENTS: BECOMING WE WITH DEPT (WEATHERED B	: WITH TRACE AND DARK ROCK CAKLY CEMENTED	
ROCK BIT								0.0		18.0-83.5 FT. <u>SANDSTONE:</u> GRAYISH RED (10R4/2), GRAINED VERY ARGILLACE BHALE LAYERS; NUMEROUS FRACTURES FROM 23.5-21	OUS WITH A FEW HIGH ANGLE	
NK COME	1	3.0	1000					25.0		23.8-29.8 FT.: CORE HIGHLY BROKEN ALO NUMEROUS HIGH-ANGLE JO WITH FACES STAINED WITH ORANGE OXIDES AND CALC COATINGS.	INTS 1	11-7-04 11-12-84 04 NOTE: SPLIT SPOON SAMPLES TAKEN IN PLOT HOLE 8 FT. FROM THIS LOCATION. BEDROCK NOT ENCOUNTERED IN PILOT HOLE UNTIL 24.5 FT. A FIFTH SAMPLE TAKEN FROM 20-22 FT.
NK CORF		8.5 00-5								27.8-26.3 26.7-28.9 SHALE		20-22 FT. GAVE THE FOLLOWING BLOW COUNTS: 35-27-27-29 54 PILCT HOLE BACKFILLED WITH GROLT.
			1 5PDDA: 5 DA: 8+817			s	SI TE		MAYN;	DD INTERIM STORAGE SITE		INCLE NO. MISS-18



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	G	EOl	OGI	C DF	RILL	. LC)G 🗖	ROJECT				T NC. HOLE NC. OF 4 NISS-1B
SAN'E LYPE AND LYLANETER	I ENCIN CUSI BIN	SANTLE RECOVERY	SAMPLE BLOWE N' PFRCENI CONF	1055 IN G. T. H.	WATER RESSURI TESTS	TINE IN MINUTES	ELEVATION	H1430	CRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	MCTEC DN: WATER EVELS, WATER MCTURN, CMARALTER DC DRILLING, ETC.
										RUN 2 26-34.5	18.0-53.5 FT. <u>SANDSTONE:</u> GRAVISH 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: LOS ~60% U ~260% WATER W-1LE CORING:USEI 1006 GALS TC COPE FROM 25-30.5 FT.
								B .0 -			34.0-34.5 FT: CORE HIGHLY BROKEN ALONG NUMEROUS HIGH-ANGLE JOINTS WITH FACES STAINED WITH GRANCE OXIDES AND CALCITE COATINGS. 30.8 FT: TIGHT HORIZONTAL CALCITE STRINGER. 37.5-38.2 FT.: CORE BROKEN ALONG NEAR VERTICAL CRESENT SHAPED JOINT, FACE STAINED WITH DOINT, FACE STAINED WITH	<u>11-12-84</u> 11-13-84 26 FT.
MX COME		9-9 DD-0		TEST	E PAC INTER	VAL				6.44-0.46 E NUN	BLACK OKIDE MO TRACE OF CALCITE. 38.3 90' 39.0-44.0 FT.: VERY ARGILLACEOUS:SOFTER 9 39-39.1: 39.0-39.9 AND 43.9-44. 42.2 FT.: 50' (0.05 FT.THICK)	- CONTINUED LOSING CIRCULATION WHILE CORING.
			5P074; 11	7.5	15	16	115	15.C			INTERIM STORAGE SUTE	H0.5 AC.

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	G	EOI	OGI	C DF	RILI	. L()G 🛛 🗖					ND, HCLENC. OF 4 MISS-1E
AND DIANE TER	LENGTH COOL PIN	SAMPLE DECOMERY	SAMPLE PI DIE "N" PERCENT COTE	1055 N 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	WATER MESSURI TESTS	I INE IN MINITES	ELEVATION	DC PTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND DLASSIFECATION	NDTE: GA: WATE: LEVELS. WATE: RETURN. CHARACTE: DF DRILLING, ETC.
5		9.0 D-0.					6.6	0.0		C.53.5	18.0-53.5 FT. <u>SANDSTONE</u> : 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.: MAMEROUS INTERSECTING JOINTS WITH BLACK OXIDE AND CALCITE. 49.5.50.2 FT.: 8.10HTLY WEATHERED. 52.3-52.9 FT.: BOTTOM OF HOLE AT 53.5 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	11-13-84 -WELL DEVELOP- MENT COMPLETED ON 2-13-85
			SPOCK: 5 D4: F+F1						MAYW	00	INTERIM STORAGE SITE	WISS-'E



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GEOLOGIC DRILL L	. O G	ROJEL" FUSRAF JDE NC. S 14501-136	HEET NG HELE NG. - 1 05 2 MISS-24
MAYWOOD INTERIM STORAGE SITE	COORDINAT		100 H0F12. BEAPINC
OUN COMPLETED DRILLER	. <u>_</u>	DRILL MAKE AND NODE. HOLE SIZE DVERBLEDEN (FT.) R	
D-29-84 16-30-84 EMPIRE SOI			N/A 20 FT. EPTH/EL. TOP OF ROCK
	AVA PVC	51.82 FT 59.7 FT. 7.55/52.15 FT.	N/4
N/A P	FT IN HOLE: VC 2 IN/21 TL 4 IN/5.	02 FT R.H. NEL SON	
WATER PRESSURE PRESSURE TESTS TES	ELEVATION	DESCRIPTION AND QLASSIFICATION	NDTES ON: WATER LEVELS. WATER RETURN, CHARACTER DE
In Over 1997 1997 1997 1997 1997 1997 1997 199		5	DRILLING, ETC.
*	55.7	0.0-3.0 FT <u>SAND</u> (SM-SC): DARK GRAY (N3) AND GRAYISH BROWN (BYR3/2) FINE GRAINED IN CLAYEY BILT MATRIX.	-SITE CHECKES FOR RADIDACTIVE CONTAMINATION BY EBERLINE. -HOLE INITIALLY ADVANCED BY ORIVING 4 IN STEL CASING
F110HT AUGER, 7-1WCH 00	66.7	3.0 3.0-10.0 FT <u>SILT</u> (ML): LIGHT GRAY (N7-NB);LOW TO MEDIUM PLASTICITY ITH SOME (~20%) VERY FINE SAND;SATURATED AT 8 FT. 5.0	FILL CASING WITH 300 LB HAMMER THEN REAMED WITH T IN OD AUGER. -FALLING HEAD PERWEABLITY TES'S RUN FOR INTERVALS: 7.5-10 FT.; 12.6-15 FT.; 17.6-20 FT. -CAMMA LOCGED 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 ANT CLASSIFY- CATION BY VISUAL FIELD WETHOSS OF LUTTINGS AND SAWFLES FROM MISS-20.
\$\$+\$P_11 \$P00+; \$7+\$HE_B* TUBE; D+DENN15DN; P+P:10+EF; D+OTHEF	ISITE	MAYWOOD INTERIM STORAGE SITE	MOLE AT. MISS-24



(GEC)LOG	SIC	; DF	RILI)G	ROJECT			FUSPAP JOE NC. SHEE 14501-138 2	ET NO. HOLE NO. DF 2 MISS-2
SAMPLE TYPE AND DIANETER SAMPLER ADVANCE	SAMPLE RECOVERY	SAMPLE BUTTER	RFLOWERY	6. P. K.	MATER RESSUR TESTS JUNSSING	TINE IN MIMUTES	ELEVATION	DEPTH	a s	ENDLE	DESCRIPTION AND CLASSIFICATION	NOTES DA: BATER LEVELS, BATER RETURN, CHARACTER OF DRILLING, ETC.
FLICHT AUGER, 7-INCH OD							40.7				19.0-20.0 FT SAND (SH-ML) : PALE YELLOWISH BROWN (10YR &/2); FIRE GRAINED WITH SOME (MEDZ) SILT. BOTTOM OF HOLE AT 20.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	10-29-84 10-30-54 INSTALIEC MONITOFING MELL 2-14-85: COMPLETED WELL DEVELOPMENT
		SPODN				1	517E		MAN	/₩C	DD INTERIM STORADE SITE	HOLE NO. MISS-24

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51 TE			OGI				COORDINAT	ES IJ	00-FEET,		FUSRAF			14501	1-138	1 OF 4	BEARINE
EGUN			NTERIM	DRIL		E 	N	9962.	48 E		AND MODEL		HOLE SIZE	OVERBURDEN	 N (F1.)	90*	10" A DEPTH
10/2	5/84	1	12/64	E	MPIRE		INVEST.		M	081LI	E 861		8/3 IN	21.5	• •	37.0	St.t FT
OPE		ERY(F'		CORE	BOXES	5ANF.	PVC	61.4	CASING 42 FT 76 FT		D EL.	DEP1n/	EL. GROUNE 10.14/50			0EPTH/EL. 70 21.5/	F OF R10+ 35.7 FT
			IGHT/FAL /30 IN	.L	CASI	NG LEFT	IN HOLE: N/29.72 (N/5.0 FT	DIA./	the second s		LOGGED 8	1 * :	R. H.	NELSON		<u></u>	
	ADVANCE IRF RIN	CONTRY CONTRY	SAMPLE FLLOOS "N" PERCENT CORE RECOVERY	•	WATER RESSURE TESTS		ELEVA-10		נ רמנ	3 Indi	_ <u></u>		10h AND CI A	SSIFILATION			TES ON:
SAMPLE TYPE AND DEAM TEP	SAMPLER ADVANCE	SAMPLE RECOVERT	SAMPLE PERCEN	1055 1 1055 6.P.H.	P.S.I P.S.IRE	TIME IN MIMUTES	(FT)	Had	ORAPHIC	a.						0	MAACTER DF Hilling, Etc.
			10-21-	38-45			60.2			· · ·	DARK	GRAY (SC): Grayish B Med in Cl			E CHECKED RADIDACTIVI ANINATION
S 5	2.0	1.0	59				\$9 .2	a.c			SILT	MATRIX	t				Derlinë.
											MODER	ATE RE	DOISH DR	BOULDER:			
AUDER			-								₹ J MEL	GRAINE	.			TO 2 TUIN TIN THEN FEET RDCK	E DRILLED 5 FT WITH 10 00 AUGER 10 20.5 WITH 8 IN 81T ANC 0NITE MJD.
22	2.0	0.5	<u>8 -32-</u> 80	 			86.7	4.9 5.0	- 7	2	LIGHT PLAST	GRAY	WITH SOM) 1 LOW TO ME E (W 202) AT 8 FT.	VERY	, ,	
AUDER																	
55	2.0	2.0	2 -2	- <u>11</u> -15			50.2	10.		3	DARK SOME	GRAY (Organi	CS; INTER	P-SN): GRAINED ROEDDED CI	LEAN		
AUGUR											PUNGE	NT OD	DR; SATUR	ATED.			504 187 10N 10A 85 197 10N 10N 88 1915 10N 88 1915
		: <p :="</td"><td>5=00h; 1</td><td> </td><td></td><td> </td><td>E I TE</td><td>1</td><td></td><td>· · · ·</td><td> </td><td></td><td>5:"E</td><td><u> </u></td><td></td><td></td><td></td></p>	5=00h; 1	 		 	E I TE	1		· · · ·			5:"E	<u> </u>			

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	G	EO	LOGI	C DI	RIL	LLC)G ľ	ROJECT				ET NC. HOLE NC. OF 4 MISS-28
AND DIANETER	SANTLER ALWANCE LEWEIN COR SHE	SAMPLE, RFCOVERT COMPLE, RFCOVERT	SANTE BUNES "N" ITERCENI CONE RECOVERY		WATER RESSUR TESTS	rine In Mimures	ELEVA" JON	11EPTH	OMAPHIC LOO	SAMPLE	DESCRIPTION AND CLASSIFICATION	NCTES ON: WATES LEVELS, WATES METURN, EHARADTER OF ORILLING, ETC.
s	2.0	2.0	<u>8 - 12-</u> 33	21-25			1	15.0		4		
							_	9.0			19.0-21.5 FT <u>LAND</u> (BM-ML) : PALE YELLOWISH BROWN (10YR 6/2); FIME GRAINED WITH SOME (6202) STLT.	
5	2.0	2.0	<u>10-11-</u> 27	<u>16</u> -21				21.5		5	21.5-58.5 FT <u>SANDSTONE</u> :	-CAMMA LOGGED TO 28 FT.
AUCER											DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (3YR 3/4) WITH OCCASIONAL LIGHTER COLONED MOTTLING; FINE TO VERY FINE GRAINED; WELL CEMENTED SHOWING THINLY LANINATED HORIZONTAL TO C 20° BEDDING WITH SOME INTERSEDOED ARGILLACEOUS AND SILTSTONE LAYERS.	28 FT.
8 5	0.8	0.8	18- <u>100</u> 4'				3	5. 0 -		•		
ROCK BLT												10-29-84
NX CIRE	<u> </u> 										29.6-31.3 FT.: VERTICAL CALCITE FILLED JOINT	10-30-64 28.5 10-30-64 28.5 STEL CASING GROUTED.
			SPEON: S			19	SI'E		MAYW	20	D INTERIM STORAGE SITE	HOLE NO. 1955-28



(GE OI	OGI	C DF	RILL	. LC)G	CUECT			FUSRAP JDE NC. 14501-136	SHEET NU. HOLE NU. 3 OF 4 N155-2E
SAMPLE TYPE AND DIAMETER SAMPLER ADVANCE		SAMT E RI MAS "N" PFREENT CONF	Lnss Lnss 0.7.6.	WATER RESSUR TESTS	TIME TIME MIMUTES	ELEVATION	DEFTH	CRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NCTED ON: MATER LEVELS, MATER RETURN, EMARACTER OF BRILLING, ETC.
NX CORE	7.2 Rp31	96% 3	DOJB TEST 33.0	E PAC INTER	KERS VAL FT.		5.0 		RUN 1 20.5-36	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.	1:-:2-64: COPED FROM 20.5-50.5 FT.
	9 7.4		10.2	15	21				1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	37.0-37.2 FT.: MEDIUM GRAINED WITH 45° JOINT WITH DARK GREEN AND RUST WEATHERED SURFACE. 37.2-30.0 FT.: ARGILLAGEOUS 38.0 FT.: INTERSECTING BO° JOINTS WITH VELLOWISH GRAY (SY 7/2)NON- NEACTIVE COATING ON FACE; B. ICKENSIDE VISIBLE. CO.S-GS.0 FT.: MANEROUS VERTICAL AND NEAR VERTICAL (>40°) CALCITE NEALED JOINTS;SLICKEN SIDES AND VELLOWISH GRAY COATING	
	5-5P: 1-	SECON: 1		r Tube:		5;78	45.C			AD VELLOWING ONLY CONTINUE ON JOINT FACE • 44. 45.0-48.C FT.: ARENACEOUS SILTSTONE/SHALE.	MLE N:



G	EOI	OGI	C DI	RILI	_ L()G 🗖	RGJECT			FUSRAF JOE NC. 1450:-138	 NC. DF 4	HOLE NO. MISE-28
SAMPLE TYPE AMD DIAMETER SAMPLER ADVANCE LENCIH TOTH, BIN	SAMPLE PECOVERY (CHE PLCOVERY	SANGLE FRUNDS "N" PFRCENT CORE RECOVENT	L055 L055 G.P.M.	WATER RESSUR TESTS	TINE TINE MINUTES	ELEVATION	DEPTH	ORAFWIC LOO	SAMPLE	DESCRIPTION AND CLASSIFICATION	 84 84 64	TEL ON: TEF LEVELS, TEF METURN, AFACTER GT LLIANC, ETC.
AK CORE	h.0.	1802	TEST	LE PA INTE -58.0	RVAL				33.5	47.4-48.0 FT.: VERTICAL CALCITE FILLED JOINT 0.01 FT THICK. 48.5-49.0 FT.: RANDOM SUBROUNDED PEBBLES.		
ž	20-0	\$ 4					0.0		-C.54 C NUN	80.09-52.5 FT.: AMENACEOUS SILTSTONE/SHALE.		
	4.7						B.0	are are are are are are are are	RUN 4 53.5-50.5	57.0 FT.: CALCITE WITH BACK STAINING. 57.5-58.0 FT: VERTICAL CALCITE FILLED JOINT.		
		\$PGDx; \$				17.0	50.0 ·			BOTTOM OF HOLE AT S8.5 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	 DE VE. WELL RECC FOR	-85: VEN_TEST PERMEAD:ITY RW:NAT;CN.

FFL	明														000	
Ê	<u> </u>	FO	00		ה	RTI		00	MUDIEC.	r		FUSRAP	ON BOL	•	<u>3:20'7.(</u>	HOLE NO.
SITE			INTER		<u> </u>				DL) 23				14501		1 DF 2 FROM HOR12,	MISS-3A MEARING
ER			PLETED		1000		115					3.37 E 9952.38 AND MODEL HOLE SIZE	AVERA POEN	(67.)	90*	N/A TOTAL DEPTH
	25/8		0/25/0	4	_	MPIRE E BORES		INVEST.		ASING O		E 550 ATV 7 IN.	13.5		1.5	15 FT.
		N/A				N/A	N/	A PVC	58.59 58.64	FT.		.2 FT. 5.12 FT.	./51.00 F	п. -	13.5 FT.	-
		N/A	Ë 1 0 HT /F			CAS	PVC	T IN HOLE 2-1N/15.0 4-1N/5.0	19 FT	INGTH		R.H.NELSO	N			
SMPLE TYPE AND DIAMETER	NAME ADVANCE NUM	CONE RECOVERY	SAMPLE BLOWS "N" PEDICENT CORE	LOSA L			T INE 11 Brimures	ELEVATION	M-30	ennic Los	JEN	DESCRIPTION AND CLAR	CE IF ICATIO	H.#	SAT BAT CHA	ES ON: ER LEVELS, ER METURN, MACTER OF LLINE, ETC.
FLIGHT AUDER. T-INCH OD								48 .2 45 .7	5.0			0.0-6.0 FT <u>SAND</u> (SM-SC THINLY INTERBEDDED BM (SYR 4/2) DARK REDDIS (IOR 3/4) AND BLACK (GRAINED WITH CLAYEY S BLACK STRATIFIED CAMB LAYERS BETWEEN 1.3-8. MODERATE WELLOWISH BM TO MODERATE VELLOWISH BM TO MODERATE NEDDISH B FINE TO MEDIUM GRAINED AMOUNT OF CLAYEY SILT OCCASIONAL SANDSTONE (SOME THINLY INTERBEDD CARBONACEOUS MATERIAL 10.5-13.5 FT-BAND (SP-SM GRAYISH BLACK (N2); FI WITH SMALL AMOUNT OF S	ROWNISH (SH BROWN (N1); FIN SILT MATH SONACEOUS .0. W)1 ROWN (107 GRAVEL W GRAVEL W SED BLACK	E 11x; 7 5/2 R 4/4 MALL 21TH	-HOLE I UTH T UTH T AUGER. -FALLI FALLI FALLI PERCAN INTERY 0.D-12) CATION FIELD USE-33 SAMPLE	LOGGED T. NC HEAD BILITY UN ON AL BETWEEN .7 FT. T FT. BY VISUAL METHODS TINGS AND B
			PCCm; 1 4; P=P]					LTE				INTERIN STORAGE SITE			HDLE HD.	1155-3A

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GEO	LOGI	C DR	ILL	LO	G T	DJECT			FUSRAP JOB NO. SHEET 14501-138 2	NC. HOLE NC. OF 2 MISS-34
AND DI ANE TER EAMDY EE ADVANCE IFNTH CONE NUM SAMPLE RECOVERY CONE RTCOVERY	SAMPLE FLOWS "N" PERCENT COPE RECOVERY	*	MATER RESSURE TESTS	IN IN MINUTES	ELEVATION	DEPTH	Chamile Loc	SMPLE	DESCRIPTION AND CLASSIFICATION	NCTES DN: WATER LEVELS, WATER RE'JAN, CHARACTER OF ORILLING, ETC.
					41.2	15			13.5-15.6 FT <u>SANDSTONE:</u> DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YRS) FINE TO VERY FINE GRAINED. BOTTOM OF MOLE AT 15.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	10-25-84 2 -21-85 COMPLETED DEVELOPMENT OF WELL. RAN RECOVEPY TEST FOR PERMEABLITY DETERMINATION.
	9700n; \$1 .0n; p=pit			5	ITE	1	MAYWO	30	INTERIM STORAGE SITE	HOLE NC. MISS-34

	G	EO	LOGI	C DI	RILI	_ L()G	RGJEC	7		FUSRAF			108 NO	 	SHEET	NC. OF 4	HELE NO.
SITE		000	INTEFIN	STORA	GE SIT		COOPDINATE	5 (JQ		427	.50 E	9966.4	e		ANG.E	FROM 4	05	BEAFINI
BEGUI	/25/8	!	FLETEL	DFIL					DPJL: M	-	ANC MODEL		HOLE SIZE 8/3 IN.	OVERBUPDE			F".,	-C.A. DE
		NER VIE	11/8/84 1./2/		BOXES	SAMP_		OF C				DEFTH/	EL. GPDUNC	RATER		06+/	E TOF	ji pyce
SALE		/91 NER W	EIGH! /FA		3 CASI	4	IN HOLE: D	7-65 7-96		56	2 FT.	 8*:		47.61 FT.		15.	.0/41.	2 77.
	140	LB/3					7: /20.0						R.+	I. NEL SON				
SAMPLE TYPE	NICE BOLLE HISTANIE	SAMPLE RECOVERY	SAMPLE RI UNS 'N' PERCENT COPE PECOVERY	(055 18 1. P. H.	DATEA RESSURE TESTS JUNISSING	TINE IN WIMUTES	ELEVATION (FT.)	Ht a 30	CRAPHIC LOC	SAMPLE		DESCRIP	TION AND CL	ASSIFICATI	0⊾ ●		84. 84 241	TES ON: TER LEVELS. TER METURN. Salter Of LLING. ETC.
SS			<u>6 -11-</u> 24	13-20	<u> </u>		56.2			5	THIN (SYR (10R GRAI BLAC		AND (SM-S ERBEDDED DARK REDD AND BLACK TH CLAYEY TJFJED CA	BPOWNISH ISH BROW (N1); F Silt MA RBONACEO	INE TRIX:		CONT/	E CHECKEC ALTOLITIVE MINATION BERLINE.
AUDER											LATE	riə BAL⊺	VEEN 1.5-	5.0.			TO 15 JUIN 7IN 0 MEANE ROCK	ID ALIGER ID WITH 8 IN. BIT AND WITE TO
55	1.5	1.2	<u>3 -4 -</u> 10	6			48.2	5.0 6.0		2	5.0-10	.5 FT	SAND (SP-	-947 :				
AUDER											TO 1 File Anci. Occ. Sole	IDDERAT TO ME INT DF SIGNAL THINL	ELLOWISH E NEDDISH DIUM GRAI CLAYEY BI SANDSTON Y INTERSE US MATERI	I BROWN (INED WITH ILT AND IE GRAVEL IDDED BLA	10YR 4 Shall WITH	4/41	L002	T. TO
55	2.0		3 - 12-					10.0	1		GRA	'ISH B∟	- <u>Sand</u> (SP) ACK (N2); AMDUNT (FINE GR		TED.		
AL145'R																	ANT CATT FIEL	F:F"10N LASSIF:- DN B: VISUAL METHODS.
			5000 5				5176		MAY	NC:01	INTERI	N STOR	AGE SITE			_	HOLE NO	M155-38

G	E0	LOGI	C D		_ L()G ľ	REJECT			F. 5825	EE* NC. 2 07	HOLE NO. 4 MISSI 3
AND DIAMETER SAMPLER ADVANTE (FIRCH COPE DIA	SAMPLE RECOVERY	FAMPLE FR CWS	1 (155 1 N 6. P. W.	PATEH PRESSUR TESTS	111F 11 11 11 11 11 11 11 11 11 11 11 11	ELEVATION	HLd30	CRANHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES DN: MATER LEVELS, MATER RETURN, DHARACTER OF DRILLING, ETC.
4.8	4.2	9 50- <u>50</u> 2.				41.2	20.0		4	15.0-50.0 FT <u>SANDSTONE/SJ.TETONE</u> : DARY REGLISH BROWN (1GF 3/4) TO LIGHT MODERATE BROWN (5YF 3/4) TO LIGHT BROWNISH GRAY (5YF 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE; SLIGHTLY WEATHERED WITH OCCASIONAL FRESH AND HEALED (COSO4 OR COCO3) HIGH ANGLED FRACTURES; THINLY LAMINATED NEAR HORIZONTAL BEDDING APPARENT. 16.5~ 1T.0 FT: SMALL AMOUNT OF CALCITE AND BLACK OXIDATION.	10- -9 \$7	-25-84 -26-84 ROUTED 4 IN. TEL CASING -26-84 -8-84 20 FT.
	9.9	1	TES5 24.	E PAI INTE -35.1	F		23.0			MAXIMUM DIMENSION VUC FILLED WITH FRIABLE MOTLY TO WELL GEMENTED SANC. ~ 19.5-20.0 FT: OPEN VUC (0.1 FT) 19.0-24.0 FT: LIGHT BROWNISH GRAY (SYR 5/1) VERY WELL GEMENTED VERY FINE GRAINED AMENACEOUS SILTSTOME. 22.0-22.4 FT: NEALED WITH CALCITE. 22.9-23.3 FT.: FINED GRAINED MOTLY CEMENTED SLIGHTLY FRIABLE ZONE. 24.0-40.0 FT.: MOT BROWN TO LIGHT BROWNISH GRAY, VERY FINE GRAINED ARGILLACEOUS.		-

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	GEO	LOGI	C DF	RILI	_ L()G ["	ROJECT		FUSEAF JOP NL. 1451-13	SHEET NO. HHEE NO. 5 3 OF 4 MIES-38
SAMPLE EVET AND USEANS FEE	SAMPLER ALVAUER LETECH LINF PIN SAMPLE RECOVERY	A PLATE E HILING	105c 14 6. P. W.	MATER MECSUR TESTS Jan 153 Jan 253 Jan 4	r I LE I N LI MITES	ELEVATION	712	CRAPHIC LOC	DESCRIPTION AND CLASSIFICATION	NCTET ONI WATER LEVELS, WATER PETURN, CHARACTER OF DRILLING, ETC.
NN CORE	10.D 8.0 R02-0	1	Doue TEST 34.4	LE PAC INTEF -45.9	KERS VAL FT.		8.0		31.5-31.6 FT.: WEA+, LAMINATED BROKEN POFER CHIF' ZONE. 15.0-50.0 FT <u>SANDSTONE/SILTSTONE:</u> DARK REDDISH BROWN (10R 3/4) TO MODERATE BROWN (5YR 3/4) TO LIG BROWNISH GRAY (SYR 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE; BLIGHTLY WEATHER WITH OCCASIONAL FRESH AND MEALE (COSD ₄ OR COCO ₃) MIGH ANGLED FRACTURES; THINLY LAMINATED NEA MORIZONTAL BEDDING APPARENT. 38.0-39.5 FT.: WROKEN MDTLY CEMENTED AMENACEOUS SILTSTONE.	D HT HED 50
NK CORF							D.D		40.0-45.0 FT.: TRACE OF COURSE SIZES AND SUBROUNDED MEMOLES. 45.C FT.: CALCITE COATING ON FACE. INTERIM STOPAGE SUTE	HELE NI. Wird-35

	G	EO	LOGI	C D	RILI	LL	DG T	IDUECT			FUSHAF	1 NUL - HELE NUL OF 4 - MULT-38
ANT BALL THAT	SAMPLED ALIVANEE	SAMPLE RECOVERY	Sauri Elimes Sauri Elimes Pier cont Pier cont	1.4.4 1.4.4 6. P. K.	HAT LA PRESSUR TESTE		ELEVATION	04 F 1 H	CRAPHIC LINS	SAMPLE	DESCRIPTION AND CLAUSIFICATION	NCTI: 5N: WATER (FVELS) WATER (FVELS) CHAFACTER DF DP:11000, ETC.
14K (144)		-					5.2 5				15.0-50.0 FT <u>SANDSTONE/SILTSTONE</u> DAPK REDLISH BROWN (10R 3/4) TO MODERATE BROWN (5YF 3/4) TO LIGHT BROWNISH GRA- (5YF 5/1) WELL CEMENTED INTERBEDDED SANDSTONE AND SILTSTONE: SLIGHTLY WEATHERED WITH OCCASIONAL FRESH AND HEALED (COSD4 OR COCO3) HIGH ANGLED FRACTURES: THINLY LAMINATED NEAF HORIZONTAL BEDDING APPARENT.	11-8-84
											BOTTOM OF HOLE AT SOLO FEET. HOLE CONVERTED TO OBSERVATION WELL. WEE OBSERVATION WELL LOC FOR CONSTRUCTION DETAILS.	2-15-85 COMPLETED DEVELOPMENT OF WELL RAN RECOVERY TEST FOR PERMEABILITY DETERMINATION.
			40041 67 41 Fifti				·	- <u>-</u> ¥	1 100W14		INTERIM STOFAGE SUITE	HDLEINU MILES-3B

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SITE						RILL AGE SI	- L(1E			RGJECT S (JD 8	-FET 1	92	FUSRAF	996.87		J05 NC. 14501	-138	SHEET NC. 1 DF 1 FROM HOP12. 90*	MDLE NC. MISS+44 MEAFING N/4
_	26/8	4 1	PLETE 0-26		_	MPIRE	SO1LS			o.		me	MD MODE. 550 ATV	71	N	90.D	-	NOCK (FT.) N/A	TOTAL DEPTH SC FT.
		N/A			CORE	BOXES N/A	S4471		PVC 5	0 0 CA			DEL. DE .0 FT.	PTH/EL. GROU 5.D FT	_		•	HE PTHZELL T	OF DE ROCH
	E HAN	N/	EIGHT/ A	FALL		CASI	NG LEFT	PVC 2		84 FT			LOCCED BY:	R.	H.NEL				
MO DIMETER	SAMPLEN ADVANCE	SAMPLE RECOVERY	SAUPLE IN PURS	INECONFRY		WATER RESSURE TESTS	TINE IN MINUTES	ELEVI	AT I ON	DEPTH	DRAPHIC LOG	SAMPLE	DE S	CRIPTION AND	CLASS	SF JCAT IO	• •		DTES ON: MATER LEVELS. MATER RETURN. MARALTEP OF RILLING, ETC.
rent muder, 7 Inch do								55.	.0	4.0			MODERATI FINE GRA CONCRETI 4.D-10.0 F GRAVISH SILTY S (NI) CLI GATRIX	T <u>SAND</u> (S E REDDISH AINED WITH E FRACMENT E FRACMENT (MED (SR 4 AND WITH 1 AVEY LOW F CONTAINING TS AND FIN	BROWN SEE)/ <u>C</u> SEE)/ <u>C</u> L/2) F L/2) F LASTI COM	LAYEY S LAYEY S INE GRA EDGED I C SILTY RODAL L	Y 511 5-1-0 5117 0 AINED BLACK Y EKE	FDR CDN 0. (ML)	TE CHECKED RADIDACTIVE TAMINATION EMERLINE.
Ľ								45.	.0	10-0			HOLE CO	OF HOLE A INVERTED T	D HON	ITORIN		10- 2-2 COMP DEVE DEVE	25-84 25-85 25
			5800-	: 67-	SHEL PT	1	Is	176						SEE MONITO			5.	FOF	NERN TEST PERMEABILITY RWINATION.

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GEOLOGIC	DRILL LOG	PRUJECT FUSRAP	408 NC. SHEET NC.	
TE MAYWOOD INTERIM	STORAGE SITE COORDI	NATES (J08-FEET) 208.18 E 10,008.36	ANGLE FROM HOR :2	
COMPLETED	DRILLER EMFIRE SOILS INVEST	DRILL MAKE AND MODEL	DLE SIZE OVERBURDEN (FT.) ROCK (FT.)	TOTAL DEPTH
DRE NECOVERY (FT. /%)	CORE BOXES SAMPLES EL.	TOP OF CASING OPOUNC EL. DEPTH/EL	. GROUND WATER DEPTH/EL.	47 FT.
28.5/95	CASING LEFT IN HOL	STL DE. 7E FF		FT./43.8 FT
140 LB/30-IN	4' STL 2-IN/1 6' STL 6-IN/1 BATER		. NELSON	
AND DIANETER ADVANCE EINETH ADVANCE EINETH CONF MAN SAMPLE RECOVERY SAMPLE RECOVERY FREEVEN CONERY RECENT CONE RECOVERY		- 1 W 1 Z 1991	ON AND CLASSIFICATION	NOTES DA: MATER LEVELS, MATER RETURN, CHARACTER OF DRILLING, ETC.
15 2.0 1.0 <u>9 -3 -10</u> 23	\$5.;	MODERATE RED	DISH BROWN (10R 4/4) CON	E CHECKED Radioactive Itamination By RLINE.
		GRAVIEH RED	TD 38,1 90 17 91 91 92 90 90 90 90 90 90 90 90 90 90 90 90 90	TONITE DRILLI
5 2.0 1.0 <u>1 -1 -1</u> 2		MATRIX CONTA	INING DANACOAL LIKE SET	MA LOGOED E TO 15 FT. AND GROUTED IN. STEEL SING TO 17 FT.
NGA				
\$5 1.5 1.0 <u>14-5 -7</u> 12				
ROT BIT	43	RED (10R 4/2 GRAINED; WEL CEMENTED; AR LAMINATED BE GENERALLY AP	SANDSTONE: SYR 5/2) TO CRAVISH) FINE TO VERY FINE L TO VERY VELL GILLACEDUS; VENE DDING APPAREN" BUT PEARS MASSIVE; MOST RESH AND HORIZONTAL.	
5+5% 17 5700+; 57+5	DELBY TUBE: SITE	MAYNOOD INTERIM STORAGE SITE	NO_1	NTSS-4B



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	G	E0	LOGI	C D	RIL	L L(06 '	ROJECT			FUSKAY	1	T NC. OF 4	HOLE NC. MISS-48
SAMPLE FYPE AND DIAMETER	SMAPLER ADVANCE LENGTH CITIE RUN	SAMPLE RECOVERY CORE PECTIVERY	SAMPT F BLOWS "N" PERCENT CORE RECOVERY	1055 1N 1.9.0.0	WATER RESSUR TESTS	TINE IN MIMUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFI		NC BAT BAT CHI	ES ON: EF LEVELS, ER RETURN, RACTER OF LLING, ETC.
ROCK BIT								5.0			11.5-47.0 FT <u>SANDSTONE</u> PALE BROWN (5YR 5/2) TO RED (10R 4/2) FINE TO VE GRAINED; WELL TO VERY WE CEMENTED; ARGILLACEOUS; LAMINATED WEDDING APPARE GENERALLY APPEARS MASSIN BREAKS ARE FRESH AND HOR	ERY FINE Ell Some Ent Blut VE: Most	10-26	17 FT.
											19,9 FT.: FRESH 55' 19,7-80,0 FT.: (REDAR): AND (N	ERIE BALE		
EX COME	18.0 RGD		SS2	POLIS WEST 83.2-1	PNCX WTERY M.7 F	EPG AL T-				12-11 1 101	24.4-24.7 FT. 14RGILLACOUS 1			
				13.7	15	19		╺╻╻╻╻╻╻╻╻╻╻╻╻╻╻╻╻╻			FEW FINE MEDI SAND SIZES. 25.5 FT.:			
			200N; ST-5 ; F-P1TCH			TIS]			RIN S	TO	RAGE SITE		DLE N.	W195-48



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		EOI	_0G]	IC D	RILI	LL	DG r	ROJECT	·		JOB NC. SHEE" NC. HOLE NC. FUSRAP 14501-138 3 of 4 M155	
SAMPLE, TYPE AND DIAMETER	LENGTH COPE RIN	SAMPLE RECOVERY	SANPT E PLONS	LOSS LOSS IN G.P.M.	HATER MESSUR TESTS	TIME IN MIMUTES	ELEVATION (FT)	H1430	CRAPHIC LOC	SAMPLE	NOTES ON: DESCRIPTION AND CLASSIFICATION DATER RETURN CHARACTER OF DRILLING, ET	•
		5.5		DOUB TES 33.2				30.0		RUN 2 27-37	11.5-47.0 FT <u>SANDSTONE</u> : 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.: 45° 30°	
NX CORE		9. 7	_ - · -	•.c	15	12	18.3	37.0		104 3 37-47	37-37.2 FT.: SHALE WITH GREENISH GRAY (SGY 5/1) MOTTLING 41.1-41.5 FT.: BHOKEN SHALE	
				S1-SHELB (TCHEP): 1			SITE	45.0			INTERIM STORAGE SITE MISS-4E	



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		<u>.0G1</u>	<u>C</u> DF	RILL	<u> </u>)G [ROJECT			FUSRAP	JOB NC. SHE 14501-136	EET NC. 4 OF 4	HOLE NC. NISS-48
AND DIANE TER SAMPLEN ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY CODE RECOVERY	SAMPLE RLOWS "N" PERVENT CORE RECOVERY	Lnss Lnss G. P. H.	RATER RESSUR TESTS	TINE IN MINUTES	ELEVATION (FT)	DEPTH	CRAPHIC LOC	SAMPLE	DESCRIPTION AND CLASSI	FICATION	TA TA Or	TES DH: TEF LEVELS. TEF RETURN. MRACTEF OF HLLING. ETC.
2-22		SPC04: 51	-s-E.P.	TUBE :				TEPIM	ST	BOTTOM OF HOLE AT 47.0 F HOLE CONVERTED TO MONITO WELL. SEE MONITORING WEL LOG FOR CONSTRUCTION DET	DRING	HCLE NO	-B5 ETED OPMEN" L. RAN ERY TES" ERMEABILITY MINATION.

EE	B													32073	5
	G	EOI	OGI	C DI	RIL	LL)G "	RDJECT		FU	SRAF		JOS NC. 14501-138	SHEET NO.	HOLE NC. MISS-5A
SITE	MAYW		INTERIM	STORA	GE \$1	TE	COOPEDINATE	s u Del·		234	.38 E 9602.5	57	ANGLE	FRON HORIZ.	MEARING N/A
BE GU≉			PLETED	DRIL			1				ME MODEL	HOLE SIZE	DVERBURDEN (FT.)	ROCK (FT,)	TOTAL DEPTH
	TECOV		1/1/84 1./%)	CORE	BOXES	SAMP.		OF CA	SINC	ROUN	1	7 IN. /EL. OROUND I	-	N/A	
SANPI		IA NET T	ËIGHT/FAL	1	N/A CAS		T STL STL STL	08.89	FT.	57	LOGGED BY:	10.61 FT.7		<u> </u>	N/A
	wiz	N.	/A		BATER		2-IN./15. 4-IN./5.0		r. 			к.н. 	NEL SO N		
SAMPLE TYPE AND DIAMETER	SAMPLER ANVANC	CORE DECOVERY	SAMPLE BLOWS "N" PERCENT CORE RECOVERT	L054 JN 0.P.H.	RESSUR TESTS		ELEVATION	DEPTH	CRAPHIC LOC	SAMPLE	DESCRI	PTION AND CL	ASSIFICATION *	914 914 D1	TES DN: TEF LEVELS, TEP RETURN, MRACTEF OF HILLING, ETC.
FLIGHT AUDER, T-INCH OD			SP004- 5				57.4 90.9 40.4	5.0			LIGHT GNEY; GRAINED WIT OF MEDIUM (MORE SILTY S FT; TRACI 6.5-6.0 FT,	ROWN (5YR - ERSEDDED P FINE TO 1 TH SOME SI INTERMEDO F ONGAN CINCERS:	4/4) WITH ROWN, TAN AND VERY FINE LT AND TRACE CK (N1) WITH ING MELOW ICS.	PDE SC CONTA BY EE -HOLE UITH AUGEF -CASS B* VI HEC CUTTI	A LOGGED FT. FT. SUAL FIELD DS OF NGS ANC ES FROM SE.
1			SPOON: S				▶1 Ft		MAY	00	D INTERIM STO	RAGE SITE			N155-54



GEOLOGIC DRILL LOG 14501-138 2 04 MISS-54 2 SAMPLE TYPE AND DIAMETEP SAMPLER ADVANCE (FNGTH COTE RUN SAMPLE RECOVERY CIME RECOVERY BATER SAMPLE BIL PHS N. PERCENT CORE RECOVERY PRESSURE CRAPHIC LOC NOTES ON: SAMPLE TESTS WATER RETURN. DEPTH ELEVATION DESCRIPTION AND CLASSIFICATION PRESSURE P.S.1 1 INE IN MIMUTES 1055 14 8.P.W. CHARACTER DE ۰. DRILLING. ETC. 10.0-15.0 FT.-SAND (SM) SILT (ML): THINLY INTERBEDDED BLACK (M1) AND DARK YELLOWISH BROWN (10YR 4/2) 15.0 42.4 SILTY SAND AND LIGHT GRAY (N7) SANDY SILT; LOW TO NO PLASTICITY. 11-1-84 2-23-85 BOTTOM OF HOLE AT 15.0 FEET. COMPLETED WELL DEVELOPMENT. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS. HOLE NO. SITE SS-SPLIT SPOON: ST-SHELBY TUBE: MAYWOOD INTERIM STORAGE SITE MISS-54 D-DENNISON: POFITCHER: OFOTHER

FROJECT

FUSRAP

320:3

HOLE NO.

SHEET NC.

JOB NC.



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	G	EOI	LOGI	C D	RIL	L L()G	ROJECI	ſ		FUSR	F		JD6 NC. 14501		SHEET (NC. DF 1	HOLE NO. MISS-SA-1
SITE	MAYW	1000	INTERIM	STOR	AGE SI	TE	COORDINATE	S (JOE			5.52 E	9604.7	2		ANGLE	Рясы ні 90*	DF 12.	BEAFING N/A
11/	1/84	Ŧ	PLETED			SUTI 5	INVEST.CO		DRJLL I		AND MODEL		HOLE SIZE 7 IN.	OVERLADE	(FT.)	1		TOTAL DEPTH
	RECOV	ERYLF	•		E SECXES	SAMPL	ES EL. TO	P OF C		GROUM	DEL.	DEPTH/	L. GROUND				EL. 100	0 FT. OF ROCK
SAMPL		N/A MER W	E)GHT/FAL		N/A CAS	ING LEFT	IN HOLET D	IA./LE	INGTH	57.	4 FT.	IY:	DR	· · · · · ·			N/A	
	wiz l		/▲	1	WATER	s	VC 2-IN./ TL 4-IN./	5.0 F						4. NEL 901				
SMPLE TYPE	SAMPLER ADVANCE LENGTH CORF RUN	COME RECOVERY	SAMPLE PLOWS	1	TESSURI TESTS			Ŧ	8	LE I					•			S DN: R LEVELS,
31000	DTH C		SAMPLE PLOWS	1.055 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1	Pressure P.S.I	TIME IN MINUTES	ELEVATION	HLABO	GRAPHIC	SAMPLE		DESCRIP	TION AND CLA	LSSIFICATIO	N ⁻		OHAR	TH RETURN, Macter of Lling, etc.
		3 15	0 IL	2 3	a -			ļ				F1 . 6			_ <u>.</u>	$ \rightarrow $		
							57.4					_	<u>END</u> (SN-SI FINE ORAI		YEY		CONTAM	DIGACTIVE INATION
								•			SILT	MATRIX	: MDIST.			[1	BY EBE	RLINE.
									3									
								2.0		•	2.9-8.0	म . - <u>-</u>	<u>MD</u> (31-9	C)+				
			-	ļ						• • •					Z)		-04004	LOCCED
					ļ					:			RAY; FINE LT MATRIX				EPTH (T. ENTIRE OF WELL MADIO- LY
8																- 1	CONT AN	INATED
7-INCH										:								
								s .o.		•								
AUGER.										-								
FL IGHT								•										RIPTION NEEIFICATION
5										• • •						- 4		AL FIELD OF CUTTINESS IS-180
																1	INIPLEI	5.
							€.4	e.o-					·				1-1-04	
									1		-		LE AT 8.0				11-12-0 FALLING PERMEAU	I HEAD
				1				.			WELL. S	EE MO	NITORING I	WELL		[TEST RU	M.
]			LUNS	RUCTION (AILS.				
				1				10.0 1										
																	2-22-8	.
					1												NO WEL DEVELO	PNENTI
1																	FLUSHE	TO ENSURE
									-								OPERA*	2 UN -
	1				i 				TL.									
			1						1									1
\vdash	\$\$+5	P. 11	52004; S'	T-SHELB	TUBE;	<u> </u> s	1TE	<u> </u>					AGE SITE				IDLE NC.	
L	D-D	ENN15/	DN: F+PIT	CHEP: C	-OTHER							- a.QH					~	199-54-1



		G	E0	L()G	IC	D	RIL	L	LC)G	PR	DJEC7			FUSRA	P	···	JOB NC		SHEET NC.	HOLE NC.
SITE		A YW	360	1N	TER	IM	STOR	GE SI	TE		COOPD11	WATES	(J08			243.48 8	9596.	00	11450		FROM HOR12.	BEAFINC
E Gu					ETEL		DR:				<u> </u>				MAKE	ANC MODE.		HOLE SIZE			ROCY (FT.)	TOTAL DEFTH
11. CORE	-		ERY (I		1676 2)			BOXES			INVEST		CAS	INC		BILE B61	DEPTH/E	B/3 IN.	IS.O	•.	37.0	65 FT.
			.5/9					3		4		I STL	_59.	.70 F	٦.	57.4 FT.		3.67 FT./		•	···	/35.4 =*.
	ιE		NER 1			•••		CAS	ING	ST	IN HOLE L 4-IN L 6-IN	. /25	.0 F	Τ.		LOGGED	87:	R.H	NELSON			
SAMPLE TYPE	SAMPLER ADVANCE	LENGTH COME MUN	SAMPLE RECOVERY	SAMPLE BLOWS	PERCENT CORE	RE COVERY	Loss I	WATER RESSUR TESTS		MINUTES	ELEVAT)		DEPTH	CRAPHIC LOC	SAMPLE		DESCRIP	TION AND CL	ASSIFICATIO	N •	BAT BAT CH	ES DN: ER LEVELS. ED ACTURN. RACTER OF LLING, ETC.
æ	2	.0	0.7	-	-2		7				57.4				1	MODER THINL LIGHT GRAIN	ATE BRO INTER GREY: ED WITH	NUN (SYR (SEEDDED SH FINE TO (SOME SIL AINS: SELA	KOWN, TAN WERY FINE T AND TR	AND	FOR RA CONTAN BY ESE AND SC TAKEN HOLE 1	HECKED DIDACTIVE INATION RLINE. BLOWS JL SAMPLES JN PILDT 2.FT. FROM
AUGEN																		NTE NEEDD GF GROAM			THIS B DAS DR UIN J T IN, TO 15 SAMMA TD 14, AND DA UTH G DRILLE B IN, AND BE	IDRING. PILO ILLED NIN ID GO ANGER FT. WHEN LOGGED S FT. CNFILLED NOLT.
5	2	.0	1.4	•	4 11	<u> </u> 	 0								2						CLEAR 95 FT. 4 IN. CASING 30 FT. GROUTE	WATER TO AFTER STEL SET TO AND D.
AUDER																BLACK SOLE (SMIP)	(N1) F	1000 (100- 1000 GPA1) 51LT3LOU	ED WITH Plastici			RIFTION ABSIFICATION MAL FIELD 5.
GS	2	.0	1.4		65		<u>6</u> -50						0.0- - - - -		3	THINL AND D SILTY	Y INTER ARK YEL SAND A	- <u>SAND</u> (SM NBEDDED BI LOWISH BN IND LIGHT DW TO NO	LACK (N1) ROWN (107 ORAY (N7	R 4/2 }	3	
AUGER													-									
							SHELBY	TUBE :		TS:	TE			MA	YWO	OD INTER	IM STOR	AGE SITE			HOLE NC.	MISS-5E



	G	EO	LOGI	C DI	RILI	_ L(DG T	RGJECT			FUSRAP	JOB NC. 14501-138	9+EE3 2	NC. OF 4	HOLE NC. MISS-58
SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY COME RECOVERY	SAMPLE FILTORS "N" FERCENT COME RECOVERY	L 055 L 055 L 055 L N. C. P.M.	WATER MESSUR TESTS	TINE NINUTES	ELEVATION	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASS	FICATION .		84 84 54	TES ON: TER LEVELS, TER RETURN, ARACTER OF JULING, ETC.
55	C.5	c.e	45- <u>50</u> 4-1	NCH				15.0-	11:11	4	10.0-18.0 FT <u>SAND</u> (SM, <u>5</u> THINLY INTERBEDDED BLACK AND DARK YELLOWISH BROWN SILTY SAND AND LIGHT GR/ SANDY SILT;LOW TO NO PLA	 ((N1) N (10YR 4/2) NY (N7)			
ROCK DIT							39.4 1				18.0-55.0 FT <u>SAMOSTONE</u> PALE BROWN (SVR 8/2) T BRAYISH RED (18R 8/2); VERY FINE BRAINED; ARG WITH A PEW SHALE LENGE VERY WELL COMENTED ENC AND BROKEN FROM 18-20.	FINE TO TILLACEDUS S; WELL TO EPT SEATHERE	30		
														11-2- 11-5- STEEL 25 FT COLUT	IN. CASING TO
NX COME		10.0 20-0	100% 12					8 		RUN 1 25-35	25.5-33.5 FT.: CORE BROK ALONG EXTENSIVE VERTIC TO NEAR VERTICAL JOINT GRANCE AND BLACK OKIDI STAINING ON FACES; OCC CALCITE DEPOSITES.	AL ING; ZED		LATIO USED WATER	
			500N; ST	TES 26.	TUBE:	SF1.	ITE	30.0		00	C INTERIM STORAGE SITE			HDLE NC	M185- 5 B



NUMBER NUMER NUMER NUMER	NOTES ON: NATER LEVELS, NATER RETURN, CHARACTER OF ORTILLING, ETC.
III.0	ORILLINO, ETC.
17.2 15 15 17.2 15 15 PALE BROWN (\$YR 5/2) TO PALE GRAYISH RED (10R 5/2);FINE TO VERY FINE GRAINED; ARGILLACEOUS UITH A FEW SHALE LENSES; WELL TO TEST INTERVAL UITH A FEW SHALE LENSES; WELL TO	
TEST INTERVAL	
30.9	
11.6 15 21 30.5~30 FT. SMALE: AMENACEOUS (VERY FINE GRAINED);LIGHT GRAY MOTTLING FROM 38-38.3 FT. 	
No.0 992 10.0 992 10.0 992 10.0 992 10.0 10.0 992 10.0	
DOUBLE PACAGERS TEST INTERVAL 41.0-63.3 FT.	•
B.5 15 21 B.0 15 21 B.5 15 B.5 B.5	LE 10 .



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	G	EO	LOGI	C DF	RILL	_ L(06	RDJECT			FUSRAP	JOB NC. 14501-138	94EE* 4	NC. DF 4	MOLE NC. MISS-58
SAMPLE TYPE AND DIMETER	SAMPLER ADVANCE	SAMPLE RECOVERY CORE RECOVERY	SAMPLE FLIMS •N* PERCENT CORE RECOVERY	L 055 L 055 G.P.M.	WATER RESSUR TESTS	TINE IN MINUTES	ELEVATION	DEPTH	ORAPHIC LDG	SAMPLE	DESCRIPTION AND CLASS	FICATION		11 11 11	UTES ON: ITER LEVELS, ITER RETURN, IARACTER OF DILLING, ETC.
and the second se	0.0	9.6	96X 94		E		8.4			RN 3 40-55	18.0-05.0 FT <u>SAMDSTONE</u> PALE BROWN (SYR 5/2) CHAYIGH GED (10R 5/2) VERY FINE GRAINED; AN UITH A FEW SHALE LONG WERY WELL COMMITED EN AND CHONEN FROM 19-SO BOTTOM OF HOLE AT 55. HOLE CONVERTED TO MON WELL. SEE MONITORING LOG FOR CONSTRUCTION	TO PALE FINE TO GILLACEOUS ES; WELL TO CEPT ENATHER I. D FEET. HITORING WELL		EVEL Ell. Elcovi Per fi	
			\$P00N; \$' 5h; P=P7				116	6 0.0			RD INTERIM STORAGE SITE			MDLE NO	w:ss-5⋶



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	G	EO	_ 0 G1	IC	DF	RILL)G	PROJEC	T	FU	SRAP			JOB 10.		SHEET NO. 1 OF 2	HOLE NO. MISS-GA
51 TE 60/		D IN	TERIM	sta	RACE	SITE		COORDINAT			. 62	E 9576	.40			MIGLE	FILM HORIZ. 90*	BEARING N/A
NE GUI			ALETTED		DAJLI Ei		SOILS	INVEST.	co.			AND MODEL		HOLE SIZE T IN.	IS.O	(FT.)	ROCK (FT.)	TOTAL DEPTH
	30/8/	DIVEF	0-31-8 1./x)	н 		BODES	-			ASING				EL. GROUND	NATER		DEPTH/EL. T	0* 0F #0CX
				-	<u> </u>	CASI	NG LEFT	IN HOLE:		ÐIGTH	56	LOGGED I		.2 FT./47	'.4 FT.			N/A
		N/A	· 				PV ST	C 2°/16.1	02 FT FT.	•	T			R.	H.NELSON		<u> </u>	
NUTE THE	LENGTH CORE RUN	CORE RECOVERY	SAMPLE RLONS "H" "H"	CONTIN	•	NATER EXALIE TESTS		ELEVATION (FT)	HLAD	BUATHIC LOG	SMPLE		DESCRIP	TION AND CL	ASSIFICATIO	•		IDTES ON: INTER LEVELS, INTER VETURN, CHARACTER OF
32					₹ Å	P.5.1	TIME IN MIMUTES		-	8								BILLING, ETC.
FLIGHT AUDER, 7-INCH OD			96.6 0.0-1.5 FT. <u>SAND</u> (SM-SC): MODERATE REDDISH BROWN (10R 4/4) BECOMING VARICOLORED GRAY = 0.5 FT. FINE ORAINED WITH SOME SILT AND CLAY. 1.5-5.0 FT. <u>SAND</u> (SM): BLACK (NI); VERY FINE GRAINED WITH SOME SILT AND FINE SAND SIZES AND A FEW COARSE SAND SIZES AND A FEW COARSE SAND SIZES AND A FEW COARSE SAND SIZE CEMENTED PARTICLES; CONTAINS ORGANIC (CINDER/CHARCOAL) FRACMENTS. 31.5 5.0 5.0 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5									FOR DY E HOLI WITI AUGE	E CHECKED RADIDALTIVE RADIDALTIVE E DRILLED H 7 IN.OD. ER. MA LOGGED 13.5 FT.					
								45.8	10.0			BLAC OF S MEDI YELL	K (N-1 ILT.BE UM DAR	COMING TH K gray (b	-SM): (AINED WIT (INLY INTE (4) AND PA (72) E	E rb ed e Nle	CLAS NCE BY V NETH NED CUTT	SCRIPTION AN ISUAL FIELD NDS OF INCS AND BB SAMPLES.
			SPOON: : DN; P-P1				<u>ا</u>	1 1 TE			 	TERIM ST	DRAGE	SITE			HOLE	NO. MISS-6A



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		EOI	OGI	C DI	RILI	_ L(DG 🗖	ROJECT			EUCOAC 1	ET ND. OF		HOLE NC. NISS-64
SAMPLE TYPE And diameter	SAMPLER ADVANCE	SMAPLE RECOVERY CIRE RECOVERY	SAMPLE. HLOWS "N" PERCENT CORE PERCENT	1055 1N 6.P.W.	MATER RESSUR TESTS	TIME IN MINUTES	ELEVATION	ОЕРТН	CRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION		WAT WAT Cha	ES ON: EP LEVELS, EF RETURN, RACTEF OF LLING, ETC.
AUGER					•			5.0			11.0-16.0 FT <u>SAND</u> (SP-SM): BLACK (N-1):FINE GRAINED WITH TRACE OF SILT, BECOMING THINLY INTERDEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15:MOIST.	10	- 30-1	84
							41.6				BOTTOM OF HOLE AT 16.0 FEET. HOLE CONVERTED TO MONITORING WELL. SEE MONITORING WELL LOG FOR CONSTRUCTION DETAILS.	10 IN MD #E	-31- STAL NITO	84. LED PIND
			: 5900N: 51)N: P+PIT			5	ITE		WDOD	IN	TERIN STORAGE SITE	HO.	E NI.	M155-64



	G	EOL	OGI	C DF	RILL)G ["	ROJECT		1	FUSRAP		JOB NG. 14501		SHEE?	NG. OF 4	MOLE NG. NISS-68
SITE	MAYW	000 1	INTERIM	STORAD	E 511	'E	COORDINATE			31	E 9570.36			AMGLE	FROM н 90*	DFIZ.	BEAFINC N/A
BEGU			PLETED	DRILL	-	50115	INVEST.C			JOE	ILE BEI		THE POEN		ROCH (TOTAL DEPTH
	1/84 RECOV	ERY (F	./2)	CORE	BOXES	SAMPLE	S EL. 70	POF CI	SING	ROUI	NC EL. DEPTH/EL. SADU	ND WATE	R		8871H/	E 10P	OF ROCK
SAMP.		,178' MER W	7 E1GHT/FAL		2 CAS		IN HOLE: D	IA./LE	NGTH	56	.6 FT. 10.05 FT						/38.6 FT.
	·····	_	/30 IN.			511 511	4-1N./2 6-1N./5	4.4 F .0 FT T	1.	1		R.H.N			<u> </u>		
SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVERY	SAMPLE PLOWS •N* PERCENT CONF PERCENT CONF		TESTS	TINE IN MIMUTES	ELEVATION (FT)	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIFTION AND) CLASS	[FICATIO	• •		WAT WAT	EG DN: ER LEVELS. EF RETURN. RACTER OF LLING, ETC.
8	2.0	2.0	<u>6 -7 -</u> 18	1-10			56.6			1	0.0-1.5 FT <u>SAND</u> (S MODERATE REDDISH BECONING VARICOLO 0.5 FT. FINE BRAI SILT AND CLAY.	BROWN RED Ø	LIOR 4			FOR RA	CHECKEC DIDACTIVE INATION RLINE.
AUGER											1.5-5.0 FT <u>BAND</u> (9 BLACK (N1);VERY F BITH SOME SILT AN SIZES AND A FEU C SIZE CEMEDITED PAR CONTAINS ORGANIC FRAGMENTS.	THE OF FINE	E SAND Band 5:	RCOAL	,	B26 FT BIT BR DIT BR THI NAC BE ERED A ANC ALL LATION DRILLI IGO GP THAS LO	KOLLER OKE EDROCK SHOLE EN ENCOUNT- T 23 FT L CIRCU- IC MUD N)
8	2.0	0.5	<u>1 -1 -</u> 3	<u>8</u> -3				5.0		2	S.D-11.0 <u>SAND</u> (SH-S VARICOLORED MODET (18R 4/4),LIGHT (BLACK (N1); FINE GRAINED WITH SILT AND TRACE OF FINE	RATE R May (To me fy cla	N-73 A Dium Y Stri		2	HOLE I	EAMING THE JITH THE IDLLER INITIAL JT BACK- JWITH REPLACE- DOLE ID
AUCER								10.0	****	· · · · · · · · ·							
55	2.0	1.1	<u>6 -8 -</u> 19	- <u></u>			45.6	11.0		3	BLACK (N-1);FINE OF SILT, BECOMING MEDIUM DARK GRAY	GRAIN THINL (N4)	Y INTE	LE LE			
ALICER											YELLOWISH BROWN 15:MOIST: PIECES AND SHINGLES.				R	DES ANC CAT VISU METH	CRIPTION CLASSIFI- CN P A. FIELD DDC.
			SPOON; S			-	SJTE		MAY	NDO	D INTERIM STORAGE SI	TE				HOLE NO	M155-68

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	- D	FOI	OGI	C DF	2111)G "	ROJECT	<u></u>		J08 NC. SHEE: FUSRAP 14501-138 2	NC. HOLE NC. DF 4 MISS-6B
SAMPLE TYPE AND DIAMETER			I E BLOWS	1	WATER RESSURE TESTS	 ELEVATION	HLd30	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATEF LEVELS, WATEF RETURN, CHARACTEF OF DRILLING, ETC.
55	1.2	1.1	16-35- 2	50 In.			15.0		4	11.0-18.0 <u>SANC</u> (SP-SM): BLACK (N-1);FINE GRAINED WITH THACE OF SILT, BECOMING THINLY INTERDEDDED MEDIUM DARK GRAY (N4) AND PALE YELLOWISH BROWN (10YR 6/2) BELOW 15:MOIST; RANDOM PIECES OF WOOD, TAR PAPER AND SHINGLES THROUGHOUT.	• INITIAL ATTEMET TC TC DF:LL 6E TOOK A 5TH SAMPLE FROM 20-22CT WITH FOLOW:NC BLOWS ANC RECOVERT: 26-30-3:-42 6: R=1.5/2.0 MATEFIAL RECOVERT WAS A REDDISH
ROCK BIT										18.0-53.0 FT <u>EANDSTONE</u> : (RAYISH RED (10R 4/29) TO PALE REDDISH BROWN (10R 5/4) FINE TO VERY FINE GRAINED WITH SOME ANGILLACEOUS ZONES; WELL TO VERY WELL CEMENTED, THINLY BEDDED TO LANTWATED STRUCTURE.	ROWN FINE SANC (IE) TEANCHERED EDROCK.
NX CORE	1	3.0 DD-0							72-62 1 NUR	23.0-36.0 FT.: VERY HARD, FINE CHAINED LAMINATED DEDDING DIPS~30°; NOST BREAKS ARE HORIZONTAL AND APPEAR CAUSED BY DRILLING. 26.00 FT.: 20' CALCITE COATING	11-1-04 11-2-04 11-2-04 11-2-04 23.0 FT. 11-3-04 23.0 FT. 11-1 25.0 FT. 11-1 11-1 11-1 11-1 11-1
			SPOON; S Dh; P=P:			SITE	30,0	4YW00	PUN 2 27 32		HOLE NC.



	G	E0		51(<u>C</u> DF		<u> </u>)G [ROJECT			FUSRAP 1450'-138	HEET	or 4	HOLE NC. M155-
AND DIANFIER	SAMPLER ADVANCE	SANTLE RECOVERY CORE RECOVERY	SAMPLE, PLOWS	PERCENT CORE	LOSS 1N G.P.M.	WATER TESSURI TESTS HINSSEA	TINE IN MIMUTES	ELEVATION	HEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION		11. 11. 11.	CTES ON: ATER LEVELS, ATER RETURN, NARACTER OF RILLING, ETC.
NX CORE		3.7 5+0		x							RUN 1 27-32			<u>11-9-</u> 11-13	
NR COME		3.2 D=0		Ľ					B.0		RUN 3 32-37.6	33.5 FT.: TRACE CALCITE AND 25 DARK OXIDIZED FACE 00 WITH FEW FINE TO MEDIUM BMD SIZE GYPSUM KLS.		MOBI CORE 32-5 28-3 OVER MOBI OVER	LE 86 DEROM JEROM JEFT WAS -CORED BY LE. THIS NEPT IN BOX.
												18.0-53.0 FT <u>SANDSTONE</u> : GRAVISH RED (10R 4/29) TO PALE REDDISH BROWN (10R 5/4) FINE TO VERY FINE GRAINED WITH SQNE ANGILLACEOUS ZONES; WELL TO VERY WELL OBNEMTED, THINK, WEDDED TO LANAMATED STRUCTURE.			
NA CORE		9.0		x							RUN 4 37.5-47.5	42.0 FT: B5.0 THIN CALCITE STRINGER 43.0 FT.: FRESH 44.0-48.0 FT: MORE ARGILLACEOUS.			•
 	\$\$.\$	P_11	SPOON :	ST	SHEL BY	1ub: :	s	116	45.0-			45.5 FI.: 45. TRACE BLACK OXIDATION		IDLE N	



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	G	EOL	OGI	C Df	RILI)G 🗖	NUECT			FUSRAP	JOB NC. 14501-13E	SHEET	NC. DF 4	HOLE NC. MISS-68
SAMPLE TYPE AND DIAMETER SAMPLER ADVANCE	I FINGTH CORF MUN	SAMPLE RECOVERY	SAMPIF RLOWS .N. PERCENT CORF RECOVERY	L055 IN 0.P.M.	WATER RESSUR TESTS JUNSS JUN	T 246 IN MINUTES	ELEVA*10N	DEPTH	CRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASS	IFICATION		9/ 9/ ()	TES ON: TEE LEVELS. TEE RETURN, WRACTER DE MILLING, ETC.
	5	314785 5.20-0	952	1028 1.4 4.0	NRS 3M4	3011 MI		3.0			45.0-53.0 FT.: SIMILAR TO 23-35; VER HARD; VERY WELL CEMENTI 18.0-53.0 FT <u>BANDSTONE</u> : GRAYIGH RED (10R 4/29 REDDISH BROWN (10R 5/4 VERY FINE GRAINED WITH ANGILLACEDUS ZONES; W WELL CEMENTED, THINKY LAMINATED STRUCTURE. BOTTOM OF HOLE AT 53. HOLE CONVERTED TO MON WELL. SEE MONITORING LOG FOR CONSTRUCTION) TO PALE 4) FINE TO H BONE ELL TO VERY BEDDED TO O FEET. ITORING WELL		DF 11-13 11-13 UASHE DCTTOF INC D TESTS EACH MOLE UP TO SID 1 FMESS FOR 1 LOOD	HELING, ETC.
			SPOON: S				SITE							COMP DEVE OF RECO FOR	23-85 DETED LOPMENT VELL RAN DVER TEST PERMEABILITY RWINA JON.



EXAM DIPUT PLAN DELLA MELLA MALLA MELLA MALLA		G	EOI	OGI	C D	RIL	LL)G	ROJECT			FUSRAP			J08 NO.		SHEET	NO. DF 1	HOLE NO. MISS-7A
11/2014 11/2014 EMPTRE SOLIE IMPERT.CD. CME SOL ATV 7 JH. 10.5 1.3 11.5 CME ALL MYA MYA MYA CTU OF CALL SOL ATV 7 JH. 10.5 ST. / A2.6 F J CME ALL MYA MYA MYA ST. / A2.6 F J SOL 7 F J. / A2.0 F J. JO.5 F J. / A2.6 F J	SITE	MAY	1000	INTERI	M STO	RAGE S	ITE	COORDINAT	ES (J 09 -		177.	.62 E 9	431.42			MILE	-	OR1Z.	BEARING N/A
OTH OTH OWNER OWN			1				50TH F				_					-			TOTAL DEFTH
Server watch microf //ALL Called Lift 11 watch 20 Archite		RECOV	ERVIF		_			ES EL. 10	P OF CA	SINCO			DEPTHAE				DEPTH/	EL. TOP	OF BOCK
VEX.000 MITE							- -	IN HOLE!	IA. AE	NGTH	53.		1	72 FT./41	1.38 FT.		10.	5 FT./	42.6 FT.
No. No. <th></th> <th></th> <th></th> <th>A</th> <th></th> <th></th> <th></th> <th>FVC 2 /1.</th> <th>2.08 F <u>.0 Ft.</u> 1</th> <th>Т. Г</th> <th>1</th> <th><u> </u></th> <th></th> <th>R.H.NELS</th> <th>N</th> <th></th> <th>T</th> <th></th> <th></th>				A				FVC 2 /1.	2.08 F <u>.0 Ft.</u> 1	Т. Г	1	<u> </u>		R.H.NELS	N		T		
83.1 0.0-10.5 FTSAND (SB-201) FTE DESCEPT MODERATE BROWN (10R 3/4) /FINE TO MEDDISH BROWN (10R 4/4) ARC (10R 4/2) /FINE TO MEDDISH (10R 4/4) /FINE TO MEDDISH BROWN (10R 4/4) /FINE TO MEDDISH (10R 4/4) /FINE	DIMETER	LEN ADVANCE	LE RECOVERY	MPLE BLOMS 	12 - 3	PRESSURE TESTS	- 	ELEVATION	2.8		SMALE		DESCRIPT	ION AND CL	ASSIFICATIO	N •		SAT SAT	ER LEVELS, Er return, Racter of
Accel choces and	12		1	3 12-	5 ÷ °													0R11	LLING, ETC.
CLAYSELIGHT PLASTICITY: GOCASIGNAL BANGTORE CARE, HUITE SILTY AND BLACK CINDER PRACENTS. CLAYSELIGHT PRACENTS.								53 .1				MODE	RATE BR	OWN (SYR	3/4) TO	-		CONTAM	INATION
Control of the set of the se												CLAY; SANOS	SLIGHT	PLASTIC	ITY: OCCAS	IONAL		HOLE D WITH 7 AUGER.	RILLED 'IN.OD.
B C																		GANGLA TO 7.5	LOGGED FT.
42.6 10.5 42.6 10.5 41.6 11.5 41.6 11.5 41	AUCER, 7-1NCH																	DESC DESC CLASSI BY VIS BY VIS	IN BOTTOM E FROM .5 FT. RIPTION AND FICATION UAL FIELD S OF
ieitt inter								41.6	0.5			THINL FINE BROW SAND AREN BEDD GENEL BOTTOM CONVER	Y INTE GRAINE STONE A ACEOUS ING APP RALLY T I OF HO TED TO	REDDED D MODERA 4/4) ARG NND GRAYI SHALE; S PARENT (O TELL CEME LE AT 11 MONITOR)	FINE TO V TE NEDDIS ILLACEOUS SH RED (1 OME LAMIN -10*DIP); NTED. 5 FEET. ING WELL.	HOR 4/		11-5-8 11-10- RAN CO HEAD P TEST F FROM 2 2-21-8 COMPLE DEVELO WELL.	4 NISTANT ERMEABILTY OR INTERVAL 2.5-9.6 FT. 5 TED PMENT DF
								ITE		AYNOC	0	INTERIM	STORAGE	SITE				NOLE NO.	MISS-TA



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<u> </u>	G	E0	LOG	IC) Df	RILI	_ L(DG	ROJECT			FUSRA	P		JOB ND. 14501		SHEET NO. 1 OF 4	HOLE NC. MISS-78
SITE	MAY	WOOD	INTE	RIM	STOR	AGE SI	TE	COORDINATE	S (JDE			471,41	E 943	0.72		ANGLE	SO .	BEAFINC N/A
DE GUI	6/8-		PLETE:	-	DRJL		SOILS	INVEST.				AND MODEL B61		HOLE SIZE			ROCK (FT.) 36.0	TOTAL DEPTH 45 FT.
COME		1 /ERY(F 7.1/5			CORE	BOXES	SAUPL	4. 51	L 55.	58 1		NC EL.	1	EL. GROUND W		-	TEPTH/EL. TO	P OF ROC+
SANP.	E HAI	AER T	EIGHT/				ING LEFT	1 IN HOLE: 1 4-IN./20	5.98 F	NGTH T.		LOGGED	1	6.22 FT./4	H. HELEON		L	
			B/30			NATER	STL	6-1N1/5	0 FT.	<u> </u>	 	1						
SAUPLE TYPE AND DIANETER	SAMPLER ADVANCE LENDTH CORE PUN	SAMPLE RECOVERY CONE PRICOVERY	SAMPLE RLOWS	RECOVERY	LOSS 1N G.P.M.	TESTS	t INE IN MIMUTES	ELEVATION (FT.)	NLd30	GRAPHIC LOG	SAMPLE		DESCRI	PTION AND CLA	SSIFICATIO	. ●	11 11 11 11 11 11 11 11 11 11 11 11 11	TES ON: NTER LEVELS, NTER RETURN, MARACTER OF NULLING, ETC.
R	1.8	1.1	<u>4 -8</u> 24		6- <u>30</u> 4'			53 .6				MODER REDDI MEDIU CLAY;	ATE BI Sh BR N BRA Slight	SAND (SM-S ROWN (SYR) DWN (1GR 3 IMED WITH S F PLASTICI	3/4) TO D /4);FINE NOME SILT IV;DCCASI	TO AND Onal	FOR CONT.	E CHECKED Radidactive ANINATION BERLINE. DT HOLE FOR
AUGER														ondle.e., um 1° Er Finnsherf			TE AL SAMP. 14.5 FICH 70 PJ SAMM	REFRED MED ED TO FT.~7 FT THIS WELL; LOT HOLE A LODGED I FT THEN ILLED WITH
*	2.0	1.5	<u>3 -1;</u> 24	2-1	2-6				6 .0		2						A IN AND I ULD I THEN CLEAS	HOLE ED WITH ROLLER BIT ENTONITE TO 19 FT. COMED WITH WATER 19-49 FT.
AUGER																		
5 5	2.0	0.5	2 -3	3 - 1	<u>11</u> -12						3							
AUGER								40.6	13.0			13.0-14 WEAT		: SANDSTONE	•		CLASS	RIPTION AND IFICATION SLAL FIELD DS.
			9900N; DN; P+F				S	ITE		MAY	#00	D INTERI	₩ STO	RAGE SITE			HOLE N	MISS-7B



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	G	EOI	OGI	C D	RILI	LLC	DG	PROJEC1	1		FUSRAP	JDE NC. 14501-138	SHEET 2	NC. OF 4	HOLE NC. MISS-78
SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE PUN	SANTLE RECOVERY	SAMPLE RLOWS 	LOSS IN d.P.V.	HATER HESSUP TESTS	1 JuE 1 NE MINUTES	ELEVATIO	AL AND	CRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASS	IFICATION		14 14 14	TES ON: TEP LEVELS, TEP RETURN, ARACTER OF JULING, ETC.
ROCK BIT								15.0			13.0-45.C FT <u>SANDSTONE/S</u> THINLY INTERBEDDED FIN FINE GRAINED MODERATE BROWN (10R 4/4) ARGILL SANDSTONE AND GRAYISH ARENACEOUS SHALE; SOME BEDDING APPARENT (0-10 GENERALLY WELL CEMENTE	E TO VERY REDDISH ACEOUS RED (10P 4/) LAMINATED "DIP);	2)		
								B .0			19.6 FT: TOT TIGHT BETH WITH CALCEN	E FILLING		-SET CASIN AND Q 11-6-1	
NX CORE		6.9 D+0,	992 65		LE PM	a Eks		20.0		Run 1 19-26	23.0 FT:				
CORF				TEST	1971E	IV AL					JOINT INTERSECTED BY TIGHT VERTICAL JOINT.	u		11-8-1 11-9-1	20.0 71
NX CC	R	D=C.		14.4 1-SHELBY	15	15		30.0		RUN 2 26-33				HD.E N	



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LE CASSIFICATION AND CLASSIFICATION WATEP	NE NO. MISS-78	NO. H	SHEET N	JØB NC. 14501-138		FUSRAF		rojec i)G		RILL	C DF	OGI	EOL		
BOLE E PARCERS TEST INTERVAL BILE PARCERS TEST INTERVAL BILE PARCERS TEST INTERVAL BILE PARCERS TEST INTERVAL BILE PARCERS TEST INTERVAL BILE PARCERS TEST INTERVAL BILE PARCERS TOTAL THEMESODED FINE TO VERY FINE GRAINED MODERATE REDOIGH BINNIN (100 4/4) AMELLACEDAE SMOSTORE AND GRAVIEN BED (100 4/2) MEDICEDAE MOD GRAVIEN BEDOING AFFANISTIC TOTAL CALCEDAE MEDICEDAE AND GRAVIENTED. TITLE THE LAMONETOR FEED THE LAMONETOR FEED	DN: LEVELS, RETURN, LTER OF ING, ETC.	NATER NATER Charai			SCRIPTION AND CLASSI		GRAPHIC LOG		ELEVATION		TESTS		PERCENT CORE	SAMPLE RECOVERY CINE RECOVERY	SAMPLEN ADVANCE LENGTH CORE FILM	SAMPLE TYPE AND DIAMETER
BOLE E PARCERS TEST INTERVAL DR. 4 40.1 PT. 33.5-33.7 FT.1 BROKEN,LAMINATED. BOLE E PARCERS TEST INTERVAL DR. 4 40.1 PT. 35.0 THE PARCERS THE BALLY INTERVEDED FILE TO VERY FINE GRAINED MODEPART REDISH UNDER ALL ORDERATE RED ALL ORDERATE UNDER ALL ORDERATE R				5н	80. FRE	31.2 FT										
41.3 FT.: 41.3 F				N.LAMINATED PHALE: E TO VERY MEDDISH ACEOUS MED (10R 4 (AMINATED PDIP); D.	FT.: SROKE FT <u>SANDSTONE/</u> INTERBEDDED FIN RAINED MODERATE (10R 4/4) ANDILL ONE AND GRAYISH EDUS DALE: SME G ATTAINENT (0-10 LLY WELL CEMENTE	33.5-33 13.0-40 THIN FINE URBU SMOR MEDO GENE		B.0			E PAG INTEL 46.1	BOLE TEST 34.4				
	-			ALCITE		41.5 F				20	13	₹.●				
W 5.0 4.1 68% Z MDD=D, 51 45.0		40. F. N.		Land Then TeeD.	FT.: BROKEN.	44.7-44		45.01								

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									·				07:		,
					DRIL		<u>DG</u>	ROJECT			FUSRAP	JOB NC. 14501-138	9411 N 4 0		HOLE NC. MISS-7
AND DIANE TER	SAMPLER ADVANCE LENOTH CORE RUN	SAMPLE RECOVERY CORE RECOVERY	SAMPLE RICHE	I I I I I I I I I I I I I I I I I I I	WATER TRESSUR TESTS	Æ	ELEVATION	0691H	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASS	IFICATION		847 847 644	ES ON: EF LEVELS, EF METURN, RACTER OF LUING, ETC.
NX CORE							4.6	49.0		RUN 4 43-49	13.0-49.0 FT <u>SANDSTONE/</u> THINLY INTERBEDDED FIG FINE GRAINED MODERATE BROWN (10R 4/4; ARGIL: SANDSTONE AND GRAYISH ARENACEDUS SHALE; SOME BEDDING APPARENT (0-11) GENERALLY WELL CEMENT	NE TO VERY REDDISH LACEDUS RED (IOR 4/ E LAMINATED D*DIP);		11-9-6	14
											BOTTOM OF HOLE AT 49. HOLE CONVERTED TO MON WELL. SEE MONITORING LOG FOR CONSTRUCTION	NITORING WELL		RECOV	
	\$5+5F	P_1* 5	POON: S	1+546.8		[<u></u> [s]	TE] M	A YWOO[NTERIM STORAGE SITE		HD	LE NI	N155-78



	MA 1 7/84	(WOO)	D I MP.	INTER Leteo /7/84	1.	STOR DRJL	AGE S	SOILS	G ECOORCINA 5 INVEST ES EL.	r.co.	DRILL	N Chi Chi	E f	FUSRAF DC E 9700 NOI IND MODE: 550 ATV D EL. DEPTH/ 5 FT.2		UVERBLADEN 1450' UVERBLADEN 1.8 WATER	- 1 3E	5.2	F 1 A;Z. T.;	HOLE NC. MISS-80 BEARINC N/A TOTAL DEPTH 7 FT. OF ROCK 57.7 FT. ²
5.u.P.				30 I				ING LEFT	IN HOLE		ENGTH			LOGGEL BY:	R.H.NELSO	N		•		
SAMPLE TYPE IND DIMETER	SAMPLER NOVANCE	SAMPLE RECOVERY	SAMPLE BLOWS		Đ:		MATER RESSURE TESTS	TJME IN MIMUTES	ELEVATIO	2 DEPTH	CRAPHIC LNG		SAMPLE	DESCRIP	TION AND CL	ASSIFICATIO	iki ⁴⁶		WAT WAT CHA	ES ON: EF LEVELS. ER RETURN. FACTER OF LLING. ETC.
	2.0	0.7	5	<u> </u>		<u>5</u> -21			57.51 67.71 12.5	1.e			2	PALE GRAVE GEATMENED, SILTY BANE PRAGMENTS. 5.0-7.0 FT1 ANGILLACED	N (5YR 2/ NE GRAINE Y SILT AN MIDSTONE (9YR 6/3 SH NED (1 SHOKEN 91 AND SHOC AND STONE NANDSTONE	2),FINE D WITH D MAYEL. 2 2)TO MOR 6/2), 17H FINE (•		TO DE DWERS THICK SAMMA S FT.I FITH I HENTON HENTON LEVA' ANTEN HOLT HOLT HOLT HOLT HOLT HOLT HOLT HOLT	LOGGED TO MACKFILLED SEMENT/ NITE TION NOT TON NOT MOLATED MOLATED MOLATED MOLATED MOLATED MOLATED FIGN AND FIGN ION PLAL FIELD DS.
-							TUBE:	<u> </u>	SITE MA	YWDOD	<u> </u>		<u> </u>	TORAGE SITE		<u></u>			HOLE N	NESS-BG



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	G	E0	LOGI	C DF	RILL	. L()G	PROJECT			FUSRAP		•.	JOB NO 14501		SHEET	NG. DF 2	HGLE NC. MISS-90
517E	IA YWC	200	NTERIN	STORAG	E SITE		CODREINAT		991C	E	9590 NO	(INAL			ANGLE	FROM 9C	HOF:2.	BEAFINC N/A
لىت BE 11-	7-84		PLETED 11-7-84	DRIL		SOILS	INVEST.	- F		-	ANC MODEL		HOLE SIZE	OVERBURDEN		1	781.) 4.5	"C"A. DEP"H
2903	RECOV	ERY (F	1.72)	COPE	BOXES	SAMPL	ES EL. TO	OP OF CA		2 00		DEPTH/	E. GROUND 1			1		OF ROCK
SAMP.	-	AEF W	EIGHT/FAL		CAST	NG LEFT	IN HOLE	DIA. /LEP	истн		LOOGED 8					<u> </u>		47.50 FT.*
	_		/30 IN.	1	WATER		N/A-GROU'	ED	1	1			R.H.NEL				ŀ	
SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLE RECOVER	SAMPLE RLOWS	LOSS IN G.P.M.	RESSURE TESTS	TIME 14 MIMUTES	ELEVATION	H1430	GRAFHIC LOG	SAMPLE		DESCRIP	TION AND CL	ASSIFICATIO	^ *		841 841 644	TES DN: TEF LEVELS, TEF RETURN, RACTEP OF LLINC, ETC.
	2.9	0.5		2-5			59 ± 92.5±	5.0			VERY IN13 TE SANDY BLACK BLACK III.5-15 DARK WEAT ARGI	-11.5 WK CRGA	GRAY (N8) FINE SI WITH SCA NIC PIECE WITH SCA NIC PIECE WITH SCA SI BROWN FINE GRA DUS, BECOMI (ITH DEPTH	TO LTY SAND TTERED S. DATIONAL (SH): FIRE E	CONT /	ACT	NOTE: BORIN TC DE OVERB THICK TO 14 BACKFI WITH (BENTO BORTO SURVEY INTERF FROM 1 DWG 31	L DELLED TERMINE URDEN NESS. A LOCOED S FT. LLED SMENT/ VITE DINATES AND TION NOT TON NOT TON NOT TON NOT TECHTEL 3-DD07-C-01. RIPTION AND IFICATION SUAL FIELD
			SPOON; ST ON; P+PIT			S	ITE		Y#00!			ORAGE	SJTE				NC.E NC	M:55-90



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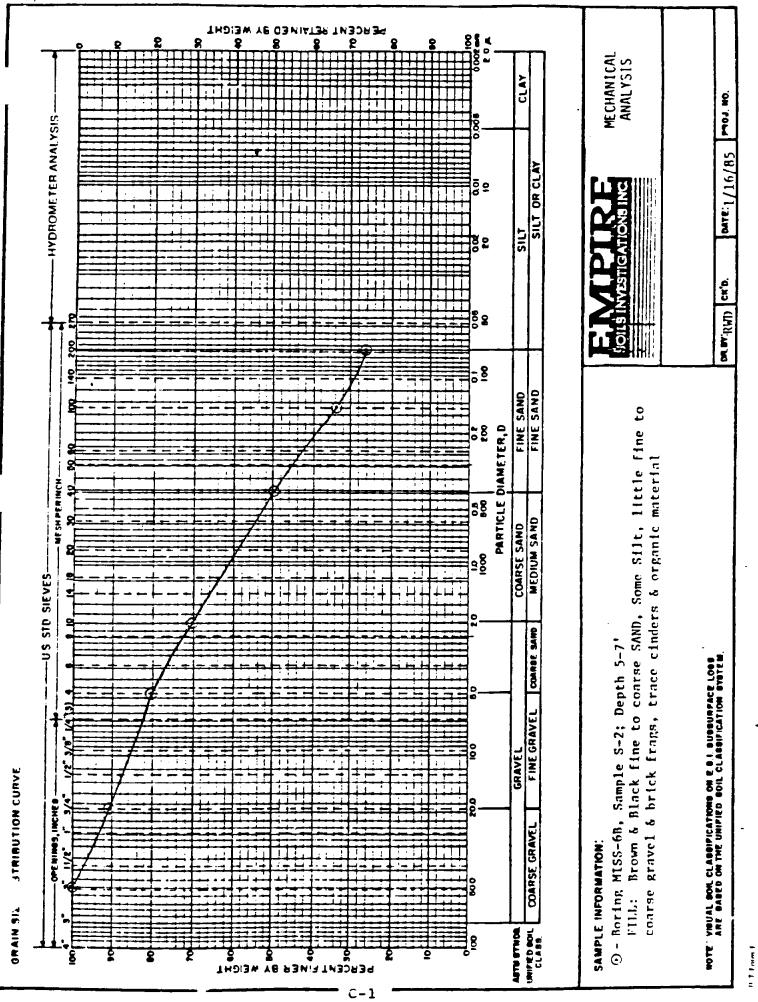
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EOL	OGI	C DI	RILI	_ L()G 🛛	ROJECT				NC. HOLE NC. OF 2 MISS-90
SAMPLE RECOVERY CORE RECOVERY	SAMPT F. FAI MAS "N" PERCENT CORE PERCENT CORE	1055 1N 0.P.M.	RATER RESSUR TESTS	TINE IN MIMUTES	ELEVATION	DEPTH	CRAPHIC LOC	SAMTE	DESCRIPTION AND CLASSIFICATION	NCTES ON: WATER LEVELS, WATER RETURN, CHARACTER DF DRILLINC, ETC.
	46-60				1	5.0-				
0.5	6"				43.0±	16.0-		4	15.5-16.0 FTCOMPETENT SANDSTONE	11-7-84
• 1 1 1	5 2 00w; 51	-SELBY	Tube :	5	17E					HOLE NC. WISS-90
				ARTER RECORD	ATEP PRESSURE TESTS TESTS TESTS<	CULUGIC DRILL LUG a to be t				

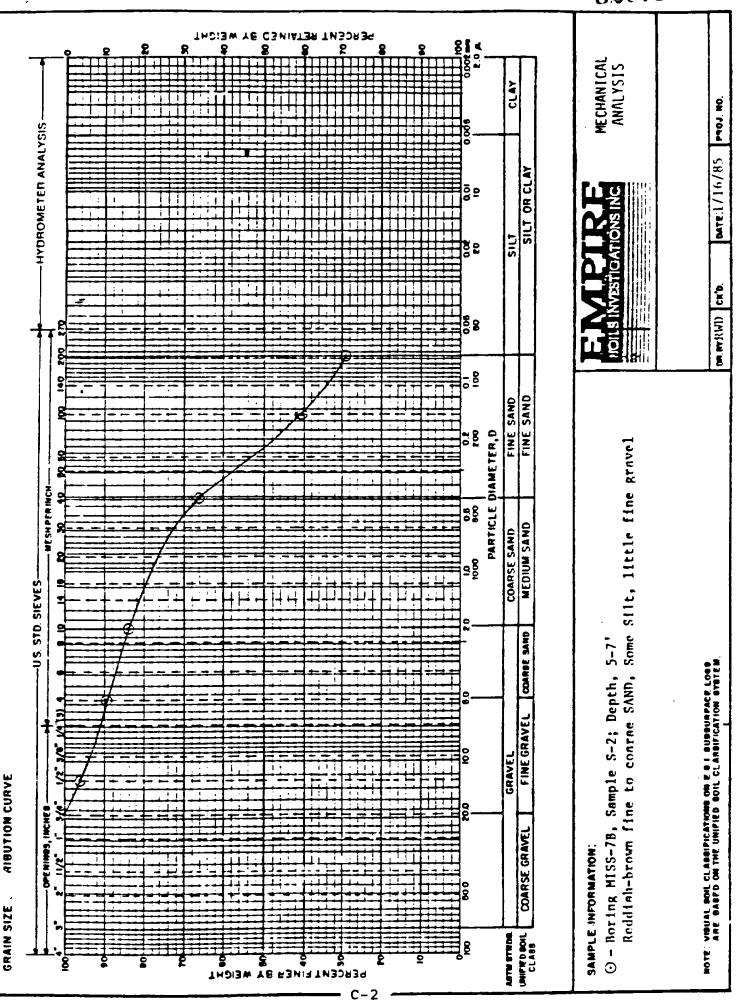
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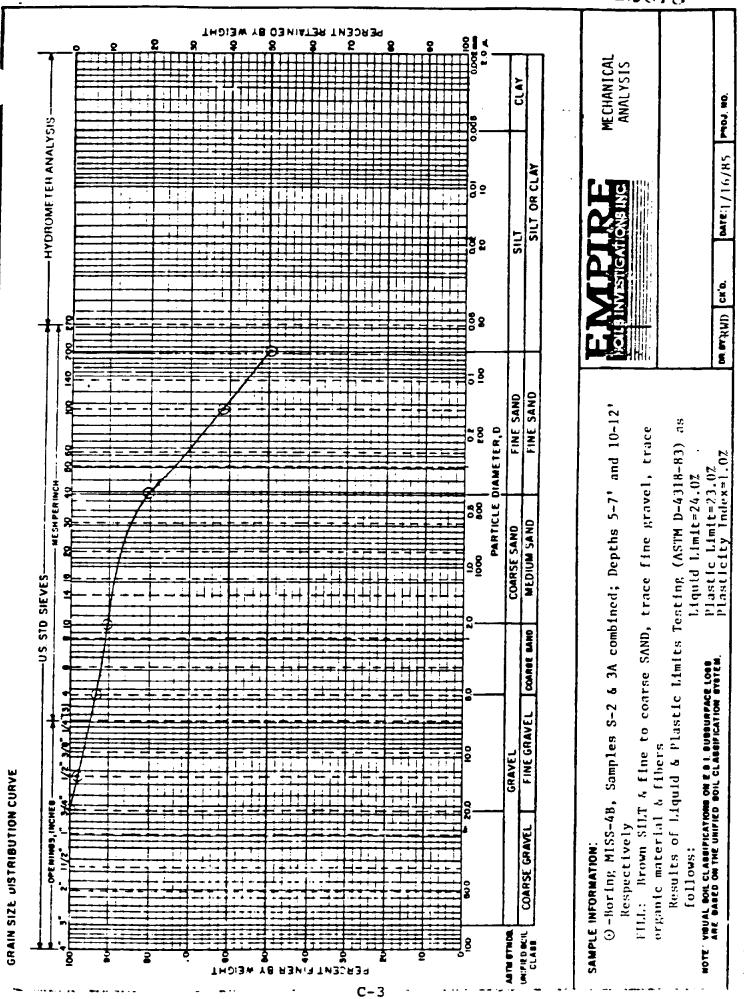
APPENDIX C

SOIL CLASSIFICATION TESTS

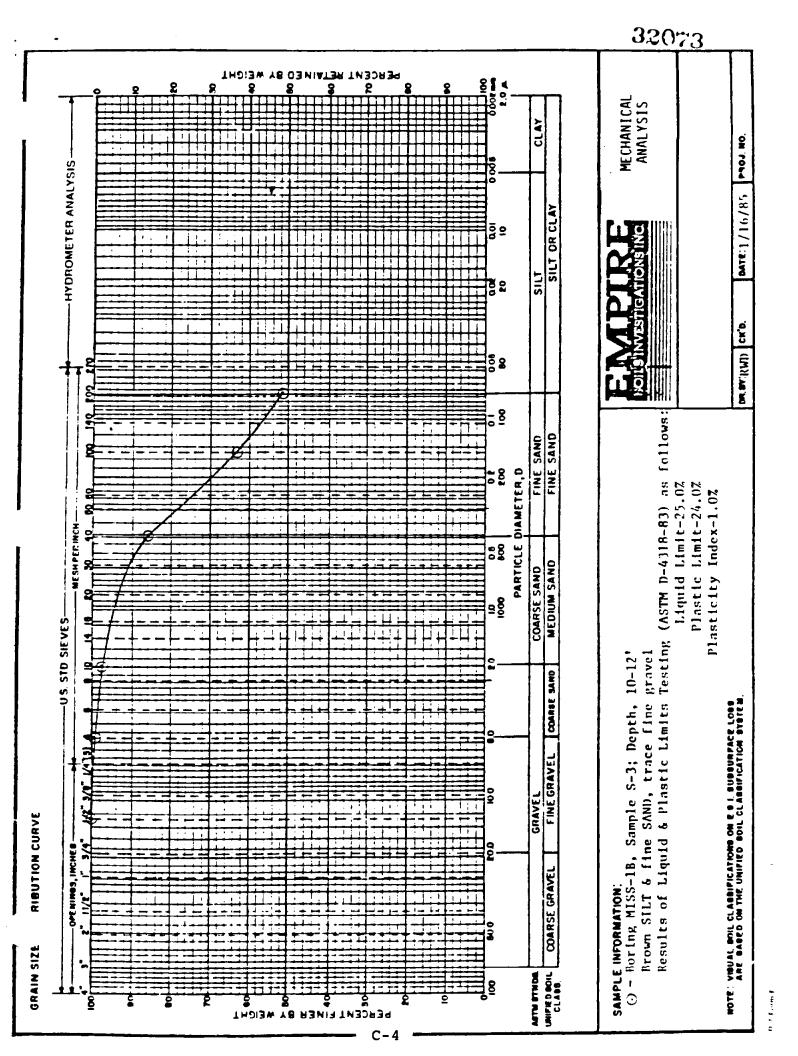


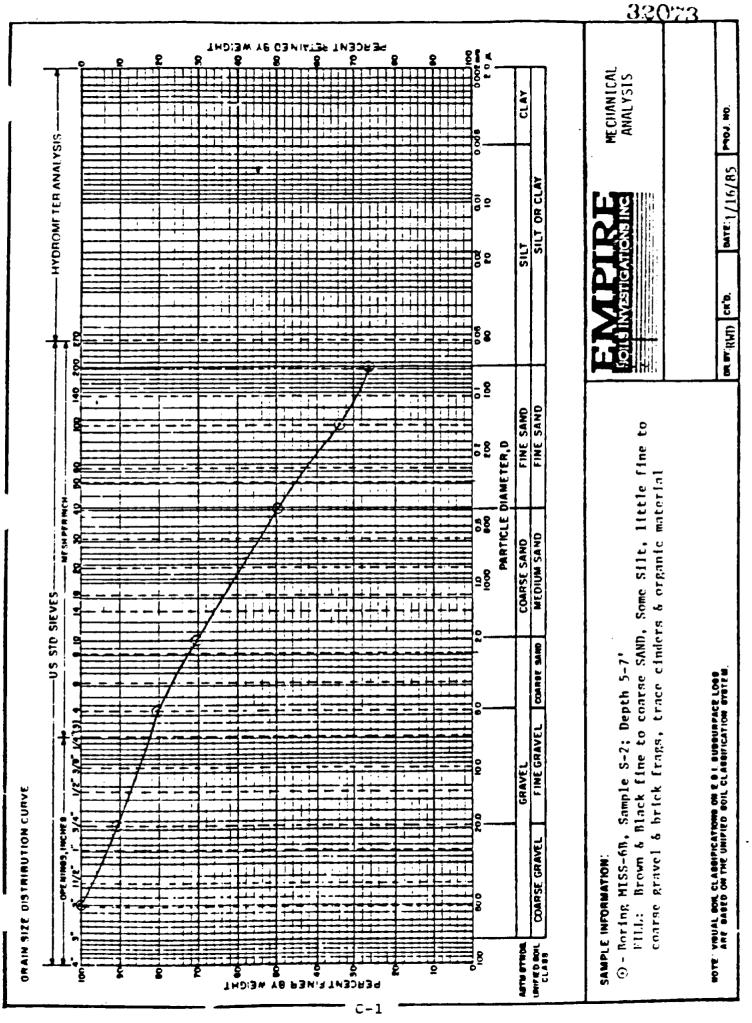


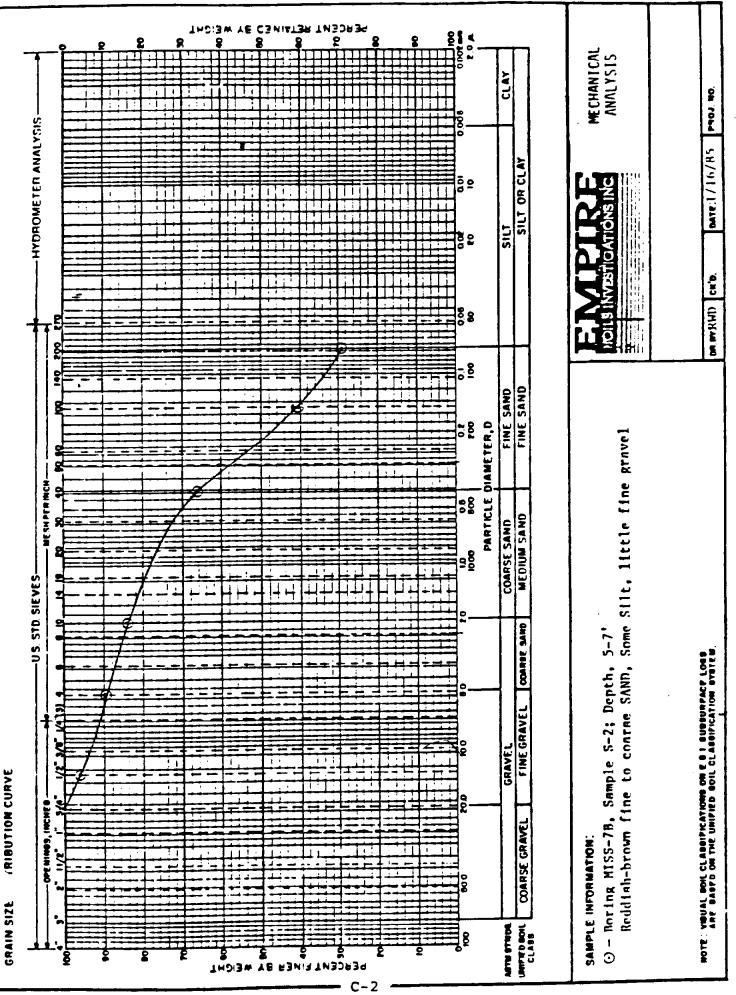
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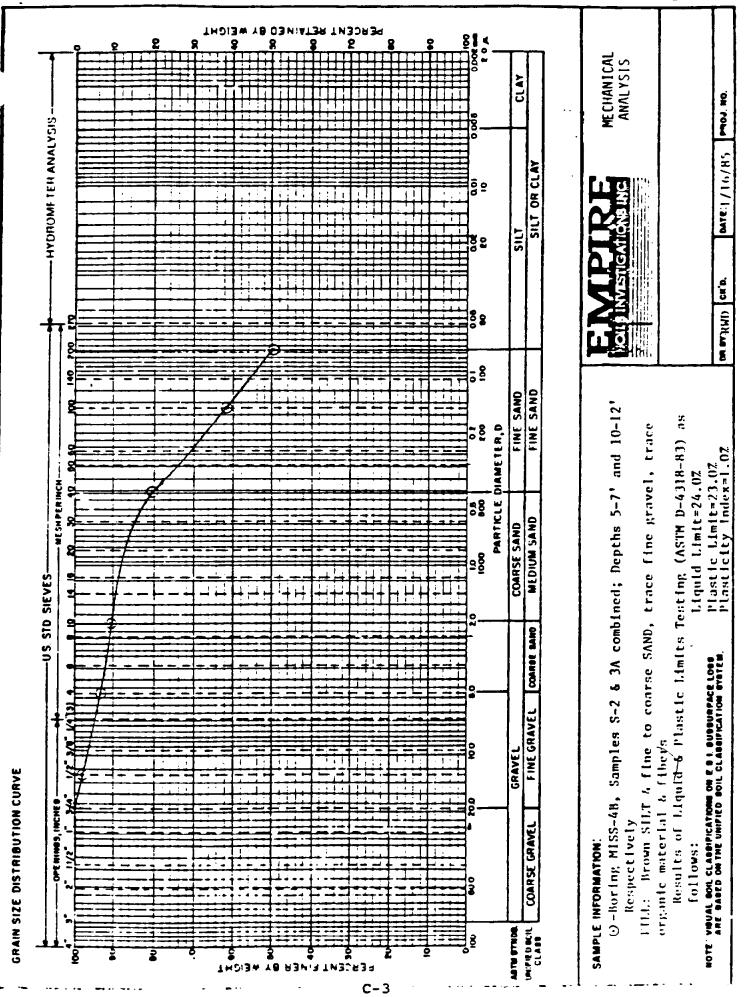


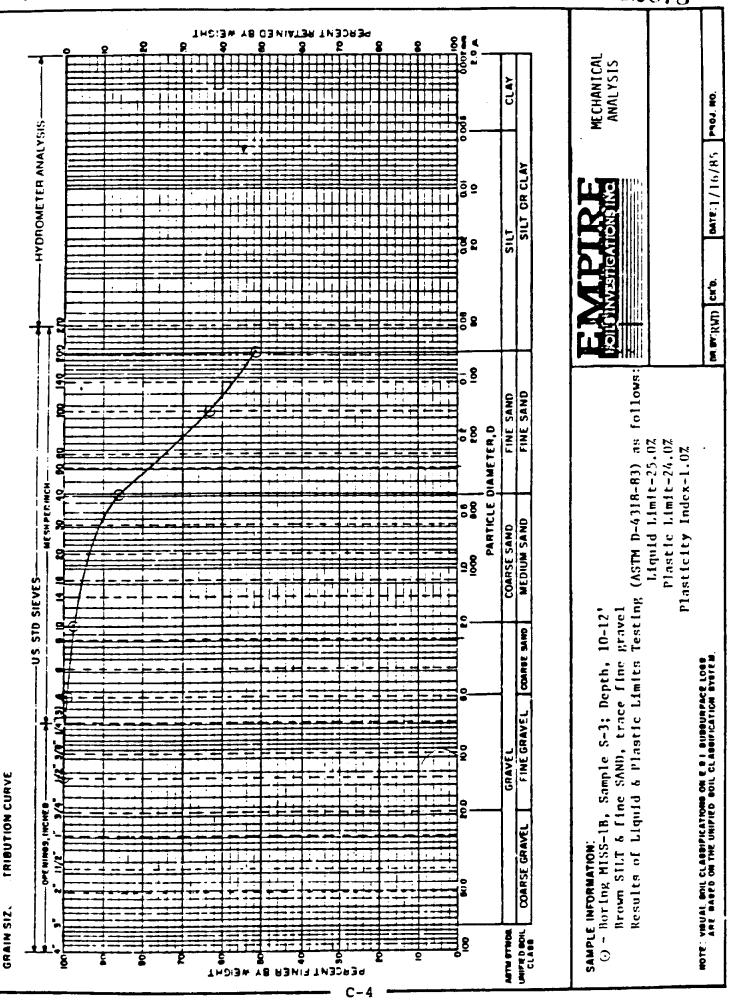


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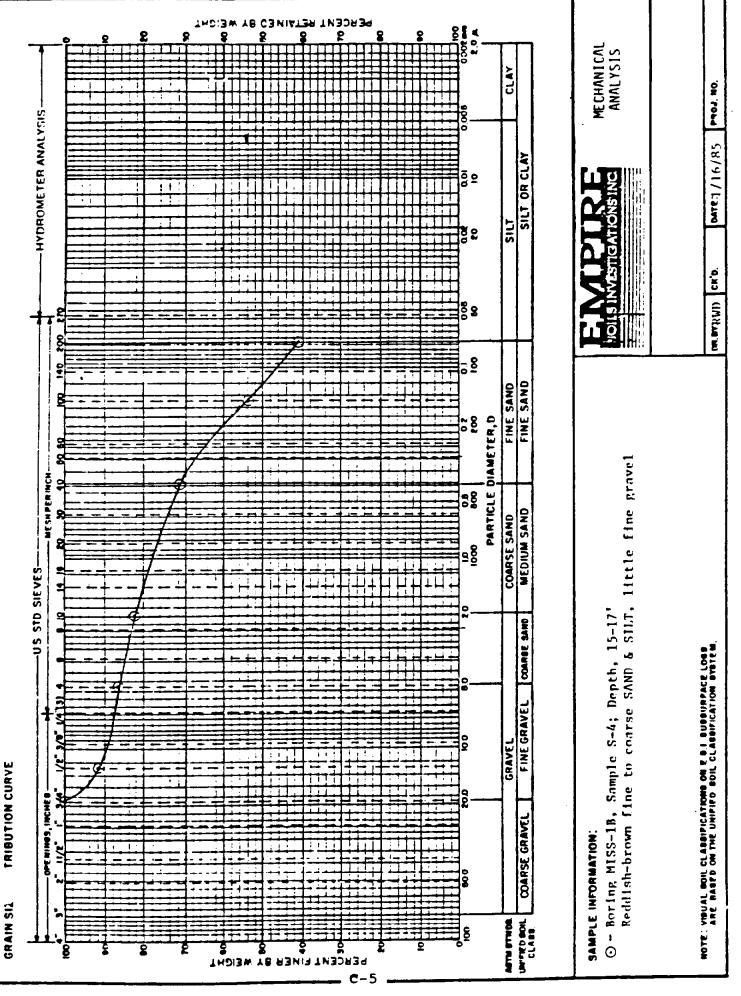
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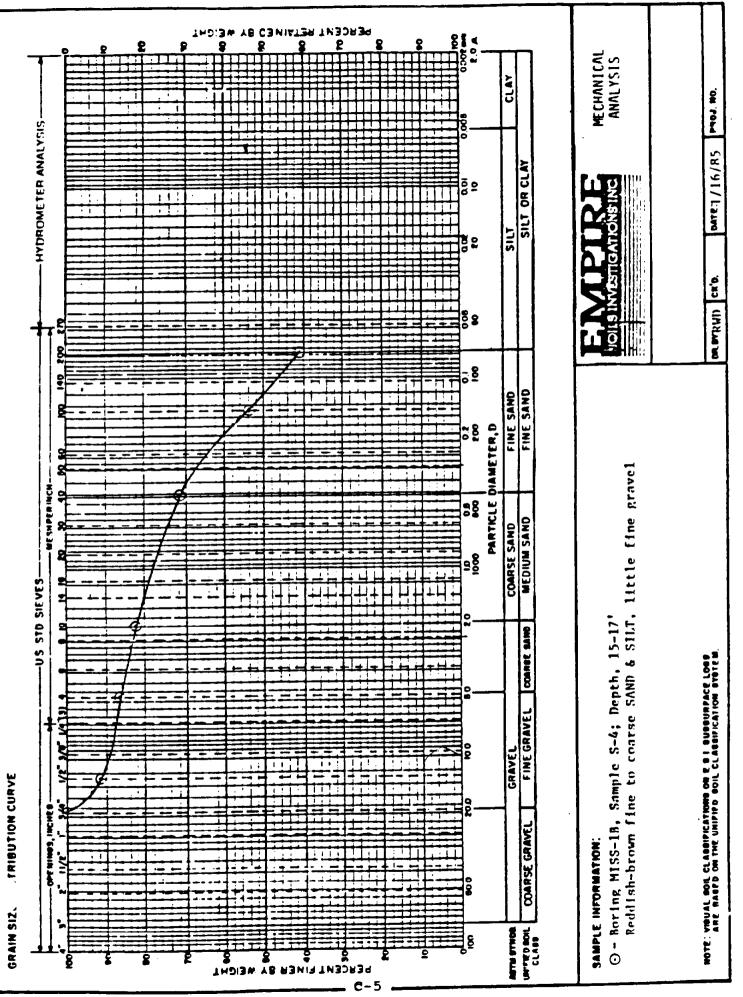




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0.11 mm



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