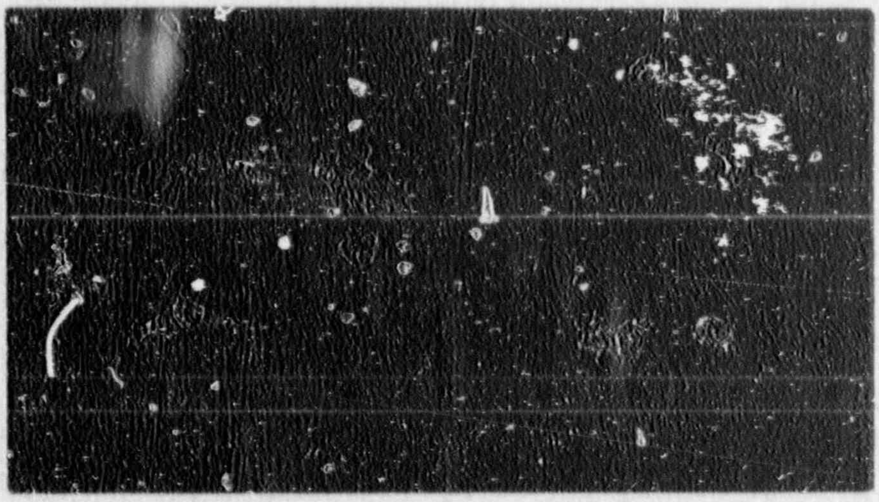

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SEQUOYAH FUELS CORPORATION

REVISION 2

MAIN PROCESS BUILDING INVESTIGATION FINAL FINDINGS REPORT

PREPARED FOR:

NRC ORDER MODIFYING LICENSE

DOCKET NO. 40-08027

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

CONTINUED

LIST OF FIGURES

LIST OF FIGURES CONTINUED

LIST OF FIGURES CONTINUED

LIST OF PLATES

LIST OF APPENDICES

EXECUTIVE SUMMARY

On September 19, 1990 The Nuclear Regulatory Commission (NRC) issued The Sequoyah Fuels Corporation (SFC) an Order Modifying License (OML) to complete actions at the Facility to investigate and prevent further releases of licensed material from the Main Process Building (MPB) and to develop a comprehensive Facility Environmental Assessment Plan for the SFC property. SFC has responded quickly and comprehensively to the OML requirements. The information obtained from the SFC responses allows complete assessment of all associated questions concerning releases of licensed material in the MPB area. Further, a groundwater monitoring system is in place around the MPB to monitor not only the uppermost groundwater system with confidence but also the next deeper system. To date, this investigation has detected only isolated and limited releases of licensed material associated with the MPB. A comprehensive Facility Environmental Investigation Plan was developed and is well along the way to being implemented with the same intensive level of effort put forth for the MPB investigation. SFC has progressed far beyond the OML scope by implementing a number of corrective actions which to date have resulted in recovery of an estimated 190 kilograms (420 pounds) of licensed material. This Environmental Investigation and response work is being performed in strict accordance with all applicable SFC health and safety procedures. This level of effort demonstrates SFC's continued commitment to environmental protection and public safety. Based upon the scope of the six (6) activities outlined in the OML, the initial actions were required to be completed on or before October 16, 1990. For reference purposes, the six (6) OML actions are noted prior to a discussion of the SFC response actions.

On September 20, 1990, SFC, which had previously retained an environmental consulting firm, Roberts/Schornick and Associates, Inc. (RSA), Norman, Oklahoma, began implementing the actions requested in the OML. SFC has completed all responses in accordance with the OML. The following are status summaries of SFC actions taken in response to each of the six (6) OML actions.

OML ITEM 1.

Obtain sufficient information to ensure the integrity of the floor of the Main Process Building and repair the floor as necessary. Minimize process liquids in sumps and on floors. Stop all activities that intentionally place liquids in sumps and on floors until the integrity of sumps and floors has been ensured.

OML ITEM 1 SFC RESPONSE

SFC has completed all responses to this action in accordance with the OML. Immediately after receipt of the OML, SFC managers directed that the SFC Operations Department stop all activities that could place process liquids in sumps or on floors in the MPB until an inspection of the sumps and floors had been conducted to insure their integrity. In addition, SFC managers directed operational personnel to make modifications that would minimize process liquids in sumps and on floors in the future. A comprehensive inspection and repair program for the MPB floors and sumps was completed and a final report prepared by the October 16, 1990 OML deadline. The report describing observations and results of all inspections is included in Appendix B of this report. Twenty-six (26) different areas and/or processes in the MPB area were inspected and reviewed to insure there was no migration of licensed material through floors or sumps in the MPB. Ten (10) of the areas and/or processes required some degree of repair to floors or sumps. These repairs were completed and inspections conducted to insure that no additional migration was occurring.

OML ITEM 2

Characterized the quantity (volume and activity) and location of licensed material under the Main Process Building floor and outside the Main Process Building, and obtaining, as necessary, soil borings and corings and digging intercept trenches to determine the direction and extent of underground migration.

OML ITEM 2 SFC RESPONSE

SFC has not only completed all responses in accordance with the OML, but has gone further to implement significant corrective actions to recover licensed material. Immediately after receipt of the OML, SFC managers initiated actions to characterize the quantity (volume and activity) and location of licensed material under the MPB floor and adjoining area. SFC managers also initiated actions to identify and investigate utility trenches in the MPB area through which licensed material could potentially migrate. RSA and SFC initiated an investigation to evaluate soils under the MPB by collecting soil samples from fourteen (14) soil borings hand augered through the MPB floor. These soil borings penetrated the sand backfill beneath the MPB and generally extended one (1) foot into native undisturbed soils. Results of this investigation identified an area of approximately 14,900 square feet beneath the MPB where licensed material was present. This area is generally located in the northwest portion of the MPB. Based upon analytical test results for soils, the total quantity of uranium in the fill materials (principally sand) beneath the MPB was estimated to be 3260 kilograms (2.2×10^{12} pCi). SFC has also evaluated twenty-four (24) utility lines in the MPB and SX Buidling areas. This evaluation consists of excavating the trenches and constructing cutoff walls and recovery sumps in the utility trenches that represented migration pathways. Of these twenty-four (24) trench excavations, nine (9) of these trenches were associated with the MPB. The amount of uranium present in sand fill that surrounds the utility lines associated with the MPB and water contained within this fill was also estimated. Based upon soil and water samples collected from the excavated trenches in the MPB area, it is estimated that 728 kilograms (4.95×10^{11} pCi) of uranium is present in soil backfills in utility line trenches associated with the MPB. An additional 0.92 kilograms (6.25×10^{8}

pCi) of uranium is estimated to be present in water in these utility line trenches. A separate evaluation of licensed material present in the SX Building area and combination stream utility trench has been performed and is presented in a separate report (Solvent Extraction Building, Status Report, Revision 3, December 12, 1990).

In addition to the OML response, SFC also initiated a program to install cutoff walls and sumps to stop potential migration of licensed material through utility trenches and recover water present in these utility trenches. A total of eight (8) cutoff walls and/or sumps were installed within utility line trenches associated with the MPB. The total volume of water removed from all sumps in the SX and MPB as of November 19, 1990 was over 77,500 gallons and the total quantity of uranium recovered is greater than 190 kilograms (420 pounds). These sumps associated with the utility line trenches are periodically being pumped to recover licensed material and to prevent the continued migration of licensed materials along these utility line trenches. A report describing the utility line trench investigation and the installation of cutoff walls and sumps was prepared by SFC prior to the October 16, 1990 deadline. This report is included in Appendix C of this report.

OML ITEM 3

Identify all potential pathways for migration beneath and beyond the Main Process Building, considering the effect of building structures and utilities, the nature and extent of underground shale and other formations, and construction activities that could have affected the integrity of groundwater barriers.

OML ITEM 3 SFC RESPONSE

SFC has completed all response actions in accordance with the OML. RSA and SFC immediately upon receipt of the OML began a review of all utility line drawings for the MPB area. A review was also made of building construction and foundation drawings to determine how construction activities could have influenced migration of licensed material through or into the shallow groundwater beneath the MPB. RSA and SFC prepared a detailed subsurface utility map for the MPB and SX Building areas. This map was developed from numerous construction drawings and identifies locations of various water, utility, drain, and other process lines in the vicinity. This map identifies potential migration pathways, by utility routes, away from the MPB and SX Buildings. This map assisted in defining areas where cutoff walls and sumps were to be installed and in locating groundwater monitoring wells. The foundation and construction drawings review concluded that the MPB Building foundations do not fully penetrate the underlying uppermost shale layer. The foundations extend less than 5 feet into the underlying shale. Also reviewed were detailed geotechnical studies which showed the location and extent of subsurface geological formations beneath the MPB. Based upon this comprehensive review, there are no foundations or construction activities which can be determined to have created direct conduits for licensed material migration to the upper shallow groundwater system in the MPB areas. This activity was completed by the October 16, 1990 OML deadline.

OML ITEM 4

Examine present and past monitoring well data for evidence of licensed material attributable to Main Process Building activities, determining whether the present and past monitoring well program has been adequate, in terms of well location, depth, and sampling, to identify migration from the Main Process Building.

OML ITEM 4 SFC RESPONSE

SFC has completed all responses in accordance with the OML. RSA and SFC evaluated the pre-existing (i.e., as of September 24, 1990) groundwater monitoring network that was in place at the SFC Facility. Approximately 115 pre-existing groundwater monitoring wells had been installed at the SFC Facility since the late 1970's. A vast majority of these wells are in the vicinity of the surface impoundment areas located west and south of the MPB and SX Buildings. None of the pre-existing wells were located sufficiently close to the MPB or SX Building for use as groundwater monitoring wells for these two (2) areas. Therefore, a groundwater monitoring well network was installed around the MPB and SX Buildings. From September 24 to November 8, 1990, RSA and SFC installed twenty-eight (28) shallow shale wells around the MPB and four (4) shallow shale wells around the SX Building. In addition, SFC installed twenty-four (24) deep sandstone wells around the MPB and four (4) deep sandstone wells were located adjacent to the SX Building. The shallow shale and deep sandstone wells were located as nested pairs within 10 feet of each other. A total of sixty (60) groundwater monitoring wells were installed around the MPB and SX Building. This well network provides comprehensive monitoring of the shallow and next deeper (sandstone) groundwater bearing zones. The monitoring well network provides an excellent system for future detection of any releases to the groundwater from these facilities.

OML ITEM 5

Determine whether licensed material is being or has been released beyond the restricted area by migration from the Main Process Building.

OML ITEM 5 SFC RESPONSE

SFC has completed all responses in accordance with the OML. SFC has conducted an extensive hydrogeological investigation in the MPB and SX Building areas in an effort to determine if licensed material is being or has been released beyond the restricted area. The hydrogeological investigation conducted in these areas consisted of installing sixty (60) groundwater quality monitoring wells, drilling thirty-seven (37) soil characterization borings (for lithological properties and analyses of soil for licensed material). This effort also included excavating approximately twenty-four (24) utility lines and examining the soil and water in these utility lines for licensed material. Based upon this data, only one (1) location was identified outside the restricted area at which licensed material was present in the groundwater at concentrations greater than the Facility license environmental action level. This location was a shallow shale well near the southwest corner of the MPB. As a result, several additional groundwater monitoring wells were installed in this area and the extent of the licensed material present in groundwater in this area was defined. No licensed material impact over the Facility environmental action levels were detected in the deeper sandstone wells installed outside the restricted area.

Further assessment indicated that a utility line trench near the southwest corner of the MPB was also a pathway for migration of licensed material away from the restricted area. Installation of a collection sump and a concrete cutoff wall was completed by SFC within this utility trench to provide a corrective action by eliminating continued migration beyond the restricted area.

Additionally, soil analyses indicate that there are very limited areas where the Facility uranium environmental action level for soils were exceeded outside of the restricted area. These areas are located on the east and southeast sides of the MPB outside the restricted area. At these locations, licensed material does not extend beyond a depth of six (6) inches. The only other area where the environmental action levels in soils were exceeded was between the depths of 10 to 15 feet near the southwest corner of the MPB. The soil samples were from the same borehole at which the groundwater levels of licensed materials exceeded environmental action levels. The initial characterization of the soil and groundwater in the MPB area was completed by the October 16, 1990 deadline.

OML ITEM 6

Develop a plan to identify and characterize other locations on SFC property where past or present operations could have resulted in contaminating the environment.

OML ITEM 6 SFC RESPONSE

RSA and SFC have developed and implemented a Facility wide Environmental Investigation Plan. RSA and SFC have developed the comprehensive plan scope to investigate all past and present operational areas at the Facility where releases of licensed material to the surface or subsurface environment may have occurred.

SFC has identified twenty-six (26) unit areas on the Facility property where these detailed investigations will be completed. Upon completion of the Facility wide Environmental Investigation Plan, SFC will have in place a comprehensive groundwater monitoring system that will be capable of detecting releases from all areas at the Facility. As of December 15, 1990, over 50 additional groundwater monitoring wells (in addition to the 60 wells in the SX and MPB areas) have been installed adjacent to other current or former operational units at the Facility. When the investigation is completed (July 1991), over 125 new groundwater quality monitoring wells may be installed at this Facility. Additionally, monitoring data from this system will be obtained in this timeframe and a comprehensive technical analysis and interpretation report will be completed.

The comprehensive environmental investigation conducted in the MPB area has fully defined the geological conditions which control the occurrence and movement of groundwater and any associated licensed materials beneath this Facility. Isopleth or concentration maps have been prepared for the MPB area that show the extent of licensed material present in the subsurface groundwater and soils. SFC has installed an extensive groundwater monitoring network around the MPB in order to provide early detection of any licensed material releases into the uppermost and next deeper groundwater systems.

As of November 19, 1990, SFC has recovered about 190 kilograms (420 pounds) of uranium from water in utility line trenches or from beneath foundations in the MPB and SX Building areas. SFC has implemented a program to recover and recycle the water containing licensed material through the SX process.

The groundwater quality results from the newly installed wells around the MPB indicated that there is a slight impact to groundwater from licensed material in the shallow shale/terrace deposits that underly the MPB. However, licensed material was detected over Facility environmental action levels in one (1) groundwater monitoring well outside of the restricted area.

SUMMARY

SFC has responded quickly and comprehensively to the OML requirements. The information obtained from the SFC responses allows complete assessment of all associated questions concerning releases of licensed material in the MPB area. Further, a groundwater monitoring system is in place around the MPB to monitor not only the uppermost groundwater system with confidence but also the next deeper system. To date, this investigation has detected only isolated and limited releases of licensed material associated with the MPB. A comprehensive Facility Environmental Investigation Plan was developed and is well along the way to being implemented with the same intensive level of effort put forth for the MPB investigation. SFC has progressed far beyond the OML scope by implementing a number of corrective actions which to date have resulted in recovery of an estimated 190 kilograms (420 pounds) of licensed material. This Environmental Investigation and response work is being performed in strict accordance with all applicable SFC health and safety procedures. This level of effort demon-strates SFC's continued commitment to environmental protection and public safety.

For reference purposes the six (6) OML actions are as follows:

1. Obtain sufficient information to ensure the integrity of the floor of the Main Process Building and repair the floor as necessary. Minimize process liquids in sumps and on floors. Stop all activities that intentionally place liquids in sumps and on floors until the integrity of sumps and floors has been ensured.

2. Characterize the quantity (volume and activity) and location of licensed material under the Main Process Building floor and outside the Main Process Building, and obtaining, as necessary, soil borings and corings and digging intercept trenches to determine the direction and extent of underground migration.

3. Identify all potential pathways for migration beneath and beyond the Main Process Building, considering the effect of building structures and utilities, the nature and extent of underground shale and other formations, and construction activities that could have affected the integrity of groundwater barriers.

4. Examine present and past monitoring well data for evidence of licensed material attributable to Main Process Building activities, determining whether the

present and past monitoring well program has been adequate, in terms of well location, depth, and sampling, to identify migration from the Main Process Building.

5. Determine whether licensed material is being or has been released beyond the restricted area by migration from the Main Process Building.

6. Develop a plan to identify and characterize other locations on SFC property where past or present operations could have resulted in contaminating the environment.

Throughout this updated and revised Final Findings Report, these actions are frequently referred to by Number (e.g. "Action 1") to clarify the relationship between a MPB Work Plan activity and the associated OML action(s). Table 1 presents comparisons of OML Actions, Work Plan Tasks, and the report section(s) presenting status results.

It is emphasized that the OML's Action 6 required the development of an overall environmental investigation plan of SFC property potentially affected by releases of licensed material from past and present operations. This plan has been developed as a separate "stand-alone" document and is not presented in this Final Findings Report.

SEQUOYAH FUELS CORPORATION
REVISION 2
MAIN PROCESS BUILDING INVESTIGATION
FINAL FINDINGS REPORT
FOR
NRC ORDER MODIFYING LICENSE
DOCKET NO. 40-08027
LICENSE NO. SUB-1010
EA 90-162
DECEMBER 15, 1990

1.0 BACKGROUND

On September 19, 1990 the NRC issued the Sequoyah Fuels Corporation (SFC) an Order Modifying License (OML) to take actions at the Facility to investigate and prevent further releases of licensed material from the Main Process Building (MPB) and develop an Environmental Assessment Plan for other locations on the SFC property. Based on the schedule of activities outlined in the OML, the actions were required to be completed on or before October 16, 1990. The SFC retained an environmental consulting firm, Roberts/Schornick and Associates, Inc. (RSA), to assist in developing and implementing a Work Plan to complete the OML actions. Although response work began upon receipt of the OML on September 20, 1990, a written MPB Work Plan was finalized by SFC and RSA on September 28, 1990 and is attached as Appendix A. RSA, as mentioned above, was notified of the order by SFC at approximately 1200 hours on Thursday, September 20, 1990. RSA immediately began a utility line review in the MPB area and contacted drilling contractors. Field drilling activities began at 0800 hours on Monday, September 24, 1990.

A time period of approximately 92 hours (3.8 days) elapsed between RSA notification and start of drilling activities. It is emphasized that RSA was unable to get a drilling contractor on-site sooner due to rig availability problems. Again, one of the first steps in a drilling program is a thorough utility line survey. Time was also needed to organize equipment and personnel. A response time of 92 hours (3.8 days) is very reasonable for a drilling program of the magnitude conducted in the MPB area. The MPB Work Plan defined all activities to be completed and presented a schedule of start and completion dates for each activity.

During the period of September 20, 1990 through December 15, 1990, a substantial effort was and continues to be made by SFC and RSA personnel to implement the Work Plan for the Main Process Building area. Daily and interim reports were prepared to document progress and status. This Final Findings Report presents the current status of the MPB Work Plan activities and summarizes the findings of the various investigations relative to the required OML actions.

2.0 MPB FLOOR AND SUMP REPAIR

In response to Action 1 of the OML (Task 1.1, 1.2, 1.3, 1.4, and 1.5 of Work Plan, Appendix A), a comprehensive inspection and repair program for Main Process Building (MPB) floors and sumps has been completed by SFC personnel.

Inspections were performed under the direction of the SFC Manager of Engineering, while repairs were made under the direction of the SFC Maintenance Manager and the SFC Manager of Engineering. A final inspection was performed for each repair made.

The observations and results of all inspections and repairs have been documented in a final report by Mr. Richard Parker, SFC Maintenance Manager. This report appears in Appendix B.

3.0 MPB FLOOR INVESTIGATION

This section summarizes the response to that part of Action 2 requiring assessment of licensed material (i.e., uranium) under the MPB floor and to satisfy the reporting requirement of Task 2.5 of the Work Plan, Appendix A. Tasks 2.1 through 2.4 of the Work Plan were implemented and include investigating the MPB floor and sump areas and completing floor borings to establish the quantity and location of licensed material beneath the MPB floor.

An investigation has been completed to estimate the quantity and extent of uranium present beneath the MPB floor. Fourteen (14) borings were performed inside or immediately outside the MPB building at the SFC Facility. The locations of these borings are shown in Plate 1 and are designated HA-1 through HA-14. The locations were selected by SFC personnel based on observations made during the MPB floor and sump inspection activity summarized in Section 2.0.

To perform these borings in all but one location, the floor concrete was cored using a diamond bit core barrel and the borings were extended beneath the MPB floor using hand auger techniques. The borings extended to depths ranging from approximately 1.4 feet to 8.15 feet below the existing finished floor slab elevation. Generally, the borings penetrated approximately one (1) foot into the native clay/shale materials encountered below the concrete sub-base sand fill. The materials encountered at each of the HA boring locations are described in Table 2. The concrete floor slab generally ranged in thickness from 7 to 8 inches with the exception of the denitration area where the thickness was much greater. The sand generally extended to depths of approximately 1 to 3.5 feet below the bottom of the concrete slab.

Soil samples were obtained directly from the hand auger. The samples obtained were tested for total uranium content by the SFC on-site laboratory. The results of the laboratory analysis are shown in Table 3.

As can be seen in Table 3, the only borings with samples exhibiting measurable uranium concentrations above the laboratory lower level of detection (LLD), 400 ug/g, limit were KA-1, HA-9, and HA-24. Soil obtained from boring HA-1 had uranium concentrations above the lower level of detection at sample intervals 1.7 to 2.2 feet and 3.0 to 3.6 feet, the maximum depth of the boring. The levels ranged from 720 to 2170 ug/g. Soil obtained from boring HA-9 had uranium levels below the LLD to a depth of approximately 3.1 feet below the finished floor slab surface. Uranium levels ranged from 890 ug/g to 5530 ug/g from a depth of 3.1 to 4.54 feet in HA-9. HA-9 was terminated at a depth of approximately 5.3 feet below the floor slab surface. The uranium levels encountered in HA-9 from 4.54 to 5.3 feet ranged from below the LLD to 550 ug/g.

Soil obtained from boring HA-14 had uranium concentrations ranging from 9020 to 10,310 ug/g. This boring was performed on October 11, 1990, through a subfloor monitoring pipe in the denitration area. The boring penetrated one (1) foot below the bottom of the pipe (but was terminated due to auger refusal), and had detectable uranium concentrations over the entire one foot length. A second attempt was made to sample soils beneath the sump on October 22, 1990. Despite repeated efforts, only one (1) additional foot of sample was obtained before sampling device refusal occurred. The uranium concentrations ranged from 10,410 to 640 ug/G and the uranium levels were declining at 700 ug/G when the boring terminated at 8.15 feet below the MPB floor slab.

The concrete slab sub-base sand fill was generally moist but not saturated with water. Free water was encountered only in HA-2, HA-12, HA-13, and HA-14.

The estimated extent of the uranium encountered in the sand fill immediately below the MPB floor slab is shown in Plate 1. To estimate the quantity of uranium located beneath the floor, an in-place dry density of 115 pounds per cubic foot (1.85 grams per cubic centimeters) was assumed.

The thickness of material containing uranium in HA-1 was 1.1 feet (note: assumed uranium not present at significantly deeper depth at HA-1) and in HA-9 was approximately 2.2 feet. The thickness of material containing uranium in HA-14 was 1.0 feet, which neglects any uranium which may be present at greater depths. The average concentrations of uranium encountered in these three (3) borings were determined using a weighted average. The weighted average was determined using the uranium concentration obtained at specific depth intervals multiplied by the length of that interval. Using this weighted average technique, the average uranium encountered in HA-1 from a depth of 1.7 to 3.6 feet was 1140 ug/g. The weighted average of uranium encountered in HA-9 from a depth of 3.1 to 5.3 feet was 1535 ug/g. The weighted average of uranium encountered in HA-14 from a depth of 6.1 to 7.1 feet was 10,030 ug/g. The areal extent of the uranium material was estimated by observing that non-detectable concentrations of uranium were determined at the other locations and extrapolating between HA-1, HA-9, and HA-14. Based on this procedure, the areal extent of migration estimated is 14,900 ft^2 and is depicted in Plate 1. The associated estimated soil volume is 22,300 cubic feet. Based on these weighted averages and the parameters given above, the total quantity of uranium in the fill immediately below the Main Process Building is estimated to be 3260 kilograms (2.22×10^{12} pCi).

The quantity of total uranium present in soils in the MPB related utility trenches is estimated to be 728 kilograms (4.95×10^{11} pCi). The mass of uranium was calculated independently for each MPB utility trench investigated by excavation and summed for the above total using the following procedures. The calculation soil volume was determined by the length of potential pathway trenches from the MPB to the trench excavation and the cross-sectional area of sand reported to be present at the investigation excavation location. The total volume of soil thus calculated is 185,000 cubic feet. The mass of soil containing uranium at each MPB utility was then determined by assuming a dry bulk soil density of 115 pounds per cubic feet for the estimated individual trench soil volumes. The mass of uranium in trenches at each excavation was calculated as the product of the average uranium concentration in soils measured by laboratory analyses at the excavation location and the trench soil mass. The total amount of uranium was then estimated by summing the mass of uranium estimated at each utility trench excavation.

The quantity of total uranium present in free water in the MPB utility line trenches is estimated to be 0.92 kilograms (6.25×10^{8} pCi). This quantity is the sum of total uranium estimated to be present in MPB utility line trench free water at each utility excavation. The individual water volumes in trenches was estimated as a product of the length of the trench, the width of sand at the utility excavation, average soil saturated water depth of six (6) inches, and an assumed sand porosity of 40 percent. The total estimated water volume is 18,800 gallons. Using the average uranium concentration determined by laboratory analysis in free water at each trench excavation, the mass of total uranium in the trenches free water at the excavation was estimated. The individual masses of uranium in free water calculated in all MPB trenches excavated and investigated to date was summed to quantify the total mass of uranium.

4.0 MPB UTILITIES AND CONSTRUCTION REVIEW AND INVESTIGATION

4.1 Introduction

First, this section summarizes the response to Action 3 which requires identification of potential utility and other construction induced pathways for migration beneath and beyond the MPB. The pathways were primarily identified by reviewing foundation, construction and utility drawings. A comprehensive utility map was developed. The utility map was developed as activity 2.2 of the Work Plan and is presented and discussed in Section 4.2. The review of the foundation drawings and other related references was completed as activity 3.1 of the Work Plan and is summarized in Section 4.3.

Secondly, this section summarizes the response to that part of Action 2 requiring boring, coring, and excavations of intercept trenches to assess potential migration of licensed material along utility trench routes. The results of this response activity are discussed in Section 4.4. Tasks 3.3, 3.4, and 3.5 of the Work Plan were implemented to accomplish this response.

4.2 Utility Map Development

A detailed utility map for both the SFC SX Building and MPB areas has been developed. The utility map was developed from Facility construction drawings and identifies the locations of various water, utility, drain, and other process lines in the vicinity. The utility map is presented as Plate 2. The map identifies potential migration pathways, by utility routes, away from the MPB and the SX building.

4.3 Foundation and Construction Drawings/Details Review

The MPB is supported on shallow drilled piers, founded at elevation 555.0 feet above mean sea level. Some of these piers are belled piers. Drilled piers are foundation elements which are constructed by drilling a vertical hole to the desired depth, placing reinforcing steel, and then pouring concrete up to grade. The finished floor elevation of the MPB is elevation 566.0 feet above msl.

Based on a review of SFC drawings 110-C-161, 162, and 163, the near surface materials consist of silt with clay and sand, underlain by shale at elevations ranging from approximately 553 to 560 feet above msl. Sandstone underlies the shale. The design for the drilled piers generally calls for the piers to be founded 6 inches below the top of the shale. It appears that the drilled pier foundations extend less than approximately 5 feet into the shale, and do not penetrate the shale into the underlying sandstone.

The administration and laboratory section of the MPB, located in the southwestern portion of the building, contains a tunnel that extends to elevation 557.0 feet above mean sea level. The subsurface information in this area, taken from the above referenced SFC drawings, shows that this tunnel does not penetrate the silt or extend to the shale.

A scale pit is located in the northwestern part of the MPB, from column lines 6 to 6.9, and A to A.6. The bottom of the scale pit is at elevation 556.0 feet above msl. The subsurface information referenced above indicates that this scale pit extends less than 5 feet into the shale, but does not extend to the sandstone.

4.4 MPB Utility Investigation

An investigation of utility trenches associated with the MPB was conducted by SFC personnel. The investigation was in response to Actions 2 and 3 of the OML, which require the determination of potential pathways for migration of licensed material beneath and beyond the MPB, as well as the direction and extent of migration of licensed material via excavated intercept trenches.

The investigation of utility trenches was conducted under the direction of the SFC Environmental Manager, and all soil and water analyses were conducted by the SFC on-site laboratory. Soil samples from trenches were analyzed for uranium content, while water samples from trenches were analyzed for uranium, nitrate, fluoride, pH, and, in the case of Trench 16, specific conductance. Soil and water analytical data from both the SX Building and MPB utility trench investigations and from surface sources appears in Tables 4 through 7. Tables 8 and 9 contain water analytical data from two (2) MPB sumps. Hydraulic barriers were also installed at utility excavations as needed to preclude continued migration of licensed material along the sand fill in the utility backfill zone. The locations of the various trench excavations and constructed hydraulic barriers are depicted on Plate 2. Trench excavation cross-sections are presented in Plate 3 for both the SX Building and MPB investigations.

The results of the utility trench investigation have been documented in a final report by Ms. Carol Couch, SFC Environmental Manager. This report appears in Appendix C.

5.0 MPB GROUNDWATER MONITORING SYSTEM REVIEW

This section summarizes the response to Action 4 which requires examination of monitoring well data existing prior to September 24, 1990 and determination of the adequacy of the associated monitoring well program to identify licensed material migration from the MPB. This response was accomplished by completing Tasks 4.1, 4.2, and 4.3 of the Work Plan, Appendix A.

A review of all available groundwater quality, geological, and monitoring well completion records was performed to evaluate the suitability of the pre-existing (i.e. prior to MPB investigation initiated September 24, 1990) groundwater monitoring well network and associated groundwater quality data for use in monitoring the groundwater in the Main Process Building (MPB) and SX Building areas.

Approximately 115 pre-existing groundwater monitoring wells have been installed at the SFC Facility since the late 1970's. A vast majority of the monitoring wells are in the surface impoundment areas located west and south of the SX Building and MPB. Approximately 42 of the 115 wells have been plugged for a variety of reasons. Of the approximately 73 pre-existing groundwater monitoring wells remaining, there are no wells located within 650 feet of the MPB. The nearest pre-existing monitoring well to the SX Building is well number

2303A, which is located approximately 400 feet to the northwest. Well 2303A is also the nearest well to the MPB and is located approximately 650 feet to the northwest. None of the pre-existing groundwater monitoring wells can be used to directly monitor and detect potential groundwater quality impacts occurring from releases at the SX Building or MPB. A map showing all pre-existing wells prior to September 20, 1990 is shown in Plate 4. Additional groundwater monitoring network wells had to be installed in the SX and MPB areas. Therefore, in response to Action 4 of the OML, it is concluded that the pre-existing groundwater monitoring well program was not adequate to identify migration from the MPB and SX Building. As a result, during the MPB investigation, SFC has installed a groundwater monitoring system adequate to identify migration from the MPB and SX Building. This system is described in detail in Section 6.0.

A review of the subsurface geotechnical investigations conducted in the SX Building and MPB areas prior to their construction, indicated that good quality geological data exists to depths of about 45 feet. The geological logs provide useful lithological data for incorporation into the stratigraphic investigation in the SX Building or MPB areas. The geotechnical investigations were conducted in 1968 and are documented on SFC drawings 110-C-151, 161, 162, and 163.

6.0 MPB AND RESTRICTED AREA BOUNDARY INVESTIGATION

6.1 Introduction

In response to Item No. 5 of the NRC Order Modifying License, Docket No. 40-08027, License No. SUB-1010, EA 90-162, SFC initiated a thorough review to "determine whether licensed material is being or has been released beyond the restricted area by migration from the Main Process Building". This included reviews of the utility line trenches in the MPB area, a program to evaluate and upgrade (if necessary) the MPB floor and associated sump areas, and an investigation to determine if releases of licensed material have occurred through the floor in the MPB. The above-mentioned programs have been completed and are discussed in previous sections of this report. SFC has also initiated a thorough and detailed program to investigate the uppermost groundwater systems that occur in the MPB area.

6.2 Scope and Objectives

The scope of the investigation to determine if licensed material has impacted or migrated through the shallow groundwater includes:

1. a review of existing environmental monitoring data for the MPB area,

2. a review of land uses and general features, including Facility processes,

3. a review of geological data for the area,

4. a detailed groundwater investigation of the uppermost groundwater systems in the MPB area, which includes soil borings, monitor well installation, groundwater sampling and analysis, soil analysis, and groundwater flow property evaluation, and

5. an evaluation of the subsurface geology and soil chemical quality.

It should be noted that thirty-six (36) soil borings, thirty-two (32) shallow shale groundwater monitoring wells, one (1) combination trench monitoring well (MW-33T), and twenty-four (24) deep sandstone wells have been installed in the MPB and SX area between September 20 and October 16, 1990. Four (4) additional deep sandstone wells (MW-24A, MW-25A, MW-26A, and MW-27A) were installed adjacent to the SX Building on November 7 and 8, 1990. This groundwater monitor well program will provide an excellent monitoring system for the SX and MPB area and this system was complete and in-place on October 12, 1990 for the MPB and on November 8, 1990, for the SX Building. The locations of the monitor wells and soil borings are shown in Figure 1.

A major objective of the hydrogeological evaluation of the MPB and SX area was to install a comprehensive groundwater monitoring system that would be capable of detecting any releases of licensed material to the groundwater system. The current groundwater monitoring well network provides an excellent monitoring system for long term monitoring of the SX and MPB areas. A second major objective of the groundwater investigation was to determine if releases of licensed material to the groundwater have occurred and to define the areal and vertical extent of any identified releases. The groundwater monitoring system installed adjacent to the MPB and SX area has accomplished this task.

6.3 Facility Description and History

The Sequoyah Fuels Corporation (SFC) Facility has been in operation with authority to use source material for the conversion of UF_6 since February, 1970, and for the reduction of depleted UF_6 since February, 1987. The UF_6 Conversion Plant produces high-purity UF_6 using uranium ore concentrates as feed material. The manufacturing process being used includes wet chemical purification to convert uranium ore concentrates to pure uranium trioxide followed by dry chemical reduction, hydrofluorination, and fluorination processes to produce UF_6.

The UF_6 Reduction Plant produces depleted UF_4 using depleted UF_6 as feed material. The process reacts UF_6 with hydrogen and produces UF_4 and anhydrous hydrogen fluoride (AHF). The recovered AHF is used in the UF_6 Conversion Plant.

In addition to facilities for conversion and reduction of UF_6, the Site also includes: (1) a storage area for uranium ore concentrates received from uranium mills, (2) a uranium sampling facility, (3) bulk storage of hazardous chemicals such as hydrofluoric (HF), nitric (HNO_3), and sulfuric (H_2SO_4) acids, ammonia (NH_3), and tributyl phosphate-hexane solvent, (4) a facility for electrolytic production of fluorine from HF, (5) treatment systems and storage ponds for both radiological and non-radiological liquid wastes, and (6) a program for beneficial use of treated raffinate from a solvent extraction system in the UF_6 conversion process as fertilizer on land owned by SFC.

6.3.1 Facility Layout

The SFC layout shown in Plate 4 uses about 85 acres of the 2100-acre site. The 85 acres is approximately the area shown on the aerial photograph presented in Plate 5. The total area under roof comprises manufacturing, warehousing, and office space in five principal buildings. The Main Process Building (M.B) contains the administrative offices, laboratory, the sampling plant, the major UF_6 conversion processing and fluorine generation facilities, and utility and maintenance areas. The main plant stack is located near the northwest corner of the building and rises 150 feet above ground level. About 200 feet west of the Main Process Building is a building where yellowcake slurry can be received and processed. Facilities in this building enable slurry to be dissolved in nitric acid and the solution to be sampled before piping it into the processing circuit. The solvent extraction (SX) building is located in a separate building about 150 feet west of the main structure. A one-story warehouse about 200 feet north of the Main Process Building provides storage for spare mechanical equipment. A decontamination building north of the Main Process Building provides decontamination and waste handling capabilities. About 400 feet north of the Main Process Building is the UF_6 Reduction Plant.

Additional facilities (Plate 5) include the following: an electrical substation, UF_6 cylinder storage area, tank farm for liquid chemicals and fuel oil, uranium ore concentrate (yellowcake) drum storage area, cooling tower for waste heat dissipation, sanitary sewage facilities, retention ponds for fluoride contaminated wastes, retention ponds for untreated raffinate waste from the solvent extraction process which contains significant quantities of radioactive material, a raffinate sludge concentration and loading facility, retention ponds for fertilizer, and a reservoir for emergency supply of water. A recent (October 31, 1990) aerial photograph of the Site showing these areas is presented in Plate 5.

6.3.2 Site Location

The Sequoyah Facility is located in Sequoyah County in mideastern Oklahoma at 95°5' West longitude and 35°30' north latitude, about 150 miles east of Oklahoma City, 40 miles west of Fort Smith, Arkansas, 25 miles southeast of Muskogee, and 2.5 miles southeast of Gore (Figure 2 and Plate 4). The Site is located in portions of Sections 15, 16, 21, 22, 23, 26, 27, and 28 T12N, R21E and consists of approximately 2100 acres bounded on the north by U.S. Route 64 and on the west by U.S. Government owned land along the Illinois and Arkansas Rivers. The eastern boundary of the Site is the eastern boundary line of Survey Section 22 (Township 12 North, Range 21 East). Most of the Site is north of Interstate 40 (Plate 4). The principal industrial facilities (including the MPB and SX Building) are located in a fenced area of about 85 acres in Section 21 as shown in Plate 4.

The SFC Site is located in rural Sequoyah County, which had a 1980 population of 27,900. The four (4) adjacent counties of Muskogee, Haskell, McIntosh, and Cherokee had a combined 1980 population of about 120,000. The major population center is the city of Muskogee (40,000), about 25 miles to the northwest. Nearby towns include Gore (population 478), Webbers Falls (485), Warner (1217), Vian (1131), Checotah (3074) and Sallisaw (4888), all of which are located along Interstate 40 or old U.S. Route 64. The total population within 5 miles of the Site is abou [illegible]371.

The Sequoyah Site is situated on gently rolling to level land of which about two-thirds is forested and one-third is open field. Elevations on or near the Site range from 460 feet above mean sea level for the normal pool elevation of the Robert S. Kerr Reservoir to 700 feet on top of a hill in the southeastern corner of the Site. Slopes over most of the upland areas of the Site are less than 7%. Steeper slopes of creek ravines and hillsides average roughly 28%. The SX and MPB area is located on land 555 to 565 feet in elevation. About 85 acres of the 2100 acre site are occupied by the industrial complex. Most of the remaining land is used for gazing cattle and forage production.

6.3.3 Adjacent Area Land Use

Prior to the advent of railroads in the area, the land was used primarily as cattle range. With availability of railroads, corn and cotton became the main agricultural products. In the last 30 years, however, the trend has been away from cultivation of these crops and back to cattle gazing and production of other food crops. Areas remaining in cultivation are primarily in the bottom lands along the Arkansas River. In 1970, about 30% of the acreage of Sequoyah County was used for range and about 40% was forested. The range is usually grazed year around, but the forage is supplemented with protein cubes, prepared pasture, and hay consisting of tame grasses and small grain. High-quality trees have been largely eliminated from the forested areas by heavy cutting, fires, and uncontrolled grazing. Most woodland in the county is used for grazing.

Within a 10 mile radius of the SFC Facility, the following land uses have been estimated:

Land Use	Percent[a]
Agricultural (mostly pasture)	30
Recreation	35
Residential	20
Commercial & Industrial	15
Unused Rough Terrain	25

[a] Due to multiple use of some areas, the total exceeds 100%

The large acreage for recreation is presented primarily by the federally-owned land and water areas along the Arkansas and Illinois Rivers and includes the 21,000 acre Sequoyah National Wildlife Refuge, where large numbers of migrating waterfowl are found in the spring, fall and winter.

6.3.4 Surface Water

The Sequoyah Facility is located on the east bank of the headwaters of the Robert S. Kerr Reservoir (Illinois River) approximately 2.5 miles south-southeast of Gore, Oklahoma. The Illinois River flows in a southwesterly direction about 1 mile to join the Arkansas River (Robert S. Kerr Reservoir) approximately 2 miles downstream from Webbers Falls, Oklahoma. Although the Illinois River in the vicinity of the Sequoyah Site is part of the reservoir, it is not considered navigable. The river flow has been regulated since 1952 by Tenkiller Ferry Reservoir, which is approximately 7 miles upstream of the Site. The average flow of the river near the Site is 1600 ft^3/s.

In the vicinity of the Sequoyah Site, the Illinois River drains an area of 1620 square miles. Most of the Site drains to the headwaters of the Robert S. Kerr Reservoir (Illinois River.). The principal Site drainage consists of the Facility effluent, identified as the Combination Stream (Plate 5), and Salt Branch, which flows along the northern boundary of the Site. The only known spring in the vicinity of the industrial Facility is about 1000 feet west of Pond 2 and has an average flow of less than 0.5 liters/minute. Location of surface waters in the area are shown on Figure 2.

6.3.5 Climate

Sequoyah County has a warm temperate, continental climate. Storms bring ample precipitation which moisture-laden air from the Gulf of Mexico meets cooler, drier air from the western and northern regions. The most variable weather occurs in the spring, when local storms can be severe and bring large amounts of precipitation. The nearest Sequoyah County weather station to the Sequoyah Site is in the town of Sallisaw. The mean annual temperature is 61.5°F. The monthly average ranges from 40°F in January to 82°F in July. The average daily range in temperature is 24°F. The lowest temperature on record was -19°F in January, 1930, and the highest was 115°F in August, 1936. The mean annual precipitation ranges from 42.9 inches in the town of Sallisaw, to approximately 44.1 inches in the northeastern part of Sequoyah County. The seasonal distribution of rainfall is fairly even, with 31% in spring, 26% in summer, 23% in fall and 20% in winter. The average amount of snowfall from November through April is about 5.2 inches. Lake evaporation averages about 47.5 inches annually. Of this amount, 72% occurs from May through October. There is a net annual evaporation rate of about 4 inches in the SFC area.

6.4 Utility Line Investigations

Numerous below-ground utility pipelines are present in the MPB and SX area. These underground utility trenches can provide pathways for contaminants to migrate away from potential release points. The importance of the utility pipeline trenches has been discussed in prior sections and will not be discussed further. A thorough review of these underground utility trench migration pathways has also been evaluated and discussed in earlier sections.

6.5 Soil Borings

6.5.1 Shallow Shale Soil Borings

RSA drilled thirty-six (36) machine-augered shallow shale soil borings in the MPB and SX areas for the purpose of evaluating the subsurface stratigraphy/hydrogeology and to delineate the horizontal and vertical extent of possible licensed material impacts to soils/groundwater. Another boring, BH-37, was drilled into the backfill surrounding the combination stream underground piping and was completed as a trench backfill monitor well (MW-33T) to monitor water quality in the sand backfill of the combination stream pipeline trench. The location of the soil borings are shown on Figure 1. All thirty-seven (37) machine-augered soil borings (BH-1 to BH-37) were drilled by Professional Services Industries, Shepherd Engineering and Testing Division, which was under the professional supervision of a hydrogeologist from

Roberts/Schornick and Associates, Inc., Norman, Oklahoma. The soil borings were all drilled between September 24 and October 11, 1990, utilizing hollow stem auger drilling methods and a CME-750 drilling rig. All borings were drilled to depths of between 6.8 to 24.0 feet. The shale soil borings were advanced until the underlying sandstone bedrock was encountered. The borings were then terminated at this contact. The purpose of boreholes BH-1 to BH-36 (except BH-24, BH-25, BH-35, and BH-36) were to define the thickness and vertical extent of the upper shale unit. These borings were drilled solely for lithological characterization and to collect soil samples for licensed material analysis. None of these borings were completed as monitoring wells. A second boring was drilled at each location (except BH-35 and BH-36) approximately five (5) feet from the first boring and this boring was completed as a monitor well. The reason why two (2) separate boreholes were drilled was to prevent the possible communication of the second borehole to the uppermost sandstone unit. The first borehole was drilled to the top of the uppermost sandstone unit (and subsequently grouted in) while the second borehole was drilled 1 to 2 feet from the sandstone surface and completed as a monitor well. A summary of the machine-augered soil boring drilling details is presented in Table 10.

Soil samples were collected continuously to the total boring depths in BH-1 to BH-37 utilizing a CME, 3-inch diameter, continuous tube sampling system. The CME sampler provided 5-foot long continuous soil samples. Lithological descriptions of the soil samples were visually made according to the Unified Soil Classification System (ASTM D-2488 and ASTM D-2049). The soil boring logs are presented in Appendix D.

The hollow-stem augers and all downhole sampling equipment were decontaminated prior to use in each boring utilizing a high temperature/pressure washer. All other sampling equipment was also washed between each sampling event. Augered cuttings from all boreholes were retained on-site and were placed in DOT approved 55-gallon drums for storage until testing can be performed to determine disposal criteria.

All boreholes (BH-1 to BH-37) were backfilled to approximately 1-foot from ground surface with a bentonite grout mix (volclay pure gold). The grout slurry was mixed to an approximate weight of 10.2 pounds per gallon. All boreholes were rechecked the day after grout placement and those boreholes where the grout had subsided were "topped off". The remainder of the borehole was filled with concrete to ground level in all areas except the grassy areas. In the grassy areas, the top one (1) foot was filled with topsoil.

6.5.2 Deep Sandstone Soil Borings

The deep sandstone soil borings were advanced through an 8-inch PVC surface conductor casing. These borings were advanced using a 6-inch bit and air rotary drilling methods (a hydrocarbon filter was used to filter the air). Soil samples were collected continuously from soil cutting and logged for lithological characteristics. Lithological logs were prepared from the top of the sandstone/shale contact to total boring depths. Select boreholes were cored using a 3-inch NX corebarrel to provide additional lithological control.

6.5.3 Soil Sample Collection

Soil samples from the thirty-seven (37) machine-augered boreholes were collected continuously to total borehole depth. Soil samples were composited in the field into 6-inch increments for analysis for uranium. The 5-foot long continuous tube soil cores were spilt into 6-inch increments and composited over each 6-inch interval. Approximately 200 grams of soil from the composited 6-inch interval was placed in glass jars and submitted under chain-of-custody control to the SFC laboratory for uranium analyses. Additional soil samples were composited for soil vapor headspace gas readings as described in the following section. All remaining soil was wrapped in cellophane and aluminum foil, labeled, and placed in waxed core boxes for permanent storage. The soil analytical data and composite intervals are shown in Table 11.

Soil samples were collected from the deep sandstone borings over each 6-inch interval (by collecting cuttings from air rotary drilling) and placed in glass jars for analysis of uranium. These samples were handled in the same way as the augered soil samples. The soil analyses from the sandstone intervals are also shown in Table 11.

6.6 Soil Headspace Gas Survey

A soil headspace gas survey typically is the measurement of relative or specific volatile hydrocarbon concentrations in soil pores in the unsaturated and saturated zone at various points, distributed vertically and horizontally. In the unsaturated zone, hydrocarbons can exist in the vapor phase in soil pores, they can be absorbed onto soil particles, and they can exist as free hydrocarbon liquid in soil pores. Hydrocarbons in the saturated zone are typically sorbed onto soil particles over the zone of groundwater fluctuations or may exist as free liquid in the soil pores. By obtaining soil headspace gas data at vertically and horizontally distributed points, the extent of subsurface hydrocarbon impact can be defined.

The ambient temperature headspace (ATH) method (Van Zyl, 1987) was utilized for the soil vapor survey in the MPB area. This method consists of collecting discreet (or composite) soil samples from a borehole and placing the soil in a glass container, leaving a vacant headspace in the glass container. The headspace gas in each glass sample container is then analyzed for organic vapors using a portable organic vapor monitor (OVM) approximately 15 to 30 minutes later.

Soil samples from the thirty-seven (37) borings drilled in the MPB and SX area were collected in continuous 5-foot lengths using a 3-inch diameter, CME continuous tube sampler. Samples were collected continuously over the entire depth of each boring. The individual 5-foot long soil samples were often "shaved" to remove the outer layer of soil with the remaining soil composited over either one (1)-foot or two (2)-foot lengths and placed in glass jars (the jars were filled to 3/4 full). A layer of aluminum foil was placed over the top of the jar and the cap screwed in place, sealing the jar. After waiting approximately 15 to 30 minutes (samples were stored at ambient air temperatures), the OVM detector probe was used to pierce the aluminum foil and an organic vapor headspace reading was obtained. The resulting OVM headspace gas readings are in parts per million (ppm) of total ionizable hydrocarbon based upon an isobutylene standard. The OVM detector was calibrated to a known isobutylene gas standard prior to the headspace gas readings. The OVM detector has a limit of detection of 0.1 parts per million of total ionizable hydrocarbon. Results of the OVM ambient temperature headspace gas readings are recorded (and presented in graphical form) on the soil boring logs presented in Appendix D. A summary of all OVM soil gas readings has been prepared and are presented in Table 12. The OVM soil gas readings provide an important insight into both the vertical and areal extent of hydrocarbon occurrence in the subsurface soils in the MPB and SX area. A soil headspace gas survey was not conducted on the deep sandstone soil samples since they were collected via air rotary drilling methods which greatly affects any volatile hydrocarbons which may be present.

6.7 Monitor Well Installation

6.7.1 Shallow Shale Wells

Thirty-two (32) of the thirty-seven (37) machine-augered borehole locations were completed as groundwater monitoring wells in order to monitor shallow groundwater quality beneath the MPB and SX area (MW-1 to MW-32), test the aquifer physical properties, and measure groundwater elevations for hydraulic gradient/flow direction and seasonal water-level fluctuations. Another well, MW-33T, was installed into the combination stream utility trench sand backfill material.

All shale and trench monitor wells were constructed with pre-cleaned, 2-inch, screw-coupled, tri-lock, PVC casing and 0.010-inch slot, 3 to 10 foot long, PVC screens. Screen placement was chosen by placing the screen across and above the groundwater level observed at the time of drilling as well as fully screening (except lower 1-2 feet) the saturated portion of the weathered shale (wells MW-1 to MW-32). Placing the screen at this level in the zone of saturation allowed for the monitoring of potential immiscible layers or lighter-than-water organics on the groundwater surface as well as monitoring the majority of the uppermost saturated weathered shale zone. Placing the screen above the existing saturated zone allows for monitoring a greater saturated thickness in the event the water-level rises. Special care was taken to avoid the penetration of the underlying sandstone zone with the shallow shale well. This precaution was taken to avoid possible communication with the underlying sandstone zone. The shallow shale well borehole was terminated between 1 to 2 feet above the sandstone to avoid the possible communication between water-bearing zones. The entire screen length annulus was surrounded with a clean 8-20 silica sand filter pack. A 0.17 to 0.75-foot long fines-catchment sump was placed below the screen interval and the bottom was fitted with a screw plug. The sand filter pack extended from the bottom of the well to approximately 2.0 feet above the top of the screen. A 2-foot thick sodium bentonite seal was placed above the top of the sand pack and hydrated with distilled water. The well annulus from the top of the bentonite seal to approximately 1.5 feet below ground level was filled with a volclay grout mix. All completion materials (screen, sump, riser, plugs, protectors and caps) were thoroughly cleaned with a high temperature/high pressure water wash before entering the borehole. Above-grade or at-grade steel casing protectors were placed over the PVC casing and concrete was placed in the remaining 1.5 feet of the borehole and a 2 foot diameter by 1 foot thick surface concrete pad poured. All at-grade completions have double, water-tight seals. The protector seal is watertight and a water-tight cap is also placed over the top of the PVC riser. Well completion diagrams for all shallow shale wells and the combination trench monitor well (MW-33T) are shown in Appendix E. A summary of monitoring well completion details for shale wells MW-1 through MW-32 and trench well MW-33T is shown in Table 13.

6.7.2 Deep Sandstone Conductor Casing

In order to prevent possible cross-contamination during drilling between groundwater contained in the shallow shale unit and deeper groundwater bearing zones (sandstones and interbedded shales), RSA and SFC installed 8-inch PVC conductor casings through the entire extent of the uppermost groundwater bearing zone (shallow shale unit). The conductor casings were set approximately 6-inches to 1.5 feet into the underlying sandstone. The conductor casing consisted of pre-cleaned, 8-inch, PVC, screw threaded Schedule 40 fitted with a drillable, water-tight bottom cap. The inside of the 8-inch conductor casing was filled with potable water prior to placement into the borehole and cementing. The casing was set into a 12.25 inch borehole that was either drilled by rotary wash or air rotary methods. The casing was cemented in place by using a tremie line to place a cement-bentonite grout mix between the casing and borehole annulus. The cement-bentonite grout mix consisted of mixing 6 gallons of water to 3-5 pounds of powdered bentonite per one (1) 94 pound bag of Portland cement. The cement was allowed to set-up over a minimum period of 24 hours prior to drilling through the casing. The potable water placed into the casing was removed prior to drilling through the casing.

The conductor casings were all installed by Pool Drillin_ of Clinton, Oklahoma which was under the professional supervision of a RSA hydrogeologist. Twenty-four (24) conductor casings were installed between September 26 and October 10, 1990. Another four (4) conductor casings were set in the SX Building area on November 5 and 6, 1990. A summary of the conductor casing drilling details is presented in Table 14.

6.7.3 Deep Sandstone Monitor Wells

Prior to drilling through the 8-inch conductor casings, all potable water was removed from the inside of the casing. The bottom cap was then drilled out using a 6-inch bit and the borehole advanced using air-rotary drilling methods (a hydrocarbon filter was used to filter the drilling air). The boreholes were advanced into an interbedded sandstone and shale sequence. The borings were terminated when a continuous sandstone unit that generally occurred between depths of 30-35 feet in the MPB and SX area was fully penetrated. The deep sandstone monitor wells were advanced to depths of between 18.5 (fish pond area) to 40.5 feet (east of MPB area). The deep sandstone wells were drilled and installed between October 5 and 11, and November 7 and 8, 1990 by Pool Drilling which was supervised by a hydrogeologist from RSA. A total of twenty-eight (28) deep sandstone wells were installed. The sandstone wells were constructed of 2-inch, tri-lock, screw-threaded PVC casing and 0.010 slot screen. The screen interval extended from about 0 to 2.5 feet below the conductor casings to the bottom of the sandstone (30-35 foot depth interval). A seal of bentonite pellets was often placed into the bottom of the borehole if the underlying shale was penetrated beyond one (1) foot. This seal extended only to the bottom of the sandstone unit. A sand pack was placed around the screen and extended 1.5 to 2.0 feet above the top of the screen. A bentonite pellet seal was then placed on top of the sand pack (the top of sand typically was 6-inches below the conductor casing) and extended 1 to 2 feet into the conductor casing. The inside of the 8-inch conductor casing was then filled with a volclay grout to 1.5 feet from ground and an aboveground or below-ground protector installed in the same manner as described in the shallow shale monitor well section. A summary of the deep sandstone monitoring well drilling and completion details is presented in Table 15. Monitor well completion records for the sandstone wells are presented in Appendix F.

The shallow shale and deep sandstone monitor wells were developed periodically between September 26 and December 6, 1990, 1990, using clean dedicated PVC bailers or a precleaned centrifugal pump. The wells were purged until the water visibly cleared of fine-grained sediment and the pH, temperature, and specific conductance of the developed groundwater stabilized. Monitor well development details are presented in Tables 16 and 17, respectively.

6.8 Hydraulic Conductivity Tests and Water-Level Measurements

Hydraulic conductivity is a numerical description of the capability of an aquifer to transmit a volume of groundwater under a known hydraulic gradient through a unit cross-section of the aquifer over a known period of time. Hydraulic conductivity tests (falling and/or rising head tests) of the uppermost groundwater systems were conducted in most of the wells installed in the SX and MPB area in November and December, 1990, utilizing the slug test method (Bouwer and Rice, 1976). The hydraulic conductivity tests were conducted in wells which were constructed under rigid dimensional controls in order to provide representative values of horizontal hydraulic conductivity for the upper shale and deeper sandstone groundwater system.

With the slug test method, the hydraulic conductivity of an aquifer is determined from the rate of rise or decline of the water level in a well after a certain volume or "slug" is suddenly inserted or removed from the well. Slug test results were evaluated in accordance with the methods presented by Bouwer and Rice (1976).

To provide useful data, slug tests in moderately permeable material are conducted using an automatic data logger and a pressure transducer to measure groundwater levels. Groundwater fluctuations were measured using an In-Situ Hermit SE-1000B Environmental Data Logger and a 10 psi downhole pressure transducer. In sandy or other permeable aquifers, the useful portion of the recovery curve occurs within the first few seconds of the test. A log-type measurement frequency is necessary to allow very frequent measurements (0.5 second or less) in the first several seconds and less frequent measurements after about 10 to 20 seconds.

In-situ field slug tests were conducted on most sandstone and shale monitoring wells in November and December, 1990, to obtain measurements of horizontal hydraulic conductivity in each groundwater horizon. The hydraulic conductivity values provide valuable insight into the transport velocity of the groundwater in the upper aquifer systems beneath the Facility. The slug test data is presented in Appendix G. The results of the slug tests are tabulated in Table 18 and are discussed in detail in Section 6.11.

Water-level and well-depth measurements have been periodically measured on all groundwater monitoring wells SX and MPB area during September, October, November and December, 1990. Water-level measurements were generally taken on a two (2) or three (3) day frequency in all wells except for seven (7) wells which were slow to reach equilibrium. In these wells (MW-3, MW-6, MW-15, MW-20, MW-21, MW-23, and MW-25), water levels were measured daily Monday-Friday beginning November 5, 1990. SFC will begin (on December 15, 1990) to measure water levels on a monthly frequency until the Facility wide Environmental Investigation is completed in July, 1991 at which time a new measurement schedule will be proposed. The water-level measurements were taken to accurately determine the hydraulic gradient and groundwater flow direction in the Facility area. Measurements taken at different time intervals also provide information on the extent of seasonal fluctuation of the groundwater surface. The water-level measurements taken in shallow shale and deep sandstone monitoring wells in the MPB and SX area are summarized in Tables 19 and 20, respectively.

Well-depth measurements were also taken periodically in the groundwater monitoring wells. The well-depth measurements provide information necessary to assess the condition of well (i.e. if the wells are experiencing silt build-up) and to provide the necessary purge volumes during groundwater sampling events. The total well-depths measurements for the shale and sandstone wells are tabulated in Tables 19 and 20, respectively.

6.9 Groundwater Sampling

Between September 28 and October 11, 1990, groundwater from the shallow shale and deep sandstone wells (except MW-24A, MW-25A, MW-26A, and MW-27A which were installed in November, 1990) installed in the MPB and SX area were sampled. The groundwater was sampled for the purpose of characterizing the chemical quality of the shallow groundwater upgradient and downgradient from the MPB and SX area. A second groundwater sampling event was conducted between December 5-10, 1990 and included sampling of all (including SX sandstone wells) wells in the SX and MPB area. All wells were sampled by RSA personnel during both sampling events.

Prior to sampling, all wells were measured to determine groundwater level and well depth. In addition, the groundwater surface was inspected to determine if any floating immiscible liquids were present. Following these measurements, the wells were purged of at least three casing/sand pack volumes of groundwater in order to eliminate stagnant fluids within the well casing and sand filter pack. If the wells did not yield three (3) casing volumes prior to being bailed dry, the wells were allowed to recover for 12-24 hours prior to obtaining a sample. Purging was accomplished by bailing with precleaned dedicated PVC bailers. All bailers were fitted with clean monofilament line. All fluids purged from the wells were collected in 55 gallon drums and are being retained pending analysis.

Groundwater samples were collected with dedicated precleaned PVC bailers. The groundwater samples were carefully poured directly into the appropriate sample bottles. Special care was exercised during sampling to avoid excess aeration of the sample.

The groundwater collected from all of the wells installed around the MPB and SX area were analyzed for uranium, fluoride, nitrate, pH, and specific conductance. The uranium, fluoride, nitrate, pH, and specific conductance parameters were chosen because they are major environmental constituents of concern for material used in the MPB and SX areas. Tables 21 and 22 summarizes the time sequence over which groundwater samples were taken and the analytical test results for the shallow shale and deep sandstone wells, respectively.

6.10 Area Groundwater Usage

All current and past groundwater users within a 1-mile radius of the SFC Facility were identified based upon records available from the following sources:

1) U.S. Geological Survey water well data base, Sequoyah County, Oklahoma

2) Oklahoma Water Resources Board Files,

3) Wells identified in the Reconnaissance of the Water Resources of the Fort Smith, Quadrangle, Hydrological Atlas 1, and

4) Wells identified by a visual inspection of the 1-mile radius surrounding the Facility.

This survey of groundwater usage identified one (1) water well in a 1-mile radius of the Facility. This well appears to be a domestic water well located on SFC property, but its current status is unknown but it is not in current use. There were no identifiable groundwater users between the Facility and the Illinois and Arkansas Rivers, the likely groundwater discharge point for the shallow groundwater system. No apparent or known impacts to current groundwater users has occurred as a result of the Facility operation. No water well records were on file with the Oklahoma Water Resources Board (OWRB) for wells within 1-mile of the Facility. A letter to this effect has been received from the OWRB and is presented in Appendix H.

6.11 Results of Hydrogeological Assessment

6.11.1 Evaluation of Groundwater as a Migration Pathway

Based upon the results of the soil boring and groundwater monitoring well installation program, SFC has defined the uppermost groundwater system beneath the MPB and SX area. Based upon preliminary results to date, it appears that there are two (2) separate groundwater flow systems in the MPB and SX area. The uppermost system appears to be either perched upon highly consolidated and cemented sandstone and shale which is less permeable than the overlying terrace deposits or it occurs within the fractures of the upper shale unit, but the groundwater level occurs below the top of the shale unit. The shallow terrace deposits (where saturated) and the uppermost shale unit SH1 are hydraulically in communication and behave as one groundwater bearing zone. This shallow groundwater occurs within the upper 10-20 feet in the MPB and SX areas. The upper 10-20 feet beneath the MPB and SX areas is underlain by shales and terrace deposits consisting of silts and clays. A deeper (and hydraulically separate) groundwater flow system occurs beneath the upper weathered shale unit SH1 and occurs within fractures of a interbedded sandstone and shale sequence that extends to depths from about 20 to 40 feet.

6.11.2 Geology

6.11.2.1 Site Soils

According to the U.S.D.A. Soil Conservation Service, the Main Process Building and SX Building are located over soils of the Pickwick Series. Other soils in the immediate area include soils of the Hector Series, Linker Series, and Vian Series.

According to the U.S.D.A. Soil Conservation Survey Map (Abernathy, 1970), the Pickwick loam, 2-5 percent slopes, eroded (PcC2), of the Pickwick Series directly underlies the MPB and SX Building. The Pickwick Series consists of deep, moderately permeable, well-drained soils on uplands that form in weathered material from sandstone. Soil of the Pickwick Series typically have a surface layer of loam that is light brownish gray in the upper part and very pale brown in the lower part. A typical profile consists of light brownish-gray loam from 0-4 inches, followed by a very pale brown loam from

4 to 10 inches. Beneath this is a reddish-yellow light clay loam from 10-14 inches underlain by a reddish-yellow clay loam to 28 inches. From 28 inches to about 68 inches is a coarsely mottled reddish-yellow clay loam followed by a mottled light gray and reddish-yellow clay loam. Soils of the Pickwick Loam (PcC2) are typically eroded. Generally, the surface soil layer is 7-11 inches thick. This soil is suited to growing of small grain crops, sorghum, and tame pasture. This soil has a moderate corrosivity to uncoated steel and a high corrosivity to concrete.

The Vian Series soils consists of deep, moderately slowly permeable, moderately well drained soils on uplands and form in loamy alluvium or loess. Soils of the Vian Series typically have a surface layer of silt loam. The upper part of the subsoil is typically a very pale brown silt loam. Below this is a brownish-yellow silty clay loam, and below this, coarsely mottled light-gray, very pale brown and yellow silty clay loam.

The Linker Series soils consist of moderately deep to deep, moderately permeable, well drained soils on uplands that formed in material weathered from sandstone. These soils are typically loam and clay loam to about 30 inches.

The Hector Series soils consist of shallow, rapidly permeable, excessively drained soils on uplands that form in material weathered from sandstone. These soils are typically fine sandy loam to about 14 inches.

A soils map showing the location of the MPB and SX Building is shown in Figure 3.

6.11.2.2 Regional Geology

The SFC Site is located on the southwest flank of the Ozark Uplift, a major tectonic feature extending from east-central Missouri to northwest Arkansas and northeast Oklahoma. The Arkoma Basin lies immediately to the south and southeast, while the Ouachita Mountains are about 50 miles south of the Facility. The geology in the region consists of Quaternary-age alluvial and terrace deposits along and adjacent to the major rivers in the region. Bedrock formations present in the region consist of Pennsylvanian, Mississippian, Devonian, Silurian, and Ordovician-age shale, limestone, siltstone, and sandstone formations. The geologic formations regionally dip to the southwest at 2-3 degrees toward the Arkoma Basin. A regional geological map showing the SFC Facility is presented in Figure 4. An explanation for this map and a regional stratigraphic column is presented in Figure 5. An area stratigraphic column is shown in Figure 6 for bedrock units present in the Arkoma Basin and adjacent areas.

6.11.2.3 Site Geology

The MPB and SX Building area (Site area) are underlain by a thin layer of Quaternary-age terrace deposits which are underlain by about 390 feet of the Pennsylvanian-age Atoka formation. The Atoka is underlain by the Pennsylvanian-age Wapanoka Limestone Formation. In areas, small amounts of fill materials are also present.

Fill Material

Small amounts of fill are present in select areas at the Facility. Most of the fill materials in the MPB and SX Building area occurs immediately adjacent to buried utility lines and as subbase to concrete floors, and concrete and asphalt roads and storage areas. The fill materials in the utility trenches consist mostly of silty sand, sandy gravel, silty clays, and weathered shale. The fill materials beneath the concrete floors and roadways consist mostly of silty sand and sandy clay that reach maximum thickness of about 1.5 feet. The fill material in the buried utility line trenches consist mostly of silty sand and silty gravel which immediately surround the utility line. A silty clay and/or weathered shale material typically overlies the coarser sands and gravels in the utility line trenches. The fill material in the buried utility line trenches occurs from depths of 0-17 feet but averages 5 to 7 feet in thickness and depth.

Terrace Deposits

A thin veneer of Quaternary-age Pleistocene terrace deposits cover most of the Site area surfaces where fill material is not present. The terrace deposits consist mostly of silts, sandy silts, silty clays, sandy gravelly clays and silty sandy clays that overlie a shale (SH1) unit of the Atoka formation. The terrace deposits are remnants of extensive terrace deposits laid down during high water stages of the Illinois and Arkansas Rivers. Downcutting by these rivers has left these deposits high above the present day river valley. From their maximum thickness on the hill tops in the area (including the MPB and SX Building areas), the terrace deposits thin rapidly in all directions. The terrace deposits in the Site area range in thickness from 1.0 to 15.0 feet (average about 7.7 feet) and occur between depths from [illegible] to 16.4 feet. The terrace deposits are thickest (16.4 feet) near the southwest corner of the MPB and thin in all directions away from this area. Beneath the MPB, the terrace deposits thicken southward from about 2 feet on the north side to 8 feet on the southeast side to 14 feet on the southwest side of the MPB. The terrace deposits range in thickness from 5.0 to 8.7 feet in the SX Building area and occur from depths of 0 to 8.7 feet in this area. An isopach map showing the thickness of the terrace deposits in the Site area is shown on Figure 7. This map also shows the depth to the top of the Atoka bedrock surface, which is a shale in the Site area. The thickness of the terrace deposits and their relationship to the underlying Atoka formation is shown on the geological cross sections presented in Figures 8, 9, 10, 11, 12, 13, and 14. The location of these geological cross sections are shown on Figure 15.

Immediately underlying the terrace deposits is the Pennsylvanian-age Atoka formation. The Atoka formation is characterized by very irregularly bedded discontinuous units of sandstone, siltstone, and shale with thin limestones in the lower part. Approximately 390 feet of the Atoka formation are present beneath the Facility. The base of the Atoka formation (390 feet below the surface), rests on the unconformity at the top of the Wapanoka limestone formation. The Wapanoka outcrops about 10 miles northeast of the Site and the top of the Atoka, marked by the Hartshore sandstone, outcrops about 6 miles southwest of the Facility. Regional dip is generally to the southwest, which is also the direction of thickening of the Atoka. The members of the Atoka exposed at the Site are about in the middle of the formation.

In the Site area, the top of Atoka formation occurs from about 1.0 to 16.4 feet below ground level as shown on Figure 7. The top of the Atoka present in the Site area consists of an upper shale unit (Unit 1SH) which was present in all areas except BH-31 near the Fish Pond south of the MPB. An isopach map showing the thickness of this upper shale unit (Unit 1SH)is shown in Figure 16. The thickness of this upper shale unit ranges from a maximum of 20.1 feet near the northwest corner of the MPB to zero in BH-31 near the Fish Pond and averages 9.2 feet in thickness across the Site. The thickness of this upper shale unit beneath the MPB ranges from about 7.5 feet in the southwest corner to about 17.5 feet near the northwest corner. This upper shale unit appears to thicken to the west and north and thin to the south and east. The thickness of this shale unit ranges from about 10 to 17 feet in the SX Building area. The uppermost shale unit (SH1) is typically dark grayish brown, fissile, and silty and sandy near the contacts with adjacent sandstone units. This unit is laterally continuous at the Site except in one boring (BH-31) near the Fish Pond. The thickness of this shale unit is important since it is essentially an aquitard which inhibits the downward or upward movement as well as the horizontal movement of groundwater or associated contaminants.

A structure map showing the elevation of the uppermost shale unit (Unit SH1) is presented in Figure 17. This map indicates that the elevation of the shale unit is highest near BH-12 on the north side of the MPB and slopes away from this point in all directions. The maximum elevation of the shale surface noted was 564.5 feet AMSL in BH-12 and the minimum elevation observed was 542.1 feet AMSL in BH-32 near the Fish Pond. A review of a structure map of this type is important since the shale typically will show a low vertical permeability and recharging water will tend to flow vertically until this shale unit is encountered and then become perched upon its surface. Groundwater flow of this perched system is then controlled by the slope or configuration of the shale surface. This structure map was also examined for the presence of erosional "valleys" or paleo-channels on the bedrock surface which often control the movement of groundwater and may also exhibit higher flow permeabilities than adjacent materials. A possible eroded paleo-channel surface on the shale unit was noted to begin near the southwest corner of the MPB and trend south-southwesterly. Two (2) other possible paleo-channel surfaces were noted on this map. One (1) is located near the southeast side of the MPB and trends southeasterly. A second possible paleo-channel begins near the northeast side of the MPB and trends southeasterly. The locations of these possible paleo-channels are shown on Figure 17.

Located beneath the uppermost shale unit is a highly cemented, very fine to medium-grained, pale brown to dark gray, sandstone. This sandstone is laterally continuous across the Site and ranges in thickness from 0.4 to 12.5 feet (averages 3.2 feet) and occurs between depths of 7.0 to 27.5 feet. This sandstone unit is essentially impermeable due to its highly cemented nature and this unit would also be considered an aquitard in the Site area. A map showing the depth to the top of the first sandstone unit encountered in the Site area is shown on Figure 18. This map shows that the depth to the top of this sandstone unit ranges from a high of 24 feet south of the SX Building (BH-28) to a low 7.5 feet near the Fish Pond (BH-31). The depth to the uppermost sandstone typically decreases to the south. A structure map (Figure 19) of the top of the uppermost sandstone was also prepared to evaluate its surface configuration and possible paleo-channel systems. This map was also prepared to aid in the evaluation of the groundwater data since the sandstone appears to be very tight and relatively impermeable. The uppermost sandstone surface is highest along the north, east, and southeast sides of the MPB and generally slopes toward the south-southwest away from these areas. A possible easterly trending paleo-channel was identified on the sandstone surface near the southeast corner. A second possible paleo-channel was identified to begin on the north side of the MPB and trends easterly away from the area. The possible paleo-channels are shown on Figure 19.

Beneath the uppermost sandstone unit SA1 is an alternating sequence of laterally continuous sandstone and shale units which have been numbered sequentially as sandstone units SA2, SA3, SA4, etc. and shale units SH2, SH3, SH4, etc. These individual units have been characterized to a depth of about 35-40 feet in the MPB and SX Building areas and are shown on the lithological cross sections shown in Figures 8 through 14. In general, those units that have been penetrated by drilling are laterally continuous beneath the SX and MPB areas. The shale layer unit 2SH ranges in thickness from 2.6 to 9.8 feet (average 5.2 feet) and occurs between depths of 8 to 32.5 feet. This shale and sandy shale unit (2SH) is dark gray to light brownish gray, fissile, silty, and contains thin laterally discontinuous silty sandstone lenses. Sandstone unit 2SA is dark gray to very dark gray, very fine grained, quartzose, well cemented sandstone. This laterally continuous unit across the Site contains laterally discontinuous beds of silty shale. This sandstone unit SA2 ranges in thickness from 3 to 10.3 feet (averages 5.0 feet) and occurs between depths of 12.5 to 38 feet below ground level in the Site area. Shale Unit SH3 underlies sandstone unit SA2. This shale is very dark gray, sandy to silty, with high organic content and contains thin discontinuous sandstone layers. Shale unit SH3 is laterally continuous across the Site and varies in thickness for 1 to >8 feet (average 2.5 feet) and is found between depths of 17.0 to >40.5 feet. Sandstone unit SA3 was penetrated by only five (5) borings at the Site. Based upon this limited data, this sandstone unit varied in thickness from 1.5 to 3.0 feet (average 2.5 feet) and was found between depths of 30 to 37 feet. This sandstone unit is highly cemented, very fine grained, very dark gray, and very hard. The last shale unit (SH4) was partially penetrated in only three (3) borings. This shale unit SH4 is greater than 4 feet in thickness and occurs between depths of 27.5 to 35.5 feet. A more detailed description of the terrace deposits and the individual shale and sandstone units is presented in the Site specific stratigraphic column shown in Figure 20.

The bedrock Atoka formation penetrated by drilling in the Site area generally dips to the south-southwest from 0.5 to 4 percent (average 2 percent). Jointing and fracturing are present in this bedrock formation to varying degrees but do not appear to be a prominent feature in these rocks. The silty and sandy shales are much less conspicuously jointed than the purer clay shale, and the observable joints are wavy, irregular, and short. Most of the sandstone beds also lack prominent jointing; where observed, they are short and irregular.

The Carlile School fault (approximately 2800 feet southeast of MPB) is the most prominent structural feature in the immediate area. The plane of the fault is not exposed, but its presence is revealed by vertical beds of sandstone which form low hummocky parallel ridges south of the Carlile School. The ridges stretch for a couple of hundred meters across a pasture. They are about 150 feet apart, and are the surface indication of sandstone beds at 1 to 2 feet thick. Data collected during the drilling program in the MPB area did not indicate the definite presence of any faults or lithological offsets. However, some difficulty was encountered in correlation of lithological data near the Fish Pond, which could indicate a small fault or lithological facies change.

The area of East Central Oklahoma, where the SFC Facility is located, lies in a quiet seismic region of the United States. Although distant earthquakes may produce shocks strong enough to be felt in this area, the region is considered to be one of minor seismic risk.

The seismically active regions closest to the Site are the El Reno-Nemaha Ridge area located in Oklahoma, Kansas, and Nebraska, and the New Madrid area in Missouri. The probability of serious damage to the SFC Facility from earthquakes occurring in either area is remote.

Minerals in the area consist of coal, limestone/sandstone, and sand/gravel from the Arkansas River floodplain, and clay and shale. The nearest coal production is 14 miles west of the town of Warner. Coal is being mined from a depth of 1400 feet at Stigler in Haskell County, 18 miles south of the Site. The nearest coal deposits are located approximately 12 miles southeast of the Site, but most of these low-quality mines are currently inactive.

6.11.3 Hydrogeology

6.11.3.1 Regional Hydrogeology

Usable groundwater in the region occurs principally in the thicker alluvial and terrace deposits of the Arkansas, Illinois, and Canadian Rivers. Groundwater also occurs to minor degrees in the Pennsylvanian-age bedrock formations. A major bedrock aquifer (The Keokuk and Rush Springs formations of Mississippian-age) occurs approximately 10 miles northeast of the Site and this aquifer is capable of yielding between 3 to 50 gallons per minute of good quality water. The location of the SFC Facility with respect to major bedrock aquifers is shown in Figure 21. An explanation for this map is shown in Figure 22. The SFC is located near the edge of a major alluvial and terrace aquifer deposited along the Arkansas and Illinois Rivers. Site specific data indicates that only a thin veneer of terrace deposits exist at the Site and these are not capable of yielding usable quantities groundwater due to their limited thickness and areal extent. The terrace deposits on the Site area yield very little to no groundwater and much of the terrace deposits in the MPB and SX area are unsaturated and therefore are not capable of yielding groundwater. A map showing the SFC Site area with respect to major alluvial aquifers is shown in Figure 23. A map showing the availability of groundwater in the area shows that the SFC, MPB and SX areas are located over geological units which are considered least favorable for development of groundwater supplies. The map showing the availability of groundwater in the SFC area is shown in Figure 24. An explanation for this map is shown in Figure 25. The SFC is also located in an area where the chemical quality of groundwater contained in underlying lithological units is described as poor to fair. A map showing the general quality of groundwater in the SFC area is shown as Figure 26. An explanation for this map is presented in Figure 27.

Regional flow of groundwater in the SFC area is west and south toward the Arkansas or Illinois Rivers, the likely discharge point for shallow groundwater beneath the Facility. Minor amounts of groundwater may discharge as springs, evapotranspiration, or recharge to other strata. The Atoka formations and terrace deposits of the area are likely recharged from precipitation following over their outcrop areas, and to a lesser degree from recharge from underlying formations.

The only significant fresh water aquifer in the immediate Site area is the alluvium of the Arkansas River Valley. The lower part of the alluvium consists of up to 15 feet of coarse sand with a productivity of as much as 900 gpm. The water is classified as "hard to very hard" (greater than 180 mg/l total hardness) but is suitable for irrigation and watering stock.

6.11.3.2 Site Hydrogeology

The hydrologic conditions in the immediate area of the Sequoyah Facility are typical of those described for the Atoka formation discussed below. This formation is considered to be a very poor aquifer because the soil cover is thin and has poor permeability, and the underlying sandstone and shale beds require fracturing to provide storage capacity. Water quality is poor and yields average only 0.5 gpm. It is estimated that because of the very low permeability of the Atoka rocks, approximately 95% of the rainfall is lost by surface runoff.

The only local area capable of supporting a marginal well is adjacent to the Carlile School fault, where fracturing of the Atoka formation is sufficient to provide a reservoir of limited areal extent. The best water well on the Site area is located in the belt of fracturing and has a depth of 84 feet, a static water level at 29 feet, and a yield of 1 gpm. The water quality of this well is better than average for the Atoka formation, having approximately 460 mg/l total dissolved solids. In contrast, water wells drilled at the three former home sites of State Highway 10 did not supply adequate water for domestic purposes. The Sequoyah County Rural Water Association now supplies rural water to area residents.

The SFC Facility does not use groundwater resources but obtains water from the Tenkiller Reservoir located about 7 miles to the north.

Groundwater in the Site area occurs in limited quantities in the Quaternary-age terrace deposits and within the interbedded sandstones and shales in the uppermost 35 feet of the Atoka formation. In general, the terrace deposits northward from the middle of the MPB were unsaturated and did not contain groundwater at the time of this investigation (October-November, 1990). Southward from this area, the terrace deposits were saturated over a portion of their thickness. A map showing the saturated thickness of the terrace deposits is presented in Figure 28. The portion of the terrace deposits where the groundwater saturation is the thickest is in the southwest corner of the MPB. A map showing the depth to groundwater on November 12, 1990 in the shale/terrace deposits is shown in Figure 29. The depth to groundwater varies from 0.45 feet at MW-29 near the Fish Pond to 10.78 feet at MW-7 near the northeast portion of the Site. The depth to groundwater varies from 9 to 10 feet beneath the SX building and 6 to 9 feet beneath the MPB. The groundwater potentiometric surface for groundwater in the uppermost shale and terrace deposits is shown in Figure 30. This map indicates that the groundwater flows radially away from the front entrance of the MPB and this map appears to be greatly affected by the trench well pumping program in the SX (where 15 trench sumps are pumped weekly) and adjacent areas. A large groundwater depression has been created near the SX Building due to the pumping of the trench sumps in this area. Preparation of a static potentiometric surface map for the shale/terrace deposits was not possible due to pumping of the trench sumps in the area. The groundwater in the uppermost shale and terrace deposits are under unconfined conditions.

The potentiometric surface map for the uppermost sandstone and interbedded shale sequence for November 12, 1990 was prepared and is presented in Figure 31. This map shows that groundwater in formations underlying the uppermost shale unit generally flows to the southwest. A comparison of this map to the structure map of the top of the uppermost sandstone (Figure 19) shows a good degree of correlation. The interbedded sandstone and shale bedrock sequence beneath the uppermost shale (SH1) is under confined conditions and there appears to be no major communication with the groundwater contained within the overlying shale or terrace deposits. In fact, the uppermost sandstone unit may likely act as a impermeable barrier on which groundwater contained within the overlying shale and terrace deposits is perched. This sandstone is very highly cemented, very fine grained and has very little primary porosity through which groundwater can move. A groundwater head difference map between the terrace deposits/uppermost shale unit and the lithological units beneath the uppermost shale has been prepared and is presented in Figure 32. This map shows that there is a significant difference in groundwater potentiometric surfaces between these water bearing formations monitored which is excellent evidence for hydraulic separation of the two (2) water bearing zones monitored. Hydrographs of select wells in the Site area have also been prepared and are presented in Figures 33 and 34. These hydrographs show short-term groundwater fluctuations and the relationship between the groundwater potentiometric surfaces in the two (2) water bearing formations monitored.

Slug tests were conducted on fourteen (14) shallow shale wells and twenty-one (21) deep sandstone wells at the SFC Facility. The permeability or horizontal hydraulic conductivity of the shallow shale formations and terrace deposits ranged from a maximum of 1.28×10^{-2} cm/sec to a minimum of 2.07×10^{-7} cm/sec. The geometric mean from the fourteen (14) shallow shale wells was 2.02×10^{-5} cm/sec. The hydraulic gradient in the shallow shale unit is variable over the Site and ranges from about 0.008 to 0.06 feet/foot. The hydraulic gradient averages about 0.06 feet/foot on the south side of the MPB and about 0.012 feet/foot on the west side of the MPB to the SX Building. The effective porosity for the fractured shale unit is estimated at 0.05 or 5 percent. Based upon these values, the average groundwater flow velocity was calculated using Darcy's flow equation:

$$V = KI/n$$

where:
V = average flow velocity, cm/sec
K = hydraulic conductivity, cm/sec
I = hydraulic gradient, feet/foot
n = effective porosity, dimensionless

The average groundwater flow velocity in the shallow shale unit at the Site is variable and largely dependent upon the degree and interconnection of fracturing present in the shale. The groundwater flow velocity in the shallow shale unit on the west side of the MPB was calculated at 0.014 feet/day or about 5 feet/year. The average groundwater flow velocity in the shallow shale unit on the south side of the MPB was calculated at 0.068 feet/day or about 25 feet/year.

The slug test results conducted on the deeper interbedded sandstone and shale sequence indicated that the horizontal hydraulic conductivity of this geologic sequence ranged from a minimum of 4.47×10^{-6} cm/sec to a maximum of 3.49×10^{-4} cm/sec. The geometric mean from the slug tests conducted on the twenty-one (21) deep sandstone wells was 6.76×10^{-5} cm/sec. The horizontal hydraulic gradient in the deep sandstone groundwater system averaged 0.01 feet/foot. The effective porosity for the fractured shale/sandstone sequence was estimated at 0.05 or 5 percent. Based upon these values, the average groundwater flow velocity in the deep sandstone unit was calculated at 0.038 feet/day or about 14 feet/year.

The results of the horizontal hydraulic tests (slug tests) are presented in Table 18 and the slug test data are presented in Appendix G.

6.11.4 Groundwater Quality Results

6.11.4.1 Shallow Shale Wells

Groundwater quality results from the shallow shale wells indicate that uranium levels outside the restricted area are below the environmental action levels of 225 ug/l at all locations sampled to date except MW-10. Uranium levels in groundwater from well MW-10, at 30,000 ug/l measured on 10/10/90 and 21,170 ug/l measured on 12/8/90, were above environmental action levels. Because groundwater in well MW-10 exceeded the environmental action level for uranium, SFC installed five (5) additional shallow shale wells in the potential downgradient direction. To date, samples have been obtained from all five (5) of these wells and all five (5) wells (MW-19, MW-29, MW-30, MW-31 and MW-32) show uranium levels well below environmental action levels. No additional monitoring wells are needed to define the uranium extent in the area of MW-10 or in the unrestricted area.

Wells where uranium levels above 225 ug/l in the restricted area occur include MW-12, MW-14, MW-15 (10-7-90 sampling), MW-16 (10-7-90 sampling), MW-18, MW-24, MW-25, MW-26 (10-7-90 sampling), and MW-27 (10-7-90 sampling). These wells are located on the west, southwest, and north sides of the MPB in the restricted area. Analytical results for the shallow shale wells is shown in Table 21. Uranium levels in groundwater from wells MW-15, MW-16, MW-26, and MW-27 measured on 10-7-90 were noted at being below process laboratory detection limits of 60,000 ug/1, <10,000 ug/1, <10,000 ug/1, and <10,000 ug/1, respectively. Analytical data from these same wells collected in early December, 1990 show uranium levels in groundwater from these wells far below the environmental action levels of 225 ug/1.

In addition to a comparison of the uranium levels detected in the uppermost shale/terrace deposits to license environmental action levels, a comparison was made to background uranium levels which likely range from 5 to 10 ug/1. An isopleth map showing uranium levels during December 5-10, 1990 in the uppermost shale and terrace deposits is shown in Figure 35. In general, this map indicates impacts to the groundwater on the southwest and northwest sides of the MPB and on the west and north sides of the SX Building. There appears to be a strong correlation between possible paleochannels noted on the shale surface, saturated thickness of the terrace deposits, and uranium levels which may indicate that geological erosional features may control the migration of contaminants in the uppermost groundwater system. Isopleth maps for nitrate, fluoride, and specific conductance have also been prepared for the December 5-10, 1990 groundwater sampling analytical results and they are shown in Figures 36, 37, and 38, respectively. The nitrate isopleth map is similar in configuration to the uranium isopleth map and shows elevated nitrate levels in the southwest, east, and northwest areas of the MPB and on the west and north sides of the SX Building. Nitrate levels exceeded the Facility environmental action level limit of 20 mg/l in two (2) wells outside the restricted area (MW-8 at 24 mg/l and 40.2 mg/l and MW-10 at 91.6 mg/l on 12-8-90). Nitrate levels in the restricted area ranged from <0.1 to 10,100 mg/l in MW-25 on 10-8-90 (nitrate was 4464 mg/l in MW-25 on 12-8-90). Background nitrate levels are likely less than 1 mg/l. The fluoride isopach map shown in Figure 37 shows elevated fluoride levels in the southwest corner of the MPB. Fluoride levels exceeding Facility environmental action levels of 1.6 mg/l (EPA drinking water level 1.4 - 2.4 mg/l - temperature dependent) were detected in groundwater samples from four (4) wells MW-1 (1.7 mg/l), MW-10 (7.1 mg/l), MW-21 (2.0 mg/l) and MW-23 (2.2 mg/l) outside the restricted area boundary during the December, 1990 sampling. Fluoride levels measured in groundwater (December, 1990 sampling) in wells inside the restricted area boundary exceeded Facility environmental action levels in wells MW-11 at 3.3 mg/l, MW-12 at 2.1 mg/l, MW-14 at 10 mg/l, and MW-18 at 2.5 mg/l. Based upon the December, 1990 fluoride analytical results, groundwater in wells MW-1 (1.7 mg/l), MW-10 (7.1 mg/l), MW-11

(3.3 mg/l), MW-12 (2.1 mg/l), MW-14 (10.0 mg/l), MW-18 (2.5 mg/l), MW-21 (2.0 mg/l), and MW-23 (2.2 mg/l) exceeded the environmental action levels of 1.6 mg/l for this Facility. Background fluoride levels are likely less than 2 mg/l. The groundwater specific conductance isopleth map shown in Figure 38, shows high conductivities north of the MPB and north and west of the SX Building. The conductivities are slightly elevated along the southwest and southeast sides of the MPB. Background specific conductance is probably less than 1000 umhos/cm.

Water samples were also taken from six (6) open boreholes in the MPB area. These results are presented in Table 23 but will not be discussed here since they are likely unreliable due to the fact that the results are likely affected by surface soil contamination. Also, monitor wells have been installed near each of these locations and provide more reliable data.

6.11.4.2 Deep Sandstone Wells

Groundwater quality data for the deep sandstone wells indicate that no wells outside the restricted area have uranium levels that exceed the environmental action level of 225 ug/l. Two (2) wells, MW-12A at 15,991 ug/l on 10-11-90 and 19,179 ug/l on 12-5-90 and well MW-25A at 2242 ug/l on 12-8-90 (MW-12A is located in the restricted area near the NW corner of the MPB and MW-25A is located north of the SX Building) exceeded the uranium environmental action levels of 225 ug/l. No additional deep sandstone monitoring wells are required to be drilled outside the restricted area boundary in the MPB or SX Building areas. A summary of the analytical data for the deep sandstone wells is shown in Table 22.

Isopleths for uranium, nitrate, fluoride, and specific conductances have been developed for the December 5-12, 1990 groundwater sampling analytical results and are presented in Figures 39, 40, 41, and 42, respectively. The uranium isopleth map was also compared to background groundwater levels which are likely less than 10 ug/l uranium in the deeper sandstone/shale lithologic sequence. No impacts to the deeper groundwater system from licensed material releases are indicated in areas outside the restricted area. Elevated uranium levels are located along the west and northwestern portion of the MPB and in areas adjacent to the SX Building. Nitrate levels exceeding the Facility environmental action level of 20 mg/l were detected in six (6) sandstone wells at the Site (MW-12A, MW-14A, MW-24A, MW-25A, MW-26A, and MW-27A) and all six (6) wells are located within the restricted area boundary near the northwest corner of the MPB or in wells adjacent to the SX Building. Nitrate levels in these wells ranged from 15.2 mg/l in MW-12A (10-11-90) to 325 mg/l in well MW-25A (12-8-90). Background nitrate levels in the deeper sandstone/shale lithological units monitored appear to be 4 mg/l or less. No wells outside the restricted area appear to be above background levels except for MW-22A at 6.0 mg/l. The nitrate isopleth map for the deeper sandstone/shale units is shown in Figure 40. The fluoride isopleth map (Figure 41) shows elevated levels over background (2.0 mg/l or less) in an area near the north side of the SX Building. Only two (2) deep sandstone wells (MW-21A at 2.0 mg/l and MW-25A at 2.8 mg/l), both in the restricted area, exceeded the fluoride environmental action level of 1.6 mg/l during the December, 1990 sampling event. The specific conductance isopleth map (Figure 42) shows conductivity levels elevated over background (1000 umhos/cm or less) near the southwest corner of the MPB and in the area west and north of the MPB and in areas adjacent to the SX Building.

The October, 1990 groundwater sampling conducted on the deep sandstone wells was done prior to a complete development of some of the monitoring wells. In particular, wells MW-10A, MW-16A, MW-17A, MW-19A, and MW-22A may not have had a complete development due to the time constraints of the NRC order, the inability of these wells to produce sufficient water for proper development, and the desire to sample the wells prior to October 16, 1990 NRC order deadline. These wells have now been fully developed and the December, 1990 analytical data are more representative of actual groundwater conditions than the October, 1990 sampling analytical data.

6.11.5 Soil Gas Survey Results

Results of the soil gas headspace survey indicate that little or no hydrocarbon impacts are present in the subsurface near the MPB and SX area. Only five (5) of thirty-seven (37) soil borings has hydrocarbons detected above background values. These were BH-13, BH-18, BH-24, BH-25, and BH-33. The hydrocarbons detected in these borings are probably from the asphalt roadway present in all of these areas. No organic impact to the soil/groundwater is evident in the MPB and SX area. The soil gas survey results are presented in Table 12.

6.11.6 Soil Boring Data

Soil samples from boreholes BH-1 through BH-37 in the SX and MPB area were composited on 6-inch intervals and analyzed for uranium. This data is summarized in Table 11.

In general, there were fifteen (15) borings where some of the composited soil intervals exceeded the environmental action level of 40 ug/g in the MPB and SX area. Seven (7) boreholes outside the restricted area (BH-6, BH-8, BH-9, BH-15, BH-30, BH-31, and BH-34) had uranium levels present in soil in some sample intervals over 40 ug/g. In all seven (7) boreholes, the interval was 0.0 - 0.5 where uranium exceed 40 ug/g. In boring BH-9, uranium levels over 40 ug/g were also noted at depth intervals of 10.0 - 15.5 and 17.0 - 18.5. This is also the only location outside the restricted area where uranium in groundwater in the shallow shale/terrace deposits exceeded environmental action levels.

In the restricted area, eight (8) boreholes showed soil intervals where uranium was greater than 40 ug/g. These borings were BH-3, BH-16, BH-17, BH-21, BH-26, BH-27, BH-28, and BH-29.

In summary, in the shallow shale and terrace deposits, uranium exceeded environmental action levels for soils in seven (7) locations outside the restricted area. At six (6) of the locations, the uranium was present over the environmental action levels in the 0.0 - 0.5 foot interval. The soil analytical indicates that there is some impact to soils outside the restricted area and this impact is generally restricted to the upper 6-inches.

Soil samples collected from beneath the upper shale unit SH-1 showed detectable uranium levels only in three (3) boreholes (BH-3A, BH-9A and BH-16A). Uranium levels in borehole BH-3A (MW-18) exceeded the 40 ug/g level in the depth interval of 24 to 36 feet. Uranium levels were not detected above 40 ug/g in the other two (2) borings BH-9A and BH-16A.

Isopleth maps showing the general extent of uranium levels in soils for the 0 to 1 foot depth interval, 1 to 5 foot depth interval, 5 to 10 foot interval, 10 to 15 foot interval, 15 to 20 foot interval, 20 to 25 foot interval, and the 25 to 30 foot depth interval are shown on Figures 43, 44, 45, 46, 47, 48, and 49, respectively. In general, review of these maps will show that the highest uranium impact to soils is in the 0 to 1 foot depth interval (Figure 43) and decreasing uranium levels are typically noted with depth.

Outside the restricted area, there were numerous areas where uranium was detected above the likely background uranium level of <5 ug/g. From 1 to 5 feet (Figure 44), the only area outside the restricted area where uranium levels were detected was on the east side of the MPB where the highest uranium detected was 22 ug/g in BH-15, in the 1.0 to 1.5 foot depth interval. Uranium levels shown on Figure 45 at the 5 to 10 foot depth interval showed minor impacts above background along the south and southwest sides of the MPB outside the restricted area. The highest uranium level noted was 11.6 ug/g from 6.5 to 7.0 feet in BH-6 (MW-2). The isopleth map shown in Figure 46 shows uranium levels outside the restricted area in the west central, southeast, and southwest sides of the MPB. Except for BH-9, the highest uranium level noted was 11.1 ug/g in BH-2. In BH-9 (MW-10), the highest uranium level in soil noted was 1940 ug/g from 12.0 to 12.5 feet. License environmental action levels of 40 ug/g was exceeded over the entire 10 to 15 foot interval in BH-9. The area at the southwest corner of the MPB corresponds to an area where an old paleochannel is thought to exist and this is also in an area where the terrace deposits are thickest. The isopleth map for uranium levels in soils for the 15 to 20 foot depth interval (Figure 47) shows only two (2) areas outside the restricted area where uranium was detected above background levels, BH-14 (MW-7) and BH-9 (MW-10). BH-9 is in the southwest corner of the MPB and BH-14 is northeast of the MPB. Uranium was detected in soils at 5.6 ug/g from 15 to 15.5 feet and uranium was between 18 to 121 ug/g from 15 to 20 feet in BH-9. The uranium levels in BH-9 exceeded the license environmental action level of 40 ug/g from 15.5 to 15.5 and 17.0-18.5 feet. No detectable uranium was found in any boreholes outside the restricted area below a depth of 20 feet as shown on Figures 48 and 49, which are soil uranium isopleths for the 20 to 25 and 25 to 30 foot depth intervals respectively. Review of Figures 48 and 49 show only minor uranium impacts to soils on the west side of the MPB inside the restricted area at these depth intervals.

6.12 Corrective Action

Based upon the results of the MPB and SX Building groundwater investigation results, additional immediate corrective action will be undertaken to identify the source of the uranium present at borehole location BH-9 and in well MW-10. Efforts are being made to identify the source of the uranium in MW-10 and the high pH and specific conductance noted in MW-10A. SFC is currently evaluating this area further and will follow up with recommendations for corrective action (if required) in this area which will include source evaluation, source elimination, and possible recovery of licensed material and associated contaminants.

SFC implemented the Facility wide Environmental Investigation Work Plan to investigate environmentally sensitive areas at the Facility. This Plan was implemented in late October, 1990 and is continuing at present (November 15, 1990). Additional corrective action measures may be undertaken once a thorough review of the data has been made and the areas of impact defined. Corrective action measures have already been undertaken to:

1) eliminate leaks in the process floor areas,
2) stop further migration of licensed material in the SX and MPB area through the installation of flow barriers and recovery sumps in the utility trenches in these areas, and
3) intercept and remove water moving through the combination stream utility trench.

6.13 Conclusions

Based upon the scope of work conducted to date in the SX and MPB area, SFC has installed an adequate groundwater monitoring system to detect releases and migration of licensed material from these areas (SX and MPB area). The groundwater quality results indicate that there is a slight impact to groundwater from licensed material in the shallow shale/terrace deposits and deep sandstone unit outside the restricted area boundary. Groundwater was impacted (over environmental action levels) by licensed material in the shallow shale/terrace deposits at only one (1) location outside the restricted area (Well MW-10). Based upon results from the December 5-10, groundwater sampling event, only three (3) locations has uranium levels present outside the restricted area boundary above background levels of approximately 10 ug/l. These were wells MW-10 (21,170 ug/l), MW-21 (24 ug/l) and MW-22 (20 ug/l). All other sandstone and shale wells outside the restricted area boundary had uranium levels present in groundwater below natural background levels. No impact of uranium over the license level of 225 ug/l was noted in any of the sandstone wells. There has been limited impact (over environmental action levels) to soils outside the restricted area by licensed material and this impact is typically confined to the upper 6-inches of soil except in the area of well MW-10, where the impact exceeds uranium environmental action levels in soils from about 10 to 17 feet.

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TABLES

TABLE 1: COMPARISON OF OML ACTIONS AND WORK PLAN TASKS, SEQUOYAH FUELS CORPORATION

OML Action (1)	Relevant Work Plan Tasks (2)	Applicable Milestone Finding Report Section
1	1.1, 1.2, 1.3, 1.4, 1.5	2.0
2	2.1, 2.2, 2.3, 2.4, 2.5	3.0, 4.1, 4.3, 4.4
3	3.1, 3.2, 3.3, 3.4, 3.5	4.1, 4.2, 4.4
4	4.1, 4.2, 4.3	5.0
5	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8	6.0
6	6.1	None

Notes:

1. See Section 1 for List of OML Actions
2. See Work Plan, Appendix A, for Task Description

TABLE 2: MPB FLOOR INVESTIGATION HAND AUGER BORING DETAILS
SEQUOYAH FUELS CORPORATION

LOCATION	**CONCRETE THICKNESS (FEET)	**SAND DEPTH (FEET)	**CLAY/SHALE DEPTH (FEET)	**TOTAL DEPTH (FEET)	**WATER DEPTH (FEET)
HA-1	0.5	0.5 - 3.58	...	3.58	NONE
HA-2	1.1	1.1 - 4.50	...	4.50	4.1
HA-3	UNDETERMINED	NOT DRILLED***	...	...	...
HA-4	0.7	0.7 - 1.65	...	1.65	NONE
HA-5	0.7	0.7 - 3.6	...	3.6	NONE
HA-6	0.6	0.6 - 1.6	...	1.6	NONE
HA-7	0.8	0.8 - 1.05	1.05 - 2.55	2.55	NONE
HA-8	0.7	0.7 - 1.53	1.53 - 2.25	2.25	NONE
HA-9	0.55	0.55 - 3.46	3.46 - 5.33	5.33	NONE
HA-10	AUGER REFUSAL, HIT CONCRETE				
HA-10A	NONE	TOPSOIL 0.0 - 0.9 CLAYEY SILT WITH GRAVEL 0.9 - 1.38	... ...	1.38	NONE
HA-10B	NONE	TOPSOIL 0.0 - 1.4 CLAYEY SILT WITH GRAVEL 1.4 - 1.9	... ...	1.9	NONE
HA-11	0.55	0.55 - 2.6	2.6 - 3.15	3.15	NONE
HA-12	1.1	1.1 - 1.5	...	1.5	0.8
HA-13	1.1	1.1 - 1.4	...	1.4	1.1
HA-14 (BOTTOM SUMP)	NONE	6.1 - 6.45*	6.45 - 8.15	8.15	NONE
HA-23	0.0 - 0.7	0.7 - 1.3	2.0 - 4.1	4.1	NONE

NOTE: ALL BORINGS PERFORMED BY CORING CONCRETE WITH DIAMOND BIT CORE BARREL AND EXTENDED USING HAND AUGERING (HA) METHODS BY RSA.

*FINISHED FLOOR ABOVE PIPE = 0 FEET

**FEET FROM FLOOR OR GROUND SURFACE

***DUE TO UNDERGROUND ELECTRICAL CONDUIT IT WAS DETERMINED THIS CORING COULD POSE AN UNDUE RISK TO PERSONNEL.

TABLE 3: SOIL AND WATER ANALYTICAL DATA FROM MAIN PROCESS BUILDING (MPB) INVESTIGATION
SEQUOYAH FUELS CORPORATION

SAMPLE	SAMPLE TYPE	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G SOIL, UG/L WATER
HA-1**	Soil	0.00 - 0.50	9/25/90	<400
	Soil	0.50 - 0.75		<400
	Soil	0.75 - 1.00		<400
	Soil Dup	0.75 - 1.00		<400
	Soil	1.00 - 1.33		<400
	Soil Spike	1.00 - 1.33		86% recovery
	Soil	1.33 - 1.67		<400
	Soil	1.67 - 2.17		720
	Soil	2.17 - 2.67		640
	Soil	2.67 - 3.00		<400
	Soil Spike	2.67 - 3.00		80% reccvery
	Soil	3.00 - 3.00[1]		660
	Soil	3.00 - 3.50		1460
	Soil Dup	3.00 - 3.50		1570
	Soil	3.50 - 3.58		2420
HA-2	...	0.00 - 1.1	9/26/90	CONCRETE
	Soil	1.10 - 1.63		<400
	Soil	1.63 - 2.44		<400
	Soil	2.44 - 3.05		<400
	Soil	3.05 - 3.72		<400
	Soil Dup	3.05 - 3.72		<400
	Soil	3.72 - 4.10		<400
	Soil	4.10 - 4.15		<400
	Soil Spike	4.10 - 4.15		80% recovery
HA-3	Not drilled due to electrical utility interferences			
HA-4	...	0.00 - 0.70	9/26/90	CONCRETE
	Soil	0.70 - 1.25		<400
	Soil Spike	0.70 - 1.25		68% recovery
	Soil	1.25 - 1.50		<400
	Soil Dup	1.25 - 1.50		<400
	Soil	1.50 - 1.65		<400
HA-5	...	0.00 - 0.70	9/27/90	CONCRETE
	Soil	0.70 - 1.60		231
	Soil	1.60 - 2.00		37.5
	Soil	2.00 - 2.25		<5
	Soil	2.25 - 2.75		<5
	Soil	2.75 - 3.25		7.7
	Soil Dup	2.75 - 3.25		<400
	Soil Spike	2.75 - 3.25		81.5% recovery
	Soil	3.25 - 3.60		18.4
HA-6	...	0.00 - 0.60	9/27/90	CONCRETE
	Soil	0.60 - 1.20		11.5
	Soil Dup	0.60 - 1.20		<400
	Soil Spike	0.60 - 1.20		121% recovery
	Soil	1.20 - 1.40		<5.0
	Soil	1.40 - 1.50		<5.0
HA-7	...	0.00 - 0.80	9/26/90	CONCRETE
	Soil	0.70 - 1.05		<400
	Soil Dup	0.70 - 1.05		<400
	Soil	1.05 - 1.58		<400
	Soil	1.58 - 2.20		<400
	Soil	2.20 - 2.55		<400
	Soil Spike	2.20 - 2.55		80% recovery
HA-8	...	0.00 - 0.70	9/26/90	CONCRETE
	Soil	0.70 - 1.53		<400
	Soil	1.53 - 1.75		<400
	Soil Dup	1.53 - 1.75		<400
	Soil	1.75 - 2.25		<400
	Soil Spike	1.75 - 2.25		80% recovery

TABLE 3: CONTINUED

SAMPLE	SAMPLE TYPE	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G SOIL, UG/L WATER
HA-9	...	0.00 - 0.55	9/27/90	CONCRETE
	Soil	0.55 - 1.10		78
	Soil	1.10 - 1.55		88
	Soil	1.55 - 2.00		131
	Soil	2.00 - 2.31		155
	Soil Dup	2.00 - 2.31		<400
	Soil Spike	2.00 - 2.31		103% recovery
	Soil	2.31 - 2.69		293
	Soil	2.69 - 3.13		290
	Soil	3.13 - 3.46		890
	Soil	3.46 - 3.96		1760
	Soil	3.96 - 4.23		5530
	Soil	4.23 - 4.54		2330
	Soil	4.54 - 4.93		402
	Soil Dup	4.54 - 4.93		<400
	Soil Spike	4.54 - 4.93		105% recovery
	Soil	4.93 - 5.18		169
	Soil	5.18 - 5.33		550
HA-10	AUGER REFUSAL - HIT CONCRETE			
HA-10A	Soil	0.00 - 0.30	9/27/90	347
	Soil	0.30 - 0.60		71
	Soil	0.60 - 0.90		12
	Soil	0.90 - 1.05		11
	Soil	1.05 - 1.25		17
	Soil	1.25 - 1.38		15
HA-10B	Soil	0.00 - 0.40	9/27/90	362
	Soil	0.40 - 0.80		31
	Soil	0.80 - 1.00		14
	Soil	1.00 - 1.40		<5
	Soil	1.40 - 1.70		11
	Soil	1.70 - 1.90		10
HA-11	...	0.00 - 0.55	10/8/90	CONCRETE
	Soil	0.55 - 0.95		<5
	Soil	0.95 - 1.36		<5
	Soil	1.36 - 1.75		<5
	Soil	1.75 - 2.08		<5
	Soil	2.08 - 2.37		<5
	Soil	2.37 - 2.60		<5
	Soil	2.60 - 2.84		<5
	Soil	2.84 - 3.00		<5
	Soil	3.00 - 3.15		<5
HA-12	Water	-----	10/9/90	40.0
HA-12	...	0.00 - 0.75	10/10/90	NR
	Soil	0.75 - 1.08		<5
	Soil	1.08 - 1.33		<5
	Soil	1.33 - 1.42		<5
	Soil	1.42 - 1.5		<5
HA-13	Water	-----	10/9/90	30.0
HA-13	...	0.00 - 0.58	10/10/90	NR
	Soil	0.58 - 0.96		<5
	Soil	0.96 - 1.02		<5
	Soil	1.02 - 1.17		<5
	Soil	1.17 - 1.38		<5

TABLE 3: CONTINUED

SAMPLE	SAMPLE TYPE	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G SOIL, UG/L WATER	FLUORIDE UG/G	NITRATE UG/G
HA-13	Soil	1.38 - 1.38	10/10/90	<5		
HA-14 (BOTTOM SUMP)	...	0.00 - 6.10	10/11/90	SUMP		
	Soil	6.10 - 6.45		10,130		
	Soil	6.45 - 6.57		9,550		
	Soil	6.57 - 7.00		10,310		
	Soil	7.00 - 7.10		9,020		
HA-14 (BOTTOM SUMP, NEW HOLE)	Soil	5.80 - 6.15	10/23/90	10,410		
	Soil	6.15 - 6.40		9,830		
	Soil	6.40 - 6.75		4,990		
	Soil	6.75 - 7.10		640		
	Soil	7.10 - 7.45		9,020		
	Soil	7.45 - 7.80		1,600		
	Soil	7.80 - 8.15		700		
	Soil	Top Fill #1		9,870		
	Soil	Top Fill #2		9,660		
HA-23	Soil	2.0 - 2.5	11/29/90	1440	708	277.7
	Soil	2.5 - 3.0		420	277	336.9
	Soil	3.0 - 3.5		96	81	311.6
	Soil	3.5 - 4.1		24	197	230.4

* FEET FROM GROUND LEVEL

**DEPTH MEASUREMENTS ARE FROM TOP OF SOIL

[1] CAVING PROBLEM

TABLE 4: SOIL ANALYTICAL DATA FROM UTILITY EXCAVATIONS AND TRENCHES
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
1A-1, NW OF SX	8/30/90	1620	NA
1A-2		2130	NA
1A-3		1920	NA
N/A	9/8/90	98	NA
N/A		495	NA
2A-1, FIRE FOAM DITCH	8/30/90	171.5	NA
2A-1	9/4/90	2780	<2.5
2A-2		8840	<2.5
2A-3		5550	<2.5
2B-1		2600	<2.5
2B-2		4360	<2.5
2B-3		7930	<2.5
N/A	9/8/90	181	<2.5
3A-1, S OF SX	8/30/90	24.1	<2.5
3A-2		36.9	<2.5
3A-3		9.4	<2.5
3B-1,		17.6	<2.5
3B-2		48.7	<2.5
3B-3		22.1	<2.5
N/A	9/8/90	223	NA
4A-1, E OF SX	8/30/90	1420	NA
4A-2		1530	NA
4A-3		900	NA
N/A	9/8/90	38	NA
5A-1, E OF SX	8/30/90	503.1	NA
5A-2, UNDER SIDEWALK		540	NA
5A-3		389.5	NA
SAND HOLE #5		138.8	NA
6A-1, E OF SX	8/31/90	19.5	<2.5
6A-2		41.3	<2.5
6A-3		14.3	<2.5
7A-1, NE CORNER OF SX	8/30/90	1840	NA
7A-2		1050	NA
7A-3		1530	NA
7B-1		1440	NA
7B-2		1480	NA
7B-3		1830	NA
7C-1		1310	NA
7C-2		1360	NA
7C-3		1910	NA
8A-1, FIREWATER LINE	8/31/90	57.0	2.7
8A-2 (N OF SX)		42.0	<2.5
8A-3		23.9	4.1
8B-1		76.5	<2.5
8B-2		41.4	<2.5
8B-3		14.5	<2.5
9A-1, NW OF SX	9/1/90	540	6.5
9A-2		710	8.2
9A-3		540	5.9
N/A	9/8/90	283	NA

TABLE 4: CONTINUED

SAMPLE LOCATION	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
10A-1, SE OF SX	9/1/90	37.8	2.6
10A-2		38.5	2.8
10A-3		33.8	<2.5
10B-1		84.1	<2.5
10B-2		119.5	2.9
10B-3		119.7	2.9
N/A	9/8/90	28	NA
11A-1, HEXANE INTAKE	9/1/90	21.1	3.8
11A-2 LINE		134.7	3.5
11A-3		76.7	3.1
11B-1, FIREWATER HYDRANT	9/1/90	105.9	2.5
11B-2		15.3	2.5
11B-3		13.9	2.5
11C-1	9/1/90	30.1	2.5
11D-1, FWATER HDR LINE	9/1/90	19.6	3.8
11D-2		33.8	3.1
11D-3		26.9	<2.5
11E-1	9/1/90	41.2	<2.5
11E-2		41.3	4.0
11E-3		37.0	4.9
12A-1	9/1/90	37.0	NA
12A-2		26.5	NA
12A-3		97.7	NA
12B-1		1160	NA
12B-2		890	NA
12B-3		476.6	NA
13,N/A	9/1/90	2500	NA
N/A	9/6/90	8950	NA
14A-1	9/4/90	1280	<2.5
14A-2		1690	<2.5
14A-3		1870	<2.5
14B-1		2330	<2.5
14B-2		3280	<2.5
14B-3		2890	<2.5
N/A	9/8/90	1197	<2.5
15A-1	9/4/90	730	<2.5
15A-2		809	<2.5
15A-3		108.1	<2.5
15B-1		157.7	<2.5
15B-2		193.9	<2.5
15B-3		182.6	<2.5
N/A	9/8/90	674	<2.5
16A, NW OF MPB ABOVE ELECTRIC LINES	9/28/90	96	NA
16A,DUP		<400	NA
16A,SPIKE		112%	NA
16B BELOW ELECTRIC LINES		66	NA
16C ABOVE LAUNDRY LINE	9/29/90	432	NA
16D BELOW LAUNDRY LINE		790	NA

TABLE 4: CONTINUED

SAMPLE LOCATION	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
17, SW OF MPB	9/25/90		
0.0 - 1.0'		93.3	7.6
1.0 - 1.5'		58.9	5.8
1.5 - 2.0'		45.7	4.2
2.0 - 2.5'		44.0	4.8
2.5 - 3.0'		87.1	7.1
3.0 - 3.5'		98.8	6.8
3.5 - 4.0'		65.2	7.5
4.0 - 4.5'		39.5	10.1
SAND ABOVE PIPE	9/25/90	<5.0	9.2
18A, SW OF MPB SAND ABOVE PIPE	10/1/90	<5.0	5.0
18B SAND BELOW PIPE		<5.0	6.8
19, S OF MPB	10/1/90		
1.0 - 1.5'		10.0	9.1
2.0 - 2.5'		6.5	11.1
2.5 - 3.0'		<5.0	9.2
20, SE OF MPB	10/1/90		
1.5 - 2.0'		<5.0	13.8
2.5 - 3.0'		<5.0	12.4
3.5 - 4.0'		<5.0	12.8
4.0 - 4.5'		<5.0	11.2
5.0 - 5.5'		<5.0	12.2
DUP		<5.0	NA
21 0.0 - 0.5	10/9/90	49.6	NA
0.5 - 1.0		<5.0	NA
1.0 - 1.5		13.7	NA
1.5 - 2.0		<5.0	NA
2.0 - 2.5		<5.0	NA
2.5 - 3.0		<5.0	NA
22A FIRELINE, NE OF MPB SAND ABOVE PIPE	10/3/90	<5.0	NA
22B SAND BELOW PIPE		<5.0	NA
23A FIRE WATER LINE SAND ABOVE PIPE	10/10/90	59.3	NA
23A POTABLE H2O LINE SAND ABOVE PIPE		81.4	NA
23A SEWER LINE SAND ABOVE PIPE		58.0	NA
23B FIRE WATER LINE SAND BELOW PIPE		224.7	NA
23B POTABLE H2O LINE SAND BELOW PIPE		159.3	NA
23B SEWER LINE SAND BELOW PIPE		126.0	NA
24A, W WATERLINE SAND ABOVE PIPE	10/11/90	8.3	NA
24A, E WATERLINE SAND ABOVE PIPE		<5.0	NA

TABLE 4: CONTINUED

SAMPLE LOCATION	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G	FLUORIDE UG/L	pH
24B, W WATER LINE SAND BELOW PIPE	10/11/90	5.6	NA		
,4B, E WATER LINE SAND BELOW PIPE		<5.0	NA		
25-1	10/15/90	<5.0	17.2	196.2	7.2
25-2		<5.0	11.7	229.8	6.6
26					
2.5 - 3.0	10/19/90	<5.0	5.2	420	5.3
3.0 - 3.5		<5.0	5.4	107	6.7
3.5 - 4.0		<5.0	6.4	378	5.3
SANITARY LAGOON	8/30/90	5909	0.6		

NA: NO ANALYSIS
ANALYSES OF 9/8/90 WERE FROM EXCAVATION SOIL PILES.

TABLE 5: WATER ANALYTICAL DATA FROM UTILITY TRENCHES
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	TIME SAMPLED	URANIUM UG/L	NITRATE MG/L	FLUORIDE MG/L	PH STD UNITS	SPEC COND UMHOS/CM
TRENCH 1	8/30/90		9746	0.59		6.6	
	9/6/90		1672	35.0		6.5	
GAS SWITCH STANDPIPE, EAST	9/25/90	15:42	1203	5.9	2.4	NA	NA
TRENCH 2	8/30/90		50,000	2.6		6.3	
	9/3/90		5359	0.3		7.9	
GAS SWITCH STANDPIPE, WEST	9/25/90	15:44	201	0.3	5.5	NA	NA
TRENCH 3	8/31/90		<10,000	1.28		7..	
TRENCH 5	8/30/90		105,000	8.8		6.5	
	9/3/90		5359	16.0		7.1	
	9/3/90		5359	0.3		7.9	
TRENCH 7	8/31/90		50,000	0.39		6.5	
	9/3/90		2487	7.0		6.9	
TRENCH 9	9/1/90		360,000	51.6		4.6	
TRENCH 11	9/1/90		30,000	21.8		4.3	
TRENCH 12	9/1/90		58,000	6.7		5.8	
	9/3/90		830	0.8		6.7	
	9/4/90		10,000	1.2		6.9	
	9/7/90		35,000	8.91			
	9/7/90		22,000	8.72			
TRENCH 13	9/1/90		73,000	41.2		5.9	
	9/1/90		150,000	0.33		6.3	
	9/1/90		112,000	8.9		6.3	
	9/3/90		113	54.0		6.6	
TRENCH 14	9/4/90		1,200,000	3.3		6.3	
	9/6/90		1494	21.0		5.0	
	9/7/90		50,465	1.3		6.5	
	9/7/90		25,000	1.63		5.8	
TRENCH 15	9/5/90		43,000	3.6		6.7	
TRENCH 16	9/28/90	15:45	30,000	15.0	104.0	6.2	686
(DRUM 1)	9/29/90	...	<10,000	15.3	102.0	6.6	576
(DRUM 2)	9/29/90	...	<10,000	13.4	19.6	6.6	524
(DRUM 3)	9/29/90	...	70,000	9.4	18.5	11.3	1350
(DRUM 3 DUP)	9/29/90		60,000	10.5	17.2	11.3	1350
TRENCH 17	9/26/90	10:30	2450	4.3	2.4	7.3	NA
	9/26/90	11:30	968	4.5	2.3	7.2	NA
	9/27/90	15:30	1143	6.0	2.5	7.1	NA
	10/4/90		269	NA	1.1	NA	NA
TRENCH 18	TRENCH WAS DRY - NO SAMPLES						
TRENCH 19	TRENCH WAS DRY - NO SAMPLES						
TRENCH 20	9/26/90	17:00	93.3	0.3	3.6	6.6	NA
	9/27/90	12:00	19.4	0.3	2.1	7.3	NA
	9/27/90	15:25	16.3	0.6	0.3	7.1	NA
	10/1/90	13:50	157.8	2.8	4.7	7.8	580
TRENCH 21	9/26/90	16:45	58.8	0.2	1.2	7.5	NA
	9/27/90	12:00	60.9	0.4	0.8	6.9	NA

NA - NO ANALYSIS CONDUCTED

TABLE 5: CONTINUED

SAMPLE LOCATION	DATE SAMPLED	TIME SAMPLED	URANIUM UG/L	NITRATE MG/L	FLUORIDE MG/L	PH STD UNITS	SPEC COND UMHOS/CM
TRENCH 22	9/28/90	08:15	9.5	0.5	0.9	7.2	NA
FIRE PLUG	9/28/90	12:20	<5.0	NA	NA	NA	NA
TRENCH 23 NE OF MPB	10/10/90		26,378	NA	NA	NA	NA
FIRELINE	10/10/90		4,233	NA	NA	NA	NA
	10/17/90		11,397	14.0	5.6	6.1	241
	10/23/90		90,708	0.3	8.1	5.9	259
TRENCH 24 EAST END	10/11/90		534	NA	NA	NA	NA
CENTER	10/11/90		1,412	NA	NA	NA	NA
WEST END	10/11/90		12,074	NA	NA	NA	NA
TRENCH 25	10/18/90	16:35	11.7	1.6	1.5	7.7	440
TRENCH 26	10/19/90	14:50	454	2.8	3.0	6.8	456
#1 HI VOLTAGE SUB STATION MANHOLE	9/26/90	13:50	4746	NA	3.0	7.6	NA
	9/27/90	11:45	1037	0.8	1.8	NA	NA
#2 8" DRAINLINE	9/27/90	12:00	60.9	0.4	0.8	6.9	NA
ROOFDRAIN	10/4/90	...	6329	NA	2.6	NA	NA
SPECIAL INVESTIGATION (24" S DRAIN LINE)	10/12/90	9:00	20	1.8	1.2	8.1	864
FIREWATER LINE EXCAVATION	10/30/90		111	1.0	9.2	7.6	1083

NA - NO ANALYSIS CONDUCTED

TABLE 6: WATER ANALYTICAL DATA FROM SURFACE SOURCES
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	TIME SAMPLED	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
75' [illegible] OF S GUARD HOUSE	9/25/90	17:40	0.6	890	9.1	7.1
SE CORNER OF FAC POND	9/25/90	17:45	0.2	15.1	0.2	8.8
50' E OF ENV TRAILER	9/25/90	17:50	0.8	195.9	0.9	6.0
CWE LINE, 5' S OF S SIDE OF RESTRICTED AREA	9/25/90	17:55	2.0	1371	1.5	7.3
E NATURAL GAS SUMP	9/25/90	18:00	6.8	1073	2.2	7.0
W NATURAL GAS SUMP	9/25/90	18:05	0.4	205	1.7	7.3

TABLE 7: SOIL AND WATER ANALYTICAL DATA FROM FACILITY (FISH) POND, (INVESTIGATION UNIT 26)
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	TIME SAMPLED	URANIUM POND SEDIMENT UG/G	URANIUM WATER, UG/L
NE CORNER	10/4/90	15:40	24.6	10.4
N SIDE	10/4/90	15:45	23.9	11.3
W END	10/4/90	15:50	25.2	11.5
SE CORNER	10/4/90	15:55	10.0	6.4

TABLE 8: WATER ANALYTICAL DATA FROM DENITRATION SUMP
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	NITRATE PERCENT OR PPM	URANIUM G/L	FLUORIDE MG/L	PH STD UNITS
SUMP	12/28/87	0.35%	6.84	...	...
SUMP	12/14/87	4500 PPM	4.82	...	...
SUMP	01/04/88	0.36%	7.58	...	...
SUMP	01/13/88	7700 PPM	7.77	...	...
SUMP	01/18/88	8000 PPM	7.77	...	...
SUMP	02/08/88	8500 PPM	7.22	...	...
SUMP	02/29/88	4.5%	7.4	...	...
SUMP	03/14/88	11000 PPM	12.03	...	...
SUMP	03/28/88	4.9%	9.22	...	...
SUMP	04/04/88	9000 PPM	8.67	...	...
SUMP	04/11/88	0.6%	8.65	...	...
SUMP	05/02/88	7400 PPM	8.37	...	...
SUMP	06/04/88	2700 PPM	3.78	...	...
SUMP	06/04/88	0.8%	3.38	...	1.6
SUMP	06/06/88	1100 PPM	1.58	...	...
SUMP	06/20/88	0.1%	1.78	0.08	...
SUMP	06/27/88	1900 PPM	2.6	...	...
SUMP	06/08/89	11900 PPM	62.0	...	...
SUMP	06/16/89	4.1%	43.0	...	...
SUMP	04/06/90	2540 PPM	4.4	...	...

TABLE 9: WATER ANALYTICAL DATA FROM BOILDOWN SUMP
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	DATE SAMPLED	NITRATE PERCENT	URANIUM G/L	PH STD UNITS
STANDPIPE	1/25/88	1.4	16.0	...
SUMP	4/18/88	2.8	8.57	...
SUMP	6/4/88	1.4	3.78	0.7
STANDPIPE	6/4/88	>200 PPM	2.14	1.7

TABLE 10: SUMMARY OF SOIL BORING DRILLING DETAILS, SHALLOW SHALE WELLS
SEQUOYAH FUELS CORPORATION

SOIL BORING NO.	GROUND LEVEL ELEVATION. FT. AMSL	DATE DRILLED	DRILLING METHOD AND CONTRACTOR	*DEPTH DRILLED, FEET	*DEPTH TO GROUNDWATER FEET, AT TIME OF BORING
BH-1 (MW-1)	563.40	09-24-90	HSA/PSI	18.0	1.9
BH-2 (MW-8)	565.03	09-24-90	HSA/PSI	20.0	15.5
BH-3 (MW-18)	565.71	09-24-90	HSA/PSI	21.0	5.6
BH-4 (MW-12)	565.40	09-25-90	HSA/PSI	22.0	NO
BH-5 (MW-4)	560.30	09-25-90	HSA/PSI	14.0	4.46
BH-6 (MW-2)	562.10	09-26-90	HSA/PSI	20.0	7.6
BH-7 (MW-3)	561.90	09-26-90	HSA/PSI	12.5	5.0
BH-8 (MW-9)	561.70	09-28-90	HSA/PSI	17.0	7.0
BH-9 (MW-10)	562.30	09-28-90	HSA/PSI	19.5	9.0
BH-10 (MW-5)	560.50	09-27-90	HSA/PSI	12.5	9.0
BH-11 (MW-6)	565.80	09-27-90	HSA/PSI	15.8	9.0
BH-12 (MW-23)	565.53	09-30-90	HSA/PSI	12.0	10.0
BH-13 (MW-20)	563.85	10-02-90	HSA/PSI	13.5	8.0
BH-14 (MW-7)	570.20	09-27-90	HSA/PSI	20.0	NO
BH-15 (MW-21)	564.93	10-02-90	HSA/PSI	12.0	NO
BH-16 (MW-13)	565.91	09-29-90	HSA/PSI	22.8	11.0
BH-17 (MW-14)	563.37	09-29-90	HSA/PSI	14.7	6.0
BH-18 (MW-15)	564.22	09-26-90	HSA/PSI	13.5	NO
BH-19 (MW-16)	565.24	09-30-90	HSA/PSI	18.5	10.5
BH-20 (MW-17)	565.31	09-30-90	HSA/PSI	17.5	9.0
BH-21 (MW-19)	565.05	10-01-90	HSA/PSI	23.0	17.0
BH-22 (MW-11)	565.41	09-28-90	HSA/PSI	19.0	5.5
BH-23 (MW-22)	564.83	10-01-90	HSA/PSI	18.3	6.0
BH-24	558.03	10-01-90	HSA/PSI	5.0	NO
BH-25	553.78	10-01-90	HSA/PSI	5.0	NO
BH-26 (MW-24)	565.70	10-03-90	HSA/PSI	19.0	NO
BH-27 (MW-25)	565.80	10-03-90	HSA/PSI	18.5	15.0
BH-28 (MW-26)	565.80	10-03-90	HSA/PSI	24.0	NO
BH-29 (MW-27)	565.20	10-03-90	HSA/PSI	22.0	NO
BH-30 (MW-32)	552.70	10-05-90	HSA/PSI	8.5	NO
BH-31 (MW-30)	550.50	10-05-90	HSA/PSI	7.0	NO
BH-32 (MW-31)	551.10	10-05-90	HSA/PSI	11.5	NO
BH-33 (MW-28)	564.61	10-04-90	HSA/PSI	19.5	NO
BH-34 (MW-29)	550.30	10-04-90	HSA/PSI	7.5	NO
BH-35	---	10/11/90	HSA/PSI	11.0	NO
BH-36	---	10/11/90	HSA/PSI	4.0	NO
BH37 (MW-33T)	---	10/11/90	HSA/PSI	12.0	NO

*	FROM GROUND LEVEL, FEET
---	DATA NOT YET AVAILABLE
HSA	HOLLOW STEM AUGER DRILLING METHOD EQUIPPED WITH CONTINUOUS TUBE SAMPLER
PSI	PROFESSIONAL SERVICES INDUSTRIES
NO	GROUNDWATER NOT OBSERVED DURING DRILLING

TABLE 11: SOIL ANALYTICAL DATA FROM DRILLED BOREHOLES, SX AND MAIN PROCESS BUILDING AREAS
SEQUOYAH FUELS CORPORATION

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-1 (MW-1)	S-1	0.0 - 0.5	9/24/90	16.3
	S-2	0.5 - 1.0		29.4
	S-3	1.0 - 1.5		8.9
	S-4	1.5 - 2.0		6.7
	S-5	2.0 - 2.5		<5.0
	...	2.5 - 5.0		NR
	S-6	5.0 - 5.5		<5.0
	S-7	5.5 - 6.0		<5.0
	S-8	6.0 - 6.5		<5.0
	S-9	6.5 - 7.0		<5.0
	S-10	7.0 - 7.8		6.8
	...	7.8 - 10.0		NR
	S-11	10.0 - 10.5		5.3
	S-12	10.5 - 11.0		<5.0
	S-13	11.0 - 11.5		<5.0
	S-14	11.5 - 12.0		<5.0
	S-15	12.0 - 12.5		<5.0
	S-16	12.5 - 13.0		<5.0
	S-17	13.0 - 13.5		<5.0
	S-18	13.5 - 14.0		<5.0
	...	14.0 - 15.0		NR
	S-19	15.0 - 15.5		<5.0
	S-20	15.5 - 16.0		<5.0
	S-21	16.0 - 16.5		<5.0
	S-22	16.5 - 17.0		<5.0
	S-23	17.0 - 17.7		<5.0
BH-2 (MW-8)	S-1	0.0 - 0.5	9/24/90	14.1
	...	0.5 - 5.0		NR
	S-2	5.0 - 5.5		<5.0
	S-3	5.5 - 6.0		<5.0
	S-4	6.0 - 6.5		<5.0
	S-5	6.5 - 7.0		<5.0
	S-6	7.0 - 7.5		<5.0
	S-7	7.5 - 8.0		<5.0
	S-8	8.0 - 8.5		<5.0
	S-9	8.5 - 9.0		<5.0
	S-10	9.0 - 9.2		<5.0
	S-10, DUP	9.0 - 9.2		<5.0
	...	9.2 - 10.0		NR
	S-11	10.0 - 10.5		<5.0
	S-12	10.5 - 11.0		<5.0
	S-13	11.0 - 11.5		<5.0
	S-14	11.5 - 12.0		<5.0
	S-15	12.0 - 12.5		11.1
	S-16	12.5 - 13.0		<5.0
	S-17	13.0 - 13.3		<5.0
	...	13.3 - 15.0		NR
	S-18	15.0 - 15.5		<5.0
	S-19	15.5 - 16.0		<5.0
	S-20	16.0 - 16.5		<5.0
	S-20, SPIKE	16.0 - 16.5		<5.0
	S-21	16.5 - 17.0		<5.0
	S-22	17.0 - 17.5		<5.0
	S-23	17.5 - 18.0		<5.0
	S-24	18.0 - 18.4		<5.0
	S-24, SPIKE	18.0 - 18.4		90% RECOVERY

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-2A (MW-8A)	S-1	18.0 - 20.0	10/7/90	<5.0
	S-2	20.0 - 22.0		<5.0
	S-3	22.0 - 24.0		<5.0
	S-4	24.0 - 26.0		<5.0
	S-5	26.0 - 28.0		<5.0
	S-6	28.0 - 30.0		<5.0
	S-7	30.0 - 32.0		<5.0
BH-3 (MW-18)	S-1	0.0 - 0.5	9/24/90	<5.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.2		<5.0
	---	1.2 - 5.0		NR
	S-4	5.0 - 5.5		<5.0
	S-5	5.5 - 6.0		<5.0
	S-6	6.0 - 6.5		<5.0
	S-7	6.5 - 7.0		<5.0
	S-8	7.0 - 7.5		<5.0
	S-9	7.5 - 8.0		<5.0
	S-10	8.0 - 8.5		<5.0
	S-11	8.5 - 9.0		<5.0
	S-12	9.0 - 9.5		<5.0
	S-13	9.5 - 10.0		<5.0
	S-14	10.0 - 10.5		<5.0
	S-15	10.5 - 11.0		1582.0
	S-16	11.0 - 11.5		356.0
	---	11.5 - 15.0		NR
	S-17	15.0 - 15.5		65.8
	S-18	15.5 - 16.0		14.2
	S-19	16.0 - 16.5		5.5
	S-20	16.5 - 17.0		<5.0
	S-21	17.0 - 17.5		10.6
	S-22	17.5 - 18.0		7.2
	S-23	18.0 - 18.5		14.3
	S-24	18.5 - 19.0		11.8
	S-25	19.0 - 19.5		13.0
	S-26	19.5 - 20.0		32.3
	S-27	20.0 - 20.5		29.3
	S-28	20.5 - 21.0		8.8
				94.1% RECOVERY
BH-3A (MW-18A)	S-1	18.0 - 20.0	10/10/90	50.0
	S-2	20.0 - 22.0		68.0
	S-3	22.0 - 24.0		53.0
	S-4	24.0 - 26.0		21.0
	S-5	26.0 - 28.0		17.0
	S-6	28.0 - 30.0		19.0
	S-7	30.0 - 32.0		16.0
	S-8	32.0 - 34.0		20.0
	S-9	34.0 - 36.0		8.8
	S-10	36.0 - 38.0		<5.0
	S-11	38.0 - 40.0		<5.0
BH-4 (MW-12)	S-1	0.0 - 0.5	9/25/90	<5.0
	S-2	0.5 - 1.0		5.8
	S-3	1.0 - 1.5		9.1
	S-4	1.5 - 1.8		<5.0
	---	1.8 - 5.0		NR
	S-5	5.0 - 5.5		<5.0
	S-6	5.5 - 6.0		<5.0
	S-7	6.0 - 6.5		6.1
	S-8	6.5 - 7.0		<5.0
	S-9	7.0 - 7.5		8.4
	S-10	7.5 - 8.0		<5.0
	S-11	8.0 - 8.5		<5.0
	S-12	8.5 - 9.0		<5.0
	S-13	9.0 - 9.5		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-4 CONTINUED	S-14	9.5 - 10.0	9/25/90	<5.0
	S-15	10.0 - 10.5		<5.0
	S-16	10.5 - 11.0		<5.0
	S-17	11.0 - 11.5		<5.0
	S-18	11.5 - 12.0		<5.0
	S-19	12.0 - 12.5		<5.0
	S-20	12.5 - 13.0		<5.0
	S-21	13.0 - 13.2		<5.0
	...	13.2 - 15.0		NR
	S-22	15.0 - 15.5		<5.0
	S-23	15.5 - 16.0		<5.0
	S-24	16.0 - 16.5		<5.0
	...	16.5 - 20.0		NR
	S-25	20.0 - 20.5		<5.0
	S-26	20.5 - 21.0		<5.0
	S-27	21.0 - 21.5		<5.0
	S-28	21.5 - 22.0		<5.0
				83.7% RECOVERY
BH-4A (MW-12A)	S-1	22.0 - 24.0	10/12/90	<5.0
	S-2	24.0 - 26.0		<5.0
	S-3	26.0 - 28.0		<5.0
	S-4	28.0 - 30.0		<5.0
	S-5	30.0 - 32.0		<5.0
	S-6	32.0 - 34.0		<5.0
	S-7	34.0 - 36.0		<5.0
	S-8	36.0 - 38.0		<5.0
BH-5 (MW-4)	S-1	0.0 - 0.5	9/25/90	9.7
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	S-5	2.0 - 2.4		<5.0
	...	2.4 - 5.0		NR
	S-6	5.0 - 5.5		<5.0
	S-7	5.5 - 6.0		<5.0
	S-8	6.0 - 6.5		<5.0
	S-9	6.5 - 7.0		<5.0
	S-10	7.0 - 7.5		<5.0
	S-11	7.5 - 8.0		<5.0
	...	8.0 - 10.0		NR
	S-12	10.0 - 10.5		<5.0
	S-13	10.5 - 11.0		<5.0
	S-14	11.0 - 11.5		<5.0
	S-15	11.5 - 12.0		<5.0
				97.6% RECOVERY
BH-5A (MW-4A)	S-1	15.5 - 18.0	10/6/90	<5.0
	S-2	18.0 - 20.0		<5.0
	S-3	20.0 - 22.0		<5.0
	S-4	22.0 - 24.0		<5.0
	S-5	24.0 - 26.0		<5.0
	S-6	26.0 - 28.0		<5.0
	S-7	28.0 - 30.0		<5.0
	S-8	30.0 - 32.0		<5.0
	S-9	32.0 - 34.0		<5.0
	S-10	34.0 - 37.5		<5.0
BH-6 (MW-2)	S-1	0.0 - 0.5	9/26/90	2289.0
	S-2	0.5 - 0.8		20.8
	...	0.8 - 5.0		NR
	S-3	5.0 - 5.5		21.8
	S-4	5.5 - 6.0		<5.0
	S-5	6.0 - 6.5		<5.0
	S-6	6.5 - 7.0		11.6
	S-7	7.0 - 7.5		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-6 CONTINUED	S-8	7.5 - 8.0	9/26/90	<5.0
	S-9	8.0 - 8.5		<5.0
	---	8.5 - 10.0		NR
	S-10	10.0 - 10.5		<5.0
	S-11	10.5 - 11.0		<5.0
	S-12	11.0 - 11.5		<5.0
	S-13	11.5 - 12.0		<5.0
	S-14	12.0 - 12.5		<5.0
	S-15	12.5 - 13.0		<5.0
	S-16	13.0 - 13.5		<5.0
	S-17	13.5 - 14.0		7.8
	---	14.0 - 15.0		NR
	S-18	15.0 - 15.5		<5.0
	S-19	15.5 - 15.8		<5.0
				104.9% RECOVERY
BH-6A (MW-2A)	S-1	17.0 - 19.0	10/7/90	<5.0
	S-2	19.0 - 21.0		<5.0
	S-3	21.0 - 23.0		<5.0
	S-4	23.0 - 25.0		<5.0
	S-5	25.0 - 27.0		<5.0
	S-6	27.0 - 27.5		<5.0
	S-7	27.5 - 28.0		<5.0
	S-8	28.0 - 30.0		<5.0
	S-9	30.0 - 31.0		<5.0
	S-10	31.0 - 34.0		<5.0
BH-7 (MW-3)	S-1	0.0 - 0.5	9/26/90	8.2
	S-2	0.5 - 1.0		<5.0
	---	1.0 - 5.0		NR
	S-3	5.0 - 5.5		<5.0
	S-4	5.5 - 6.0		<5.0
	S-5	6.0 - 6.5		<5.0
	S-6	6.5 - 7.0		<5.0
	S-7	7.0 - 7.5		<5.0
	S-8	7.5 - 8.0		<5.0
	S-9	8.0 - 8.5		<5.0
	S-10	8.5 - 9.0		<5.0
	S-11	9.0 - 9.5		<5.0
	S-12	9.5 - 10.0		<5.0
	S-13	10.0 - 10.5		<5.0
	S-14	10.5 - 11.0		<5.0
	S-15	11.0 - 11.5		<5.0
	S-16	11.5 - 12.0		<5.0
	S-17	12.0 - 12.5		<5.0
				98.8% RECOVERY
BH-7A (MW-3A)	S-1	15.0 - 17.0	10/12/90	<5.0
	S-2	17.0 - 19.0		<5.0
	S-3	19.0 - 20.0		<5.0
	S-4	20.0 - 22.0		<5.0
	S-5	22.0 - 24.0		<5.0
	S-6	24.0 - 26.0		<5.0
	S-7	26.0 - 28.0		<5.0
	S-8	28.0 - 30.0		<5.0
	S-9	30.0 - 32.0		<5.0
	S-10	32.0 - 34.0		<5.0
BH-8 (MW-9)	S-1	0.0 - 0.5	9/29/90	66.0
	---	0.5 - 5.0		NR
	S-2	5.0 - 5.5		<5.0
	S-3	5.5 - 6.0		<5.0
	S-4	6.0 - 6.5		<5.0
	S-5	6.5 - 7.0		<5.0
	S-6	7.0 - 7.5		<5.0
	S-7	7.5 - 8.0		<5.0
	S-8	8.0 - 8.5		<5.0
	S-9	8.5 - 9.0		<5.0
	---	9.0 - 10.0		NR

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
	S-10	10.0 - 10.5		<5.0
	S-10 DUP	10.0 - 10.5		<5.0
	S-10 SPIKE	10.0 - 10.5		<5.0
	S-11	10.5 - 11.0		<5.0
	S-12	11.0 - 11.5		<5.0
	S-13	11.5 - 12.0		<5.0
	S-14	12.0 - 12.5		<5.0
	S-15	12.5 - 13.0		<5.0
	S-16	13.0 - 13.5		<5.0
	S-17	13.5 - 14.0		<5.0
	S-18	14.0 - 14.5		<5.0
	S-19	14.5 - 15.0		<5.0
	S-20	15.0 - 15.5		<5.0
	S-20 DUP	15.0 - 15.5		<5.0
	S-21	15.5 - 16.0		<5.0
	S-22	16.0 - 16.5		<5.0
	S-23	16.5 - 17.0		<5.0
				89.8% RECOVERY
BH-8A (MW-9A)	S-1	18.0 - 20.0	10/7/90	<5.0
	S-2	20.0 - 22.0		<5.0
	S-3	22.0 - 24.0		<5.0
	S-4	24.0 - 26.0		<5.0
	S-5	26.0 - 28.0		<5.0
	S-6	28.0 - 30.0		<5.0
	S-7	30.0 - 32.0		<5.0
BH-9 (MW-10)	S-1	0.0 - 0.5	9/29/90	72.0
	S-2	5.0 - 5.5		7.1
	S-3	5.5 - 6.0		<5.0
	S-4	6.0 - 6.5		<5.0
	S-5	6.5 - 7.0		<5.0
	S-6	7.0 - 7.5		7.2
	S-7	7.5 - 8.0		<5.0
	S-8	8.0 - 8.4		<5.0
	- - -	8.4 - 10.0		NR
	S-9	10.0 - 10.5		58.0
	S-10	10.5 - 11.0		45.0
	S-10 DUP	10.5 - 11.0		46.2
	S-11	11.0 - 11.5		212.0
	S-12	11.5 - 12.0		288.0
	S-13	12.0 - 12.5		1940.0
	- - -	12.5 - 15.0		NR
	S-14	15.0 - 15.5		121.0
	S-15	15.5 - 16.0		8.8
	S-16	16.0 - 16.5		12.0
	S-17	16.5 - 17.0		13.0
	S-18	17.0 - 17.5		51.0
	S-19	17.5 - 18.0		119.0
	S-20 SPIKE	18.0 - 18.5		88.0
				87.7% RECOVERY
BH-9A (MW-10A)	S-1	18.0 - 20.0	10/7/90	18
	- - -	20.0 - 22.0		NR
	S-2	22.0 - 24.0		<5.0
	S-3	24.0 - 26.0		<5.0
	S-4	26.0 - 28.0		<5.0
	S-5	28.0 - 30.0		<5.0
	S-6	30.0 - 32.0		<5.0
	S-7	32.0 - 34.0		<5.0
	S-8	34.0 - 35.0		<5.0
	S-9	35.0 - 36.0		<5.0
BH-10 (MW-5)	S-1	0.0 - 0.5	9/29/90	<5.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-10 CONTINUED	S-5	2.0 - 2.5	9/29/90	<5.0
	S-6	2.5 - 3.0		<5.0
	S-7	3.0 - 3.5		<5.0
	S-8	3.5 - 4.0		<5.0
	S-9	4.0 - 4.5		<5.0
	---	4.5 - 5.0		NR
	S-10	5.0 - 5.5		<5.0
	S-11	5.5 - 6.0		<5.0
	S-12	6.0 - 6.5		<5.0
	S-13	6.5 - 7.0		<5.0
	S-14	7.0 - 7.5		<5.0
	S-15	7.5 - 8.0		<5.0
	S-16	8.0 - 8.5		<5.0
	S-17	8.5 - 9.0		<5.0
	---	9.0 - 10.0		NR
	S-18	10.0 - 10.5		<5.0
	S-19	10.5 - 11.0		<5.0
	S-20	11.0 - 11.5		<5.0
	S-21	11.5 - 12.0		<5.0
	S-22	12.0 - 12.5		<5.0
				88.3% RECOVERY
BH-10A (MW-5A)	S-1	15.0 - 17.0	10/6/90	<5.0
	S-2	17.0 - 19.0		<5.0
	S-3	19.0 - 20.0		<5.0
	---	20.0 - 22.0		NR
	S-4	22.0 - 24.0		<5.0
	S-5	24.0 - 26.0		<5.0
	S-6	26.0 - 28.0		<5.0
	S-7	28.0 - 30.0		<5.0
BH-11 (MW-6)	S-1	0.0 - 0.5	9/29/90	<5.0
	S-2	0.5 - 1.0		<5.0
	---	1.0 - 5.0		NR
	S-3	5.0 - 5.5		<5.0
	S-4	5.5 - 6.0		<5.0
	S-5	6.0 - 6.5		<5.0
	S-6	6.5 - 7.0		<5.0
	S-7	7.0 - 7.5		<5.0
	S-8	7.5 - 8.0		<5.0
	---	8.0 - 10.0		NR
	S-9	10.0 - 10.5		<5.0
	S-10	10.5 - 11.0		<5.0
	S-11	11.0 - 11.5		<5.0
	S-12	11.5 - 12.0		<5.0
	---	12.0 - 15.0		NR
	S-13	15.0 - 15.5		<5.0
				94.5% RECOVERY
BH-11A (MW-6A)	S-1	20.0 - 20.5	10/6/90	<5.0
	S-2	20.5 - 21.0		<5.0
	S-3	21.0 - 21.5		<5.0
	S-4	21.5 - 22.0		<5.0
	S-5	22.0 - 22.5		<5.0
	S-6	22.5 - 23.0		<5.0
	S-7	23.0 - 23.5		<5.0
	S-8	23.5 - 24.0		<5.0
	S-9	24.0 - 24.5		<5.0
	S-10	24.5 - 25.0		<5.0
	S-11	25.0 - 25.5		<5.0
	---	25.5 - 30.0		NR
	S-12	30.0 - 30.5		<5.0
	S-13	30.5 - 31.0		<5.0
	S-14	31.0 - 31.5		<5.0
	S-15	31.5 - 32.0		<5.0
	S-16	32.0 - 32.5		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-11A CONTINUED	S-17	32.5 - 33.0	10/6/90	<5.0	
	S-18	33.0 - 33.5		<5.0	
	S-19	33.5 - 34.0		<5.0	
	S-20	34.0 - 34.5		<5.0	
	S-21	34.5 - 35.0		<5.0	
	S-22	35.0 - 35.5		<5.0	
	S-23	35.5 - 36.0		<5.0	
	S-24	36.0 - 36.5		<5.0	
	S-25	36.5 - 37.0		<5.0	
	S-26	37.0 - 37.5		<5.0	
	S-27	37.5 - 38.0		<5.0	
	S-28	38.0 - 38.5		<5.0	
	S-29	38.5 - 39.0		<5.0	
	S-30	39.0 - 39.5		<5.0	
	S-31	39.5 - 40.0		<5.0	
BH-12 (MW-23)	...	0.0 - 1.0	10/2/90	NR	
	S-1	1.0 - 1.5		6.8	7.0
	S-1 DUP	1.0 - 1.5		<5.0	
	...	1.5 - 5.0		NR	
	S-2	5.0 - 5.5		<5.0	3.6
	S-3	5.5 - 6.0		<5.0	3.5
	S-4	6.0 - 6.5		<5.0	6.0
	S-5	6.5 - 7.0		<5.0	5.6
	S-6	7.0 - 7.5		<5.0	5.0
	S-7	7.5 - 8.0		<5.0	4.1
	S-8	8.0 - 8.5		<5.0	4.7
	S-9	8.5 - 9.0		<5.0	4.1
	S-10	9.0 - 9.5		<5.0	4.7
	S-11	9.5 - 10.0		<5.0	6.1
	...	10.0 - 15.0		NR	
	S-13	15.0 - 15.5		<5.0	5.3
	S-14	15.5 - 16.0		<5.0	6.4
	S-15	16.0 - 16.5		<5.0	6.3
	S-16 SPIKE	16.5 - 17.0		<5.0	6.1
				96.9% RECOVERY	
BH-13 (MW-20)	...	0.0 - 0.3	10/2/90	NR	
	S-1	0.3 - 0.5		<5.0	51.9
	S-2	0.5 - 1.0		17.0	44.4
	S-3	1.0 - 1.8		6.4	104.4
	...	1.8 - 5.0		NR	
	S-4	5.0 - 5.5		<5.0	82.0
	S-5	5.5 - 6.0		<5.0	39.6
	S-6	6.0 - 6.5		<5.0	16.3
	S-7	6.5 - 7.0		<5.0	4.5
	S-8	7.0 - 7.5		<5.0	0.5
	S-9	7.5 - 8.0		<5.0	1.0
	S-10	8.0 - 8.5		<5.0	1.7
	S-11	8.5 - 9.0		<5.0	2.2
	S-12	9.0 - 10.0		NR	
	S-13	10.0 - 10.5		<5.0	2.2
	S-14	10.5 - 11.0		<5.0	3.0
	S-15	11.0 - 11.5		<5.0	4.3
	S-16	11.5 - 12.0		<5.0	4.3
	S-17	12.0 - 12.5		<5.0	6.0
	S-18	12.5 - 13.0		<5.0	5.7
	S-19	13.0 - 13.5		<5.0	8.0
				86.4% RECOVERY	
BH-13A (MW-20A)	S-1	18.7 - 20.0	10/7/90	<5.0	
	S-2	20.0 - 22.0		<5.0	
	S-3	22.0 - 24.0		<5.0	
	S-4	24.0 - 26.0		<5.0	
	S-5	26.0 - 27.0		<5.0	
	S-6	27.0 - 29.0		<5.0	
	S-7	29.0 - 31.0		<5.0	
	S-8	31.0 - 33.0		<5.0	

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-14 (MW-7)	S-1	0.0 - 5	9/29/90	10.9	
	S-2	0.5 - 1.0		<5.0	
	S-3	1.0 - 1.5		<5.0	
	S-4	1.5 - 2.0		<5.0	
	S-5	2.0 - 2.5		<5.0	
	S-6	2.5 - 3.0		<5.0	
	...	3.0 - 5.0		NR	
	S-7	5.0 - 5.5		<5.0	
	S-8	5.5 - 5.8		<5.0	
	...	5.8 - 10.0		NR	
	S-9	10.0 - 10.5		<5.0	
	...	10.5 - 15.0		NR	
	S-10	15.0 - 15.5		5.6	
	S-10 DUP	15.0 - 15.5		5.6	
	S-10 SPIKE	15.0 - 15.5		90.3% RECOVERY	
BH-14A (MW-7A)	S-1	21.6 - 25.0	10/5/90	<5.0	
	S-2	25.0 - 27.0		<5.0	
	...	27.0 - 30.0		NR	
	S-3	30.0 - 32.0		<5.0	
	...	32.0 - 35.0		NR	
	S-4	35.0 - 37.0		<5.0	
	S-5	37.0 - 40.0		<5.0	
BH-15 (MW-21)	...	0.0 - 0.5	10/2/90	NR	
	S-1	0.5 - 1.0		54.0	33.7
	S-2	1.0 - 1.5		22.0	12.3
	S-3	1.5 - 2.0		<5.0	
	S-4	2.0 - 2.5		6.6	5.3
	...	2.5 - 5.0		NR	
	S-5	5.0 - 5.5		<5.0	0.8
	S-6	5.5 - 6.0		<5.0	0.8
	S-7	6.0 - 6.5		<5.0	0.8
	S-8	6.5 - 7.0		<5.0	0.8
	S-9	7.0 - 7.5		<5.0	0.7
	S-10	7.5 - 8.0		<5.0	1.0
	S-11	8.0 - 8.5		<5.0	1.3
	S-12	8.5 - 9.0		<5.0	1.4
	S-13	9.0 - 9.5		<5.0	1.5
	S-14	9.5 - 10.0		<5.0	1.6
	S-15	10.0 - 10.5		<5.0	2.6
	S-16	10.5 - 11.0		<5.0	2.1
	S-17	11.0 - 11.5		<5.0	2.1
	S-18	11.5 - 12.0		<5.0	2.4
				90.3% RECOVERY	
BH-15A (MW-21A)	S-1	18.1 - 20.0	10/7/90	<5.0	
	S-2	20.0 - 22.0		<5.0	
	S-3	22.0 - 24.0		<5.0	
	S-4	24.0 - 25.0		<5.0	
	S-5	25.0 - 27.0		<5.0	
	S-6	27.0 - 29.0		<5.0	
	S-7	29.0 - 31.0		<5.0	
	S-8	31.0 - 33.0		<5.0	
BH-16 (MW-13)	...	0.0 - 1.0	9/29/90	NR	
	S-1	1.0 - 1.5		516	
	...	1.5 - 5.0		NR	
	S-2	5.0 - 5.5		325	
	S-3	5.5 - 6.0		910	
	S-4	6.0 - 6.5		1561	
	S-5	6.5 - 7.0		375	
	...	7.0 - 10.0		NR	
	S-6	10.0 - 10.5		<5.0	
	S-7	10.5 - 11.0		59	
	S-8	11.0 - 11.5		<5.0	

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-16 CONTINUED	S-9	11.5 - 12.0	9/29/90	<5.0	
	...	12.0 - 15.0		NR	
	S-10	15.0 - 15.5		<5.0	
	S-11	15.5 - 16.0		<5.0	
	S-12	16.0 - 16.5		<5.0	
	S-13	16.5 - 17.0		<5.0	
	S-14	17.0 - 17.5		<5.0	
	S-15	17.5 - 18.0		<5.0	
	...	18.0 - 20.0		NR	
	S-16	20.0 - 20.5		<5.0	
	S-17	20.5 - 21.0		<5.0	
	S-18	21.0 - 21.5		<5.0	
	S-19	21.5 - 22.0		<5.0	
				101.8% RECOVERY	
BH-16A (MW-13A)	S-1	21.0 - 23.0	10/12/90	7.3	
	S-2	23.0 - 25.0		<5.0	
	S-3	25.0 - 26.0		9.3	
	S-4	26.0 - 28.0		<5.0	
	S-5	28.0 - 30.0		<5.0	
BH-17 (MW-14)	S-1	1.0 - 1.5	9/29/90	133.0	
	S-2	0.0 - 0.5		54.0	
	S-3	0.5 - 1.0		<5.0	
	S-4	1.0 - 1.5		<5.0	
	...	1.5 - 5.0		NR	
	S-5	5.0 - 5.5		<5.0	
	S-6	5.5 - 6.0		30.0	
	S-7	6.0 - 6.5		264.0	
	S-8	6.5 - 7.0		966.0	
	S-9	7.0 - 7.5		941.0	
	S-10	7.5 - 8.0		25.0	
	S-11	8.0 - 8.5		13.0	
	...	8.5 10.0		NR	
	S-12	10.0 - 10.5		5.2	
	S-13	10.5 - 11.0		5.6	
	S-14	11.0 - 11.5		5.3	
	S-15	11.5 - 12.0		5.8	
				119.4% RECOVERY	
BH-18 (MW-15)	S-1	0.0 - 0.5	9/29/90	14.1	
	S-2	0.5 - 1.0		<5.0	
	S-3	1.0 - 1.5		<5.0	
	...	1.5 - 5.0		NR	
	S-4	5.0 - 5.5		<5.0	
	S-5	5.5 - 6.0		<5.0	
	S-6	6.0 - 6.5		<5.0	
	S-7	6.5 - 7.0		<5.0	
	S-8	7.0 - 7.5		<5.0	
	S-9	7.5 - 8.0		<5.0	
	S-10	8.0 - 8.5		<5.0	
	S-11	8.5 - 9.0		<5.0	
	S-12	9.0 - 9.5		<5.0	
	...	9.5 - 10.0		NR	
	S-13	10.0 - 10.5		<5.0	
	S-14	10.5 - 11.0		<5.0	
	S-15	11.0 - 11.5		<5.0	
	S-16	11.5 - 12.0		<5.0	
	S-17	12.0 - 125.		<5.0	
	S-18	12.5 - 13.0		<5.0	
	S-19	13.0 13.5		<5.0	
				99.6% RECOVERY	
BH-19 (MW-16)	...	0.0 - 1.0	9/30/90	NR	
	S-1	1.0 - 1.5		<5.0	22.4
	...	1.5 - 5.0		NR	
	S-2	5.0 - 5.5		<5.0	6.5
	S-3	5.5 - 6.0		<5.0	4.3
	S-4	6.0 - 6.5		<5.0	4.7

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-19 CONTINUED	S-5	6.5 - 7.0	9/30/90	<5.0	6.6
	...	7.0 - 10.0		NR	
	S-6	10.0 - 10.5		<5.0	5.9
	S-7	10.5 - 11.0		<5.0	4.6
	...	11.0 - 15.0		NR	
	S-8	15.0 - 15.5		<5.0	5.1
	S-9	15.5 - 16.0		<5.0	7.2
	S-10	16.0 - 16.5		<5.0	5.5
	S-11	16.5 - 17.0		<5.0	10.7
	S-12	17.0 - 17.5		<5.0	19.5
	S-13	17.5 - 18.0		<5.0	24.3
	S-14	18.0 - 18.5		<5.0	13.9
	S-14 SPIKE	18.0 - 18.5		94.1% RECOVERY	
BH-19A (MW-16A)	S-1	19.0 - 20.0	10/10/90	<5.0	
	S-2	20.0 - 22.0		<5.0	
	S-3	22.0 - 24.0		<5.0	
	S-4	24.0 - 26.0		<5.0	
	S-5	26.0 - 28.0		<5.0	
	S-6	28.0 - 30.0		<5.0	
	S-7	30.0 - 32.0		<5.0	
	S-8	32.0 - 34.0		<5.0	
BH-20 (MW-17)	...	0.0 - 1.0	9/30/90	NR	
	S-1	1.0 - 1.5		<5.0	6.3
	S-2	1.5 - 2.0		<5.0	3.9
	S-3	2.0 - 2.5		<5.0	3.8
	S-4	2.5 - 3.0		<5.0	4.2
	S-5	3.0 - 3.5		<5.0	5.7
	S-6	3.5 - 4.0		<5.0	5.0
	S-7	4.0 - 4.5		<5.0	5.1
	S-8	4.5 - 5.0		<5.0	5.2
	S-9	5.0 - 5.5		<5.0	5.7
	S-10	5.5 - 6.0		<5.0	6.3
	S-10 DUP	5.5 - 6.0		<5.0	
	S-11	6.0 - 6.5		<5.0	5.5
	S-12	6.5 - 7.0		<5.0	9.6
	...	7.0 - 10.0		NR	
	S-13	10.0 - 10.5		<5.0	5.9
	S-14	10.5 - 11.0		<5.0	4.7
	S-15	11.0 - 11.5		<5.0	3.9
	S-16	11.5 - 12.0		<5.0	4.8
	S-17	12.0 - 12.5		<5.0	6.8
	S-18	12.5 - 13.0		<5.0	5.0
	S-19	13.0 - 13.5		<5.0	6.2
	S-20	13.5 - 14.0		<5.0	6.1
	S-20 SPIKE	13.5 - 14.0		<5.0	
	S-21	14.0 - 14.5		<5.0	5.1
	S-22	14.5 - 15.0		<5.0	5.0
	S-23	15.0 - 15.5		<5.0	6.2
	S-24	15.5 - 16.0		<5.0	6.4
	S-25	16.0 - 16.5		<5.0	6.0
	S-26	16.5 - 17.0		<5.0	6.4
	S-27	17.0 - 17.5		<5.0	5.4
	S-27 DUP	17.0 - 17.5		<5.0	
				100.3% RECOVERY	
BH-20A (MW-17A)	S-1	19.0 - 20.0	10/11/90	<5.0	
	S-2	20.0 - 22.0		<5.0	
	S-3	22.0 - 24.0		<5.0	
	S-4	24.0 - 26.0		<5.0	
	S-5	26.0 - 28.0		<5.0	
	S-6	28.0 - 30.0		<5.0	
	S-7	30.0 - 32.0		<5.0	
	S-8	32.0 - 34.0		<5.0	

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-21 (MW-19)	S-1	0.7 - 1.5	10/1/90	<5.0	11.9
	S-2	1.5 - 2.0		<5.0	2.2
	S-3	2.0 - 2.5		<5.0	2.7
	S-4	2.5 - 3.0		68.4	12.6
	S-5	3.0 - 3.5		33.9	11.6
	S-6	3.5 - 4.0		25.0	11.2
	...	4.0 - 5.0		NR	
	S-7	5.0 - 5.5		25.0	6.4
	S-8	5.5 - 6.0		<5.0	5.2
	S-9	6.0 - 6.5		<5.0	3.6
	S-10	6.5 - 7.0		<5.0	4.8
	S-10 SPIKE	6.5 - 7.0		<5.0	
	S-11	7.0 - 7.5		<5.0	3.3
	S-12	7.5 - 8.0		<5.0	4.2
	S-13	8.0 - 8.5		<5.0	2.4
	...	8.5 - 10.0		NR	
	S-14	10.0 - 10.5		<5.0	13.9
	S-15	10.5 - 11.0		<5.0	19.2
	S-16	11.0 - 11.5		<5.0	93.4
	S-17	11.5 - 12.0		<5.0	34.8
	...	12.0 - 15.0		NR	
	S-18	15.0 - 15.5		<5.0	3.7
	S-19	15.5 - 16.0		<5.0	3.2
	S-20	16.0 - 16.5		<5.0	3.0
	S-20 DUP	16.0 - 16.5		<5.0	
	S-21	16.5 - 17.0		<5.0	4.0
	S-22	17.0 - 17.5		<5.0	3.4
	S-23	17.5 - 18.0		<5.0	3.2
	S-24	18.0 - 18.5		<5.0	4.4
	S-25	18.5 - 19.0		<5.0	4.4
	...	19.0 - 20.0		NR	
	S-26	20.0 - 20.5		<5.0	5.0
	S-27	20.5 - 21.0		<5.0	4.6
	S-28	21.0 - 21.5		<5.0	5.5
	S-29	21.5 - 22.0		<5.0	4.3
	S-30	22.0 - 22.5		<5.0	3.5
	S-30 SPIKE	22.0 - 22.5		<5.0	
	S-31	22.5 - 23.0		<5.0	4.0
	S-32	12.0 - 12.5		<5.0	2.9
	S-33	12.5 - 13.0		<5.0	3.9
	S-34	13.0 - 13.5		<5.0	2.9
	S-35	13.5 - 14.0		<5.0	2.6
	S-35 DUP	13.5 - 14.0		<5.0	
				98.2% RECOVERY	
BH-21A (MW-19A)	S-1	24.0 - 26.0	10/12/90	<5.0	
	S-2	26.0 - 28.0		<5.0	
	S-3	28.0 - 30.0		<5.0	
	S-4	30.0 - 32.0		<5.0	
	S-5	32.0 - 34.0		<5.0	
BH-22A (MW-11A)	S-1	20.0 - 22.0	10/12/90	<5.0	
	S-2	22.0 - 24.0		<5.0	
	S-3	24.0 - 26.0		<5.0	
	S-4	26.0 - 28.0		<5.0	
	S-5	28.0 - 30.0		<5.0	
	S-6	30.0 - 32.0		<5.0	
	S-7	32.0 - 34.0		<5.0	
	S-8	34.0 - 36.0		<5.0	
	S-9	36.0 - 38.0		<5.0	
BH-23 (MW-22)	S-1	0.6 - 1.0	10/1/90	8.5	20.9
	...	1.0 - 5.0		NR	
	S-2	5.0 - 5.5		5.7	25.9
	S-3	5.5 - 6.0		<5.0	1.2
	S-4	6.0 - 6.5		<5.0	0.1

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G	NITRATE UG/G
BH-23 CONTINUED	S-5	6.5 - 7.0	10/1/90	8.6	1.2
	S-6	7.0 - 7.5		<5.0	1.2
	S-7	7.5 - 8.0		<5.0	1.1
	S-8	8.0 - 8.5		<5.0	1.5
	S-9	8.5 - 9.0		<5.0	1.9
	S-10	9.0 - 9.5		<5.0	8.0
	S-10DUP	9.0 - 9.5		<5.0	
	S-11	9.5 - 10.0		<5.0	4.3
	S-12	10.0 - 10.5		<5.0	6.2
	S-13	10.5 - 11.0		<5.0	6.5
	S-14	11.0 - 11.5		<5.0	6.9
	S-15	11.5 - 12.0		<5.0	5.8
	S-16	12.0 - 12.5		<5.0	4.2
	S-17	12.5 - 13.0		<5.0	4.6
	S-18	13.0 - 13.5		<5.0	8.1
	S-19	13.5 - 14.0		<5.0	3.8
	S-20	14.0 - 14.5		<5.0	3.7
	S-20 SPIKE	14.0 - 14.5		<5.0	
	S-21	14.5 - 15.0		<5.0	3.7
	S-22	15.0 - 15.5		<5.0	7.0
	S-23	15.5 - 16.0		<5.0	5.3
	S-24	16.0 - 16.5		<5.0	5.3
	S-25	16.5 - 17.0		<5.0	5.9
	S-26	17.0 - 17.5		<5.0	7.7
	S-27	17.5 - 18.0		<5.0	8.5
				99.2% RECOVERY	
BH-23A (MW-22A)	S-1	19.7 - 20.0	10/7/90	<5.0	
	S-2	20.0 - 22.0		<5.0	
	S-3	22.0 - 24.0		<5.0	
	S 4	24.0 - 26.0		<5.0	
	S-5	26.0 - 27.0		<5.0	
	S-6	27.0 - 29.0		<5.0	
	S-7	29.0 - 31.0		<5.0	
	S-8	31.0 - 33.0		<5.0	
	S-9	33.0 - 34.0		<5.0	
BH-24	S-1	0.4 - 0.9	10/1/90	<5.0	59.6
	S-2	2.5 - 3.0		<5.0	57.5
	S-3	1.0 - 1.5		<5.0	78.4
	S-4	1.5 - 2.0		<5.0	23.6
	S-5	2.0 - 2.5		<5.0	28.8
	S-6	2.5 - 3.0		<5.0	59.0
	S-7	3.0 - 3.5		<5.0	26.6
	S-8	3.5 - 4.0		<5.0	34.6
	S-9	4.0 - 4.5		<5.0	31.0
	S-10	4.5 - 5.0		<5.0	36.0
				102.7% RECOVERY	
BH-25	...	0.0 - 0.4	10/1/90	NR	
	S-1	0.4 - 0.9		<5.0	
	...	0.9 - 2.5		NR	
	S-2	2.5 - 3.0		<5.0	
	...	3.0 - 5.0		NR	
BH-26 (MW-24)	S-1	0.0 - 0.5	10/3/90	374.0	
	S-2	0.5 - 1.0		6.9	
	S-3	1.0 - 1.5		<5.0	
	S-4	1.5 - 2.0		<5.0	
	...	2.0 - 5.0		NR	
	S-5	5.0 - 5.5		5.7	
	S-6	5.5 - 6.0		<5.0	
	S-7	6.0 - 6.5		<5.0	
	S-8	6.5 - 7.0		8.6	
	...	7.0 - 10.0		NR	
	S-9	10.0 - 10.5		<5.0	

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-26 CONTINUED	S-10	10.5 - 11.0	10/3/90	<5.0
	S-11	11.0 - 11.5		<5.0
	S-12	11.5 - 12.0		<5.0
	S-13	12.0 - 12.5		<5.0
	S-14	12.5 - 13.0		<5.0
	S-15	13.0 - 13.5		<5.0
	S-16	13.5 - 14.0		<5.0
	S-17	14.0 - 14.5		<5.0
	S-18	14.5 - 15.0		<5.0
	S-19	15.0 - 15.5		<5.0
	S-20	15.5 - 16.0		<5.0
	S-21	16.0 - 16.5		<5.0
	S-22	16.5 - 17.0		<5.0
	S-23	17.0 - 17.5		<5.0
	S-24	17.5 - 18.0		<5.0
				83.0% RECOVERY
BH-27 (MW-25)	S-1	0.0 - 0.5	10/3/90	1211.0
	S-2	0.5 - 1.0		4503.0
	---	1.0 - 5.0		NR
	S-3	5.0 - 5.5		7940.0
	S-4	5.5 - 6.0		6621.0
	S-5	6.0 - 6.5		3800.0
	S-6	6.5 - 7.0		2545.0
	S-7	7.0 - 7.5		2100.0
	S-8	7.5 - 8.0		828.0
	---	8.0 - 10.0		NR
	S-9	10.0 - 10.5		54.0
	S-10	10.5 - 11.0		11.0
	S-11	11.0 - 11.5		8.3
	S-12	11.5 - 12.0		7.0
	---	12.0 - 15.0		NR
	S-13	15.0 - 15.5		<5.0
	S-14	15.5 - 16.0		<5.0
	S-15	16.0 - 16.5		<5.0
	S-16	16.5 - 17.0		<5.0
	S-17	17.0 - 17.5		<5.0
	S-18	17.5 - 18.0		<5.0
				105.7% RECOVERY
BH-28 (MW-26)	S-1	0.0 - 0.5	10/6/90	121.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	---	2.0 - 5.0		NR
	S-5	5.0 - 5.5		<5.0
	S-6	5.5 - 6.0		<5.0
	S-7	6.0 - 6.5		<5.0
	S-8	6.5 - 7.0		<5.0
	S-9	7.0 - 7.5		<5.0
	S-10	7.5 - 8.0		<5.0
	---	8.0 - 9.0		NR
	S-11	9.0 - 9.5		<5.0
	S-12	9.5 - 10.0		<5.0
	S-13	NO SAMPLE		---
	S-14	10.0 - 10.5		<5.0
	S-15	10.5 - 11.0		<5.0
	S-16	11.0 - 11.5		<5.0
	S-17	11.5 - 12.0		<5.0
	S-18	12.0 - 12.5		<5.0
	S-19	12.5 - 13.0		<5.0
	S-20	13.0 - 13.5		<5.0
	S-21	13.5 - 14.0		<5.0
	---	14.0 - 15.0		NR
	S-22	15.0 - 15.5		<5.0
	S-23	15.5 - 16.0		<5.0
	S-24	16.0 - 16.5		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-28 CONTINUED	S-25	16.5 - 17.0	10/6/90	6.3
	S-26	17.0 - 17.5		5.6
	S-27	17.5 - 18.0		5.2
	S-28	18.0 - 18.5		<5.0
	S-29	18.5 - 19.0		<5.0
	...	19.0 - 20.0		NR
	S-30	20.0 - 20.5		<5.0
	S-31	20.5 - 21.0		<5.0
	S-32	21.0 - 21.5		<5.0
	S-33	21.5 - 22.0		<5.0
BH-29 (MW-27)	S-1	0.0 - 1.0	10/6/90	430.0
	...	1.0 - 5.0		NR
	S-2	5.0 - 5.5		5.7
	S-3	5.5 - 6.0		<5.0
	S-4	6.0 - 6.5		<5.0
	S-5	6.5 - 7.0		<5.0
	S-6	7.0 - 7.5		<5.0
	S-7	7.5 - 8.0		<5.0
	S-8	8.0 - 8.5		<5.0
	S-9	8.5 - 9.0		<5.0
	S-10	9.0 - 9.5		<5.0
	S-11	9.5 - 10.0		<5.0
	S-12	10.0 - 10.5		<5.0
	S-13	10.5 - 11.0		<5.0
	S-14	11.0 - 11.5		<5.0
	S-15	11.5 - 12.0		<5.0
	S-16	12.0 - 12.5		<5.0
	S-17	12.5 - 13.0		<5.0
	...	13.0 - 15.0		NR
	S-18	15.0 - 15.5		<5.0
	S-19	15.5 - 16.0		<5.0
	S-20	16.0 - 16.5		<5.0
	S-21	16.5 - 17.0		<5.0
	S-22	17.0 - 17.5		<5.0
	S-23	17.5 - 18.0		<5.0
	S-24	18.0 - 18.5		<5.0
	S-25	18.5 - 19.0		<5.0
	S-26	19.0 - 19.5		<5.0
	S-27	19.5 - 20.0		<5.0
	S-28	20.0 - 20.5		<5.0
	S-29	20.5 - 21.0		<5.0
	S-30	21.0 - 21.5		<5.0
	S-31	21.5 - 22.0		<5.0
				95.7% RECOVERY
BH-30 (MW-32)	S-1	0.0 - 0.5	10/5/90	55.8
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	...	2.0 - 5.0		NR
	S-6	5.5 - 6.0		<5.0
	S-7	6.0 - 6.5		<5.0
	S-8	6.5 - 7.0		<5.0
	S-9	7.0 - 7.5		<5.0
	S-10	7.5 - 8.0		<5.0
	S-11	8.0 - 8.5		<5.0
	S-12	8.5 - 9.0		<5.0
BH-30A (MW-32A)	S-1	10.0 - 12.0	10/12/90	<5.0
	S-2	12.0 - 14.0		<5.0
	S-3	14.0 - 16.0		<5.0
	S-4	16.0 - 18.0		<5.0
	S-5	18.0 - 20.0		<5.0
	S-6	20.0 - 22.0		<5.0
	S-7	22.0 - 24.0		<5.0
	S-8	24.0 - 26.0		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-31 (MW-30)	S-1	0.0 - 0.5	10/5/90	111.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	...	2.0 - 5.0		NR
	S-5	5.0 - 5.5		<5.0
	S-6	5.5 - 6.0		<5.0
	S-7	6.0 - 6.5		<5.0
	S-8	6.5 - 7.0		<5.0
				90.0% RECOVERY
BH-31A (MW-30A)	S-1	9.0 - 10.0	10/12/90	<5.0
	S-2	10.0 - 12.0		<5.0
	S-3	12.0 - 14.0		<5.0
	S-4	14.0 - 16.5		<5.0
	S-5	16.5 - 18.5		<5.0
BH-32 (MW-31)	S-1	0.0 - 0.5	10/5/90	27.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	...	2.0 - 5.0		NR
	S-5	5.0 - 5.5		<5.0
	S-6	5.5 - 6.0		<5.0
	S-7	6.0 - 6.5		6.7
	S-8	6.5 - 7.0		<5.0
	S-9	7.0 - 7.5		<5.0
	S-10	7.5 - 8.0		<5.0
	S-11	8.0 - 8.5		<5.0
	S-12	8.5 - 9.0		<5.0
	S-13	9.0 - 9.5		<5.0
	...	9.5 - 10.0		NR
	S-14	10.0 - 10.5		<5.0
	S-15	10.5 - 11.0		5.6
	S-16	11.0 - 11.5		<5.0
BH-32A (MW-31A)	S-1	12.0 - 14.0	10/7/90	<5.0
	S-2	14.0 - 16.0		<5.0
	S-3	16.0 - 18.0		<5.0
	S-4	18.0 - 20.0		<5.0
	S-5	20.0 - 21.0		<5.0
	S-6	21.0 - 22.0		<5.0
	S-7	22.0 - 24.0		<5.0
	S-8	24.0 - 25.0		<5.0
	S-9	25.0 - 27.0		<5.0
	S-10	27.0 - 29.0		<5.0
BH-33 (MW-28)	...	0.0 - 0.5	10/4/90	NR
	S-1	0.5 - 1.0		6.3
	...	1.0 - 5.0		NR
	S-2	5.0 - 5.5		<5.0
	S-3	5.5 - 6.0		<5.0
	S-4	6.0 - 6.5		12.0
	S-5	6.5 - 7.0		<5.0
	S-6	7.0 - 7.5		8.4
	S-7	7.5 - 8.0		<5.0
	S-8	8.0 - 8.5		<5.0
	S-9	8.5 - 9.0		6.8
	...	9.0 - 10.0		NR
	S-10	10.0 - 10.5		<5.0
	S-11	10.5 - 11.0		6.2
	S-12	11.0 - 11.5		<5.0
	S-13	11.5 - 12.0		<5.0
	S-14	12.0 - 12.5		<5.0
	S-15	12.5 - 13.0		<5.0
	S-16	13.0 - 13.5		<5.0
	S-17	13.5 - 14.0		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-33 CONTINUED	S-18	14.0 - 14.5		<5.0
	S-19	14.5 - 15.0		<5.0
	S-20	15.0 - 15.5		<5.0
	S-21	15.5 - 16.0		<5.0
	S-22	16.0 - 16.5		<5.0
	S-23	16.5 - 17.0		<5.0
	S-24	17.0 - 17.5		<5.0
	S-25	17.5 - 18.0		<5.0
	S-26	18.0 - 18.5		<5.0
	S-27	18.5 - 19.0		<5.0
				84.5% RECOVERY
BH-33A (MW-28A)	S-1	20.0 - 22.0	10/11/90	<5.0
	S-2	22.0 - 24.0		<5.0
	S-3	24.0 - 26.0		<5.0
	S-4	26.0 - 28.0		<5.0
	S-5	28.0 - 30.0		<5.0
	S-6	30.0 - 32.0		<5.0
BH-34 (MW-29)	S-1	0.0 - 0.5	10/4/90	81.8
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	S-5	2.0 - 2.5		<5.0
	S-6	2.5 - 3.0		<5.0
	---	3.0 - 5.0		NR
	S-7	5.0 - 5.5		<5.0
	S-8	5.5 - 6.0		<5.0
	S-9	6.0 - 6.5		<5.0
	S-10	6.5 - 7.0		<5.0
	S-11	7.0 - 7.5		<5.0
BH-35	S-1	0.0 - 0.5	10/11/90	<5.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0
	S-4	1.5 - 2.0		<5.0
	S-5	2.0 - 2.5		<5.0
	S-6	2.5 - 3.0		<5.0
	---	3.0 - 5.0		NR
	S-7	5.0 - 5.5		<5.0
	S-8	5.5 - 6.0		<5.0
	S-9	6.0 - 6.5		<5.0
	S-10	6.5 - 7.0		<5.0
	S-11	7.0 - 7.5		<5.0
	S-12	7.5 - 8.0		<5.0
	S-13	8.0 - 8.5		<5.0
	S-14	8.5 - 9.0		<5.0
	S-15	9.0 - 9.5		<5.0
	S-16	9.5 - 10.0		<5.0
	S-17	10.0 - 10.5		<5.0
	S-18	10.5 - 11.0		<5.0
				90.8% RECOVERY
BH-36	S-1	0.0 - 0.5	10/11/90	44.0
	S-2	0.5 - 1.0		<5.0
	S-3	1.0 - 1.5		<5.0

TABLE 11: CONTINUED

SAMPLE LOCATION	SAMPLE NUMBER	*DEPTH INTERVAL, FEET	DATE SAMPLED	URANIUM UG/G
BH-37	S-1	0.0 - 0.5	10/11/90	5.5
	S-2	0.5 - 5.5		<5.0
	S-3	5.5 - 6.0		5.8
	S-4	6.0 - 6.5		13.0
	---	6.5 - 10.0		NR
	S-5	10.0 - 10.5		130
	S-6	10.5 - 11.0		60

*Feet from ground level
NR - No Recovery

TABLE 12: SUMMARY OF OVM HEADSPACE SOIL GAS READINGS ON SOIL SAMPLES, SHALLOW SHALE WELLS AND BOREHOLES, SEQUOYAH FUELS CORPORATION

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-1 (MW-1)	1	0.0 - 2.0	0.1	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	2	2.0 - 2.6	0.0	
	...	2.6 - 5.0	NR	
	3	5.0 - 7.0	0.0	
	4	7.0 - 7.8	0.1	
	...	7.8 - 10.0	NR	
	5	10.0 - 12.0	0.0	
	6	12.0 - 14.1	0.0	
	...	14.1 - 15.0	NR	
	7	15.0 - 17.7	0.0	
	...	17.7 - 18.0	NR	
BH-2 (MW-8)	1	0.0 - 0.6	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	0.6 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.2	0.0	
	...	9.2 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 13.3	0.0	
	...	13.3 - 15.0	NR	
	6	15.0 - 17.0	0.0	
	7	17.0 - 18.4	0.0	
	...	18.4 - 20.0	NR	
BH-3 (MW-18)	1	0.0 - 1.2	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	1.2 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	1.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 11.4	0.0	
	...	11.4 - 15.0	NR	
	6	15.0 - 17.0	0.0	
	7	17.0 - 19.0	0.0	
	8	19.0 - 20.0	0.0	
	9	20.0 - 21.0	0.0	
BH-4 (MW-12)	1	0.0 - 1.8	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	1.8 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.0	0.0	
	6	12.0 - 13.2	0.0	
	...	13.2 - 15.0	NR	
	7	15.0 - 16.5	0.0	
	...	16.5 - 20.0	NR	
	8	20.0 - 22.0	0.0	
BH-5 (MW-4)	1	0.0 - 2.4	0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.4 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 8.0	0.0	
	...	8.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	...	12.0 - 14.0	NR	

NOTES:
NR = NO RECOVERY
ND = NO DATA

TABLE 12: CONTINUED

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-6 (MW-2)	1	0.0 - 0.8	0.0	BACKGROUND
	...	0.8 - 5.0	NR	SOIL: 0.0
	2	5.0 - 7.0	0.0	AIR: 0.0 - 0.2
	3	7.0 - 8.5	0.0	
	...	8.5 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 14.0	0.0	
	...	14.0 - 15.0	NR	
	6	15.0 - 15.8	0.0	
	...	15.8 - 20.0	0.0	
BH-7 (MW-3)	1	0.0 - 1.1	0.0	BACKGROUND
	...	1.1 - 5.0	NR	SOIL: 0.0
	2	5.0 - 7.0	0.0	AIR: 0.0 - 0.2
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.5	0.0	
BH-8 (MW-9)	1	0.0 - 0.5	0.0	BACKGROUND
	...	0.5 - 5.0	NR	SOIL: 0.0
	2	5.0 - 7.0	0.0	AIR: 0.0 - 0.2
	3	7.0 - 9.0	0.0	
	...	9.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 14.0	0.0	
	6	14.0 - 15.0	0.0	
	7	15.0 - 17.0	0.0	
BH-9 (MW-10)	1	0.0 - 0.5	0.0	BACKGROUND
	...	0.5 - 5.0	NR	SOIL: 0.0
	2	5.0 - 7.0	0.0	AIR: 0.0 - 0.2
	3	7.0 - 8.4	0.0	
	...	8.4 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 12.8	0.0	
	...	12.8 - 15.0	NR	
	6	15.0 - 17.0	0.0	
	7	17.0 - 18.2	0.0	
	...	18.2 - 20.0	NR	
BH-10 (MW-5)	1	0.0 - 2.0	0.0	BACKGROUND
	2	2.0 - 4.5	0.0	SOIL: 0.0
	...	4.5 - 5.0	NR	AIR: 0.0 - 0.2
	3	5.0 - 7.0	0.0	
	4	7.0 - 9.0	0.0	
	...	9.0 - 10.0	NR	
	5	10.0 - 12.5	ND	
BH-11 (MW-6)	1	0.0 - 1.0	0.0	BACKGROUND
	...	1.0 - 5.0	NR	SOIL: 0.0
	2	5.0 - 7.0	0.0	AIR: 0.0 - 0.2
	3	7.0 - 8.0	0.0	
	...	8.0 - 10.0	NR	
	4	10.0 - 12.3	0.0	
	...	12.3 - 15.0	NR	
	5	15.0 - 15.8	0.0	

NOTES:
NR = NO RECOVERY
ND = NO DATA

TABLE 12: CONTINUED

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-12 (MW-23)	...	0.0 - 1.0	NR	BACKGROUND
	1	1.0 - 1.5	ND	SOIL: 0.0
	...	1.5 - 5.0	NR	AIR: 0.0 - 0.2
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.0	0.0	
BH-13 (MW-20)	...	0.0 - 0.3	NR	BACKGROUND
	1	0.3 - 1.8	4.0	SOIL: 0.0
	...	1.8 - 5.0	NR	AIR: 0.0 - 0.2
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	...	9.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 13.5	0.0	
BH-14 (MW-7)	1	0.0 - 2.0	0.0	BACKGROUND
	2	2.0 - 3.0	0.0	SOIL: 0.0
	...	3.0 - 5.0	NR	AIR: 0.0 - 0.2
	3	5.0 - 5.8	0.0	
	...	5.8 - 10.0	NR	
	4	10.0 - 10.5	0.0	
	...	10.5 - 15.0	NR	
	5	15.0 - 15.1	0.0	
	...	15.1 - 20.0	NR	
BH-15 (MW-21)	...	0.0 - 0.5	NR	BACKGROUND
	1	0.5 - 2.6	0.0	SOIL: 0.0
	...	2.6 - 5.0	NR	AIR: 0.0 - 0.2
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.0	0.0	
BH-16 (MW-13)	...	0.0 - 0.8	NR	BACKGROUND
	1	0.8 - 1.2	ND	SOIL: 0.0
	...	1.2 - 5.0	NR	AIR: 0.0 - 0.2
	2	5.0 - 7.0	0.0	
	...	7.0 - 10.0	NR	
	3	10.0 - 12.0	0.0	
	...	12.0 - 15.0	NR	
	4	15.0 - 17.0	0.0	
	5	17.0 - 18.0	0.0	
	...	18.0 - 20.0	NR	
	6	20.0 - 22.0	0.0	
	...	22.0 - 22.5	NR	
BH-17 (MW-14)	...	0.0 - 0.8	NR	BACKGROUND
	1	0.8 - 2.0	0.0	SOIL: 0.0
	...	2.0 - 5.0	NR	AIR: 0.0 - 0.2
	2	5.0 - 7.0	0.0	
	3	7.0 - 8.5	0.0	
	...	8.5 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	...	12.0 - 14.7	NR	

NOTES:
NR = NO RECOVERY
ND = NO DATA

TABLE 12: CONTINUED

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-18 (MW-15)	...	0.0 - 0.7	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	0.7 - 2.2	269	
	...	2.2 - 5.0	NR	
	2	5.0 - 7.0	1.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 9.5	0.0	
	...	9.5 - 10.0	NR	
	5	10.0 - 12.0	1.0	
	6	12.0 - 13.5	0.4	
BH-19 (MW-16)	...	0.0 - 1.0	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	1.0 - 1.5	ND	
	...	1.5 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	...	7.0 - 10.0	0.0	
	3	10.0 - 11.0	0.0	
	...	11.0 - 15.0	NR	
	4	15.0 - 17.0	0.0	
	5	17.0 - 18.5	0.0	
BH-20 (MW-17)	...	0.0 - 1.0	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	1.0 - 3.0	0.0	
	2	3.0 - 5.0	0.0	
	3	5.0 - 7.0	0.0	
	...	7.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 14.0	0.0	
	6	14.0 - 15.0	0.0	
	7	15.0 - 17.0	0.0	
	8	17.0 - 17.5	0.0	
BH-21 (MW-19)	...	0.0 - 0.7	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	0.7 - 2.7	0.0	
	2	2.7 - 3.7	0.0	
	...	3.7 - 5.0	NR	
	3	5.0 - 7.0	0.0	
	4	7.0 - 8.0	0.0	
	...	8.0 - 10.0	NR	
	5	10.0 - 12.0	0.0	
	6	12.0 - 14.0	0.0	
	...	14.0 - 15.0	NR	
	7	15.0 - 17.0	0.0	
	8	17.0 - 19.0	0.0	
	...	19.0 - 20.0	NR	
	9	20.0 - 22.0	0.0	
	10	22.0 - 23.0	0.0	
BH-22 (MW-11)	SEE BH-23 FOR DATA			

NOT[illegible]

NR [illegible]

ND [illegible]

TABLE 12: CONTINUED

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-23 (MW-22)	...	0.0 - 0.8	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	0.8 - 1.1	ND	
	...	1.1 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.0	0.0	
	6	12.0 - 14.0	0.0	
	7	14.0 - 15.0	0.0	
	8	15.0 - 17.0	0.0	
	9	17.0 - 18.3	0.0	
BH-24	...	0.0 - 1.0	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	1.0 - 3.0	7.0	
	2	3.0 - 5.0	4.0	
BH-25	...	0.0 - 0.4	NR	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	0.4 - 0.9	6.0	
	...	0.9 - 2.5	NR	
	2	2.5 - 3.0	3.0	
	...	3.0 - 5.0	NR	
BH-26 (MW-24)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.0 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	...	7.0 - 10.0	NR	
	3	10.0 - 12.0	0.0	
	4	12.0 - 14.0	0.0	
	5	14.0 - 15.0	0.0	
	6	15.0 - 17.0	0.0	
	7	17.0 - 18.0	0.0	
	...	18.0 - 19.0	NR	
BH-27 (MW-25)	1	0.0 - 1.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	1.0 - 5.0	NR	
	2	5.0 - 7.0	0.1	
	3	7.0 - 8.0	0.0	
	...	8.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	...	12.0 - 15.0	NR	
	5	15.0 - 17.0	0.0	
	6	17.0 - 18.0	0.0	
BH-28 (MW-26)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.0 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	...	9.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 14.0	0.0	
	...	14.0 - 15.0	NR	
	6	15.0 - 17.0	0.0	
	7	17.0 - 19.0	0.0	
	...	19.0 - 20.0	NR	
	...	20.0 - 24.0	ND	

NOTES:
NR = NO RECOVERY
ND = NO DATA

TABLE 12: CONTINUED

SOIL BORING NO.	SOIL SAMPLE NO.	*SOIL SAMPLE INTERVAL, FT.	**OVM SOIL GAS READINGS, PPM	COMMENTS
BH-29 (MW-27)	1	0.0 - 1.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	1.0 - 5.0	NR	
	2	5.0 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 10.0	0.0	
	5	10.0 - 12.0	0.0	
	6	12.0 - 13.0	0.0	
	...	13.0 - 15.0	NR	
	7	15.0 - 17.0	0.0	
	8	17.0 - 19.0	0.0	
	9	19.0 - 20.0	0.0	
	10	20.0 - 22.0	0.0	
BH-30 (MW-32)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.0 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 8.5	0.0	
BH-31 (MW-30)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.0 - 5.0	NR	
	2	5.0 - 7.0	0.0	
BH-32 (MW-31)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	...	2.0 - 5.0	NR	
	2	5.0 - 7.0	0.0	
	3	7.0 - 9.0	0.0	
	4	9.0 - 9.5	0.0	
	...	9.5 - 10.0	NR	
	5	10.0 - 11.5	0.0	
BH-33 (MW-28)	...	0.0 - 0.5	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	1	0.5 - 1.0	ND	
	...	1.0 - 5.0	NR	
	2	5.0 - 7.0	0.4	
	3	7.0 - 9.0	1.0	
	...	9.0 - 10.0	NR	
	4	10.0 - 12.0	0.0	
	5	12.0 - 14.0	0.0	
	6	14.0 - 15.0	0.0	
	7	15.0 - 17.0	0.0	
	8	17.0 - 19.0	0.0	
	...	19.0 - 19.5	0.0	
BH-34 (MW-29)	1	0.0 - 2.0	0.0	BACKGROUND SOIL: 0.0 AIR: 0.0 - 0.2
	2	2.0 - 3.0	0.1	
	...	3.0 - 5.0	NR	
	3	5.0 - 6.5	0.0	
	4	6.5 - 7.5	0.0	

NOTES:

NR = NO RECOVERY

ND = NO DATA

*: MEASURED FROM GROUND SURFACE

**: SOIL GAS READINGS ARE IN PARTS PER MILLION BASED UPON AN ISOBUTYLENE STANDARD. DETECTION LIMIT 100 PARTS PER BILLION.

TABLE 13: PRELIMINARY SUMMARY OF MONITOR WELL DRILLING AND COMPLETION DETAILS, SHALLOW SHALE MONITOR WELLS, SEQUOYAH FUELS CORPORATION

MONITOR WELL NUMBER	DATE DRILLED	GROUND LEVEL ELEVATION, FEET AMSL	TOP OF PVC CASING ELEVATION, FEET	*DRILLED BOREHOLE DEPTH, FEET	*MONITOR WELL DEPTH, FEET	**PVC CASING STICKUP/ STICKDOWN, FEET	*MONITOR WELL SCREEN INTERVAL, FEET
MW-1	09-25-90	563.70	566.17	17.23	17.22	+3.36	7.03 - 16.60
MW-2	09-26-90	562.30	564.73	14.50	14.50	+1.87	4.36 - 13.80
MW-3	09-26-90	562.00	563.70	11.80	11.80	+1.85	1.67 - 11.50
MW-4	09-26-90	560.50	562.15	11.10	11.10	+1.55	0.96 - 10.45
MW-5	09-27-90	560.70	562.98	11.50	10.90	+2.50	3.69 - 10.74
MW-6	09-27-90	565.60	568.05	15.00	14.95	+2.20	4.96 - 14.44
MW-7	09-27-90	565.95	572.01	19.00	18.16	+2.00	8.38 - 17.80
MW-8	09-27-90	565.00	564.67	18.00	17.39	-0.30	7.55 - 17.05
MW-9	09-28-90	562.10	563.60	16.30	16.19	+1.15	6.35 - 15.83
MW-10	09-28-90	562.80	565.17	18.00	17.96	+2.47	7.88 - 17.36
MW-11	09-28-90	565.28	565.02	19.00	18.81	-0.25	8.83 - 18.31
MW-12	09-28-90	565.32	565.05	20.00	19.00	-0.28	9.02 - 18.50
MW-13	09-29-90	563.89	565.55	21.30	20.88	-0.40	10.73 - 20.25
MW-14	09-29-90	563.44	563.20	14.03	14.03	-0.20	4.05 - 13.55
MW-15	09-29-90	564.17	563.79	12.50	12.14	-0.42	4.48 - 11.97
MW-16	09-30-90	565.25	564.82	17.00	16.68	-0.50	6.50 - 15.98
MW-17	09-30-90	565.29	564.85	16.60	16.39	-0.45	6.21 - 15.69
MW-18	09-30-90	565.65	565.32	19.50	19.40	-0.45	9.25 - 18.70
MW-19	10-01-90	565.05	564.67	21.50	20.93	-0.40	10.75 - 20.23
MW-20	10-02-90	563.98	563.76	12.00	11.64	-0.26	3.95 - 11.48
MW-21	10-02-90	564.93	564.60	10.50	9.55	-0.35	1.88 - 9.39
MW-22	10-01-90	564.76	564.32	16.00	15.93	-0.42	5.75 - 15.23
MW-23	09-30-90	565.51	565.22	10.00	9.91	-0.35	5.21 - 9.75
MW-24	10-03-90	565.70	568.39	17.50	17.33	+2.40	7.15 - 16.63
MW-25	10-03-90	565.70	568.17	16.50	16.33	+2.49	6.15 - 15.63
MW-26	10-03-90	565.40	567.86	22.00	21.49	+2.65	11.31 - 20.79
MW-27	10-03-90	565.20	567.64	20.00	19.24	+2.55	8.93 - 18.54
MW-28	10-04-90	564.34	564.34	18.53	18.53	-0.33	8.35 - 17.83
MW-29	10-04-90	550.60	553.32	6.80	6.80	+2.56	2.90 - 6.74
MW-30	10-05-90	550.00	552.57	6.13	6.13	+2.50	2.85 - 5.97
MW-31	10-05-90	551.10	553.47	10.10	10.10	+2.05	2.33 - 9.54
MW-32	10-05-90	552.90	555.28	7.50	7.43	+2.21	2.42 - 7.27
MW-33T	10-11-90	---	---	12.0	12.0	-0.60	5.97 - 11.85

NOTE:

ALL MONITOR WELLS COMPLETED WITH 2" SCHEDULE 40 FLUSH JOINT PVC CASING AND SCREEN. ALL SCREEN SLOT SIZE 0.010" SLOT.

* REPRESENTS FEET BELOW GROUND SURFACE.

** + REPRESENTS CASING STICKUP IN FEET ABOVEGROUND SURFACE.

\- REPRESENTS CASING STICKDOWN IN FEET BELOW GROUND SURFACE.

--- DATA NOT YET AVAILABLE.

TABLE 14: PRELIMINARY SUMMARY OF 8" PVC SURFACE CONDUCTOR CASING DRILLING DETAILS, DEEP SANDSTONE WELLS, SEQUOYAH FUELS CORPORATION

SOIL BORING WELL NO.	GROUND LEVEL ELEVATION, AMSL	*8-INCH PVC CONDUCTOR DEPTH,	*DRILLED DEPTH OF CONDUCTOR BOREHOLE AND BOREHOLE SIZE, FT	DATA CONDUCTOR DRILLED/INSTALLED	CONDUCTOR DRILLING METHOD AND CONTRACTOR
MW-1A	NOT DRILLED				
MW-2A	562.10	16.80	17.50/12.25 INCH	10-01-90	POOL DRILLING/ROTARY WASH
MW-3A	561.90	14.80	14.50/12.25 INCH	10-09-90	POOL DRILLING/ROTARY WASH
MW-4A	560.30	15.50	15.80/12.25 INCH	09-30-90	POOL DRILLING/ROTARY WASH
MW-5A	560.50	14.60	14.80/12.25 INCH	10-01-90	POOL DRILLING/ROTARY WASH
MW-6A	565.80	17.50	17.60/12.25 INCH	10-01-90	POOL DRILLING/ROTARY WASH
MW-7A	570.20	21.60	21.80/12.25 INCH	09-30-90	POOL DRILLING/ROTARY WASH
MW-8A	565.03	17.50	19.00/12.25 INCH	09-30-90	POOL DRILLING/ROTARY WASH
MW-9A	561.70	18.00	18.00/12.25 INCH	10-02-90	POOL DRILLING/ROTARY WASH
MW-10A	562.30	20.50	21.00/12.25 INCH	10-02-90	POOL DRILLING/ROTARY WASH
MW-11A	565.41	20.00	20.50/12.25 INCH	10-06-90	POOL DRILLING/ROTARY WASH
MW-12A	565.40	22.00	22.50/12.25 INCH	10-06-90	POOL DRILLING/ROTARY WASH
MW-13A	565.91	21.40	22.00/12.25 INCH	10-07-90	POOL DRILLING/ROTARY WASH
MW-14A	563.37	20.00	20.90/12.25 INCH	10-09-90	POOL DRILLING/ROTARY WASH
MW-15A	NOT DRILLED				
MW-16A	565.24	19.00	20.00/12.25 INCH	10-07-90	POOL DRILLING/ROTARY WASH
MW-17A	565.31	19.00	19.66/12.25 INCH	10-07-90	POOL DRILLING/ROTARY WASH
MW-18A	565.71	18.00	20.00/12.25 INCH	10-07/08-90	POOL DRILLING/ROTARY WASH
MW-19A	565.05	23.00	23.00/12.25 INCH	10-05-90	POOL DRILLING/ROTARY WASH
MW-20A	563.85	18.10	18.50/12.25 INCH	10-03-90	POOL DRILLING/ROTARY WASH
MW-21A	564.93	18.10	18.50/12.25 INCH	10-03-90	POOL DRILLING/ROTARY WASH
MW-22A	564.83	19.70	20.00/12.25 INCH	10-03-90	POOL DRILLING/ROTARY WASH
MW-23A	NOT DRILLED				
MW-24A	565.70	18.50	19.90/12.25 INCH	10-07-90	POOL DRILLING/ROTARY WASH
MW-25A	565.80	18.00	19.50/12.25 INCH	10-08-90	POOL DRILLING/ROTARY WASH
MW-26A	565.80	24.00	25.30/12.25 INCH	10-08-90	POOL DRILLING/ROTARY WASH
MW-27A	565.20	22.00	23.50/12.25 INCH	10-08-90	POOL DRILLING/ROTARY WASH
MW-28A	564.61	20.40	20.41/12.25 INCH	10-09-90	POOL DRILLING/ROTARY WASH
MW-29A	NOT DRILLED				
MW-30A	550.50	8.48	08.48/12.25 INCH	10-09-90	POOL DRILLING/ROTARY WASH
MW-31A	551.10	12.10	12.30/12.25 INCH	10-04-90	POOL DRILLING/ROTARY WASH
MW-32A	552.70	12.10	12.10/12.25 INCH	10-04-90	POOL DRILLING/ROTARY WASH

--- DATA NOT YET AVAILABLE

* MEASURED IN FEET FROM GROUND LEVEL

TABLE 15: SUMMARY OF MONITOR WELL DRILLING AND COMPLETION DETAILS, DEEP SANDSTONE MONITOR WELLS
SEQUOYAH FUELS CORPORATION

MONITOR WELL NUMBER	DATE DRILLED	GROUND SURFACE ELEVATION, FEET AMSL	TOP OF 2" PVC CASING ELEVATION, FEET AMSL	*DEPTH TO BOTTOM OF CONDUCTOR CASING, FEET	*DEPTH OF DRILLED BOREHOLE, FEET	*DEPTH OF MONITOR WELL, FEET	* CASING STICKUP/ STICKDOWN, FEET	* MONITOR WELL SCREEN INTERVAL, FEET
MW-1A	NOT DRILLED							
MW-2A	10-06-90	562.10	564.04	16.80	34.00	31.00	+2.00	18.13 - 31.00
MW-3A	10-11-90	561.90	563.73	14.80	34.00	34.00	+2.00	16.80 - 33.9
MW-4A	10-05-90	560.30	562.42	15.50	37.00	31.60	+2.40	17.39 - 31.42
MW-5A	10-05-90	560.50	563.09	14.60	33.70	32.10	+2.57	16.79 - 32.10
MW-6A	10-04-90	565.80	568.72	17.50	40.50	35.00	+2.89	20.28 - 35.00
MW-7A	10-05-90	570.20	572.63	21.60	40.50	35.00	+2.39	22.85 - 34.83
MW-8A	10-07-90	565.03	564.70	17.50	32.00	31.00	-0.33	19.10 - 31.00
MW-9A	10-06-90	561.70	563.84	18.00	34.00	31.80	+2.15	20.30 - 31.80
MW-10A	10-06-90	562.30	563.72	20.50	36.00	35.00	+1.61	21.19 - 35.00
MW-11A	10-09-90	565.41	564.95	20.00	38.50	37.00	-0.42	21.47 - 37.00
MW-12A	10-09-90	565.40	564.91	22.00	39.00	38.00	-0.55	22.75 - 37.17
MW-13A	10-10-90	565.91	565.48	21.40	33.00	30.90	-0.48	23.40 - 30.74
MW-14A	10-10-90	563.37	562.65	20.00	33.00	32.29	-0.75	22.08 - 31.54
MW-15A	NOT DRILLED							
MW-16A	10-10-90	565.24	565.00	19.00	33.00	31.79	-0.25	21.58 - 31.08
MW-17A	10-10-90	565.31	564.89	19.00	35.00	31.90	-0.45	21.65 - 31.12
MW-18A	10-10-90	565.71	565.08	16.00	40.00	39.15	-0.65	24.24 - 38.34
MW-19A	10-10-90	565.05	564.71	23.00	35.10	35.10	-0.40	24.90 - 34.45
MW-20A	10-06-90	563.85	563.63	18.10	34.00	33.00	-0.23	19.39 - 33.00
MW-21A	10-07-90	564.93	564.65	18.10	33.30	33.30	-0.30	18.27 - 33.30
MW-22A	10-07-90	564.83	564.46	19.70	34.50	35.02	-0.35	19.57 - 34.50
MW-23A	NOT DRILLED							
MW-24A	10-08-90	565.71	568.34	18.50	35.50	35.34	+2.63	21.20 - 35.00
MW-25A	10-08-90	565.31	568.18	18.00	32.00	32.00	+2.37	21.60 - 31.28
MW-26A	10-08-90	565.15	567.63	24.00	34.00	34.00	+2.48	26.90 - 33.89
MW-27A	10-08-90	564.71	567.46	22.00	34.00	34.00	+2.75	24.80 - 33.84
MW-28A	10-11-90	564.61	564.40	20.40	32.25	32.25	-0.22	22.00 - 31.40
MW-29A	NOT DRILLED							
MW-30A	10-11-90	550.50	552.76	8.48	18.50	18.50	+2.26	10.40 - 18.34
MW-31A	10-07-90	551.10	553.16	12.10	29.00	27.00	+2.06	14.33 - 27.00
MW-32A	10-11-90	552.70	555.01	12.40	26.50	26.50	+2.3	11.60 - 26.40

* REPRESENTS FEET FROM GROUND LEVEL
\+ REPRESENTS PVC CASING STICKP IN FEET ABOVEGROUND
\- REPRESENTS PVC CASING STICKDOWN IN FEET BELOW GROUND
--- DATA NOT YET AVAILABLE

TABLE 16: SUMMARY OF WELL DEVELOPMENT DETAILS OF SHALLOW SHALE MONITOR WELLS
SEQUOYAH FUELS CORPORATION

WELL NUMBER	DATE DEVELOPED AND PURGE VOLUME (GAL)								TOTAL PURGE VOLUME
	9-28-90 TO 10-1-90	10-2-90	10-6-90	10-7-90	10-18-90	12-5-90	12-6-90	12-7-90	
MW-1	---	---	5.0	---	--	---	6.0	---	11.0
MW-2	---	---	2.5	---	---	5.5	---	---	8.0
MW-3	---	---	4.5	---	---	5.5	---	---	10.0
MW-4	---	---	3.0	---	---	7.0	---	---	10.0
MW-5	0.2	---	0.2	---	---	5.0	---	---	5.4
MW-6	0.5	---	3.0	---	---	---	---	---	3.5
MW-7	0.3	---	4.8	---	---	1.0	---	---	6.1
MW-8	10.0	---	5.0	---	---	---	---	7.0	22.0
MW-9	30.0	---	---	---	---	---	20.0	---	50.0
MW-10	50.0	---	---	---	---	---	---	20.0	70.0
MW-11	4.0	---	30.0	---	---	---	---	28.0	62.0
MW-12	5.0	---	---	---	---	---	---	6.0	11.0
MW-13	4.0	---	---	---	---	---	---	5.0	9.0
MW-14	30.0	---	---	15.0	---	---	---	19.0	64.0
MW-15	ND	---	---	3.0	0.5	---	---	1.0	4.5+
MW-16	4.0	---	---	5.0	---	---	---	3.0	12.0
MW-17	3.0	---	---	---	---	---	---	4.0	7.0
MW-18	35.0	---	---	---	---	---	---	26.0	61.0
MW-19	30.0	---	---	---	---	---	---	6.0	36.0
MW-20	---	---	---	ND	---	---	3.0	---	3.0+
MW-21	---	---	0.5	ND	---	---	2.0	---	2.5+
MW-22	---	5.0	---	---	---	---	---	---	5.0
MW-23	---	---	---	ND	---	---	---	1.0	1.0+
MW-24	---	---	---	3.5	---	---	---	---	3.5
MW-25	---	---	---	ND	---	---	---	2.0	2.0+
MW-26	---	---	---	.5	---	---	---	4.5	11.0
MW-27	---	---	---	.5	---	---	---	3.5	7.0
MW-28	---	---	28.0	---	---	---	---	5.0	33.0
MW-29	---	---	13.0	---	---	---	8.5	---	21.5
MW-30	---	---	---	ND	---	---	2.0	---	2.0+
MW-31	---	---	4.5	---	---	---	2.5	---	7.0
MW-32	---	---	---	ND	---	---	2.0	---	2.0+

NOTE: ND - WELL DEVELOPMENT CONDUCTED BUT PURGE VOLUME NOT DOCUMENTED

TABLE 17: SUMMARY OF WELL DEVELOPMENT DETAILS OF DEEP SANDSTONE MONITOR WELLS
SEQUOYAH FUELS CORPORATION

WELL NUMBER	DATE DEVELOPED AND PURGE VOLUME (GAL) 10-11-90	10-18-90	10-24-90	11-9-90	11-21-90	11-26-90	11-27-90	11-28-90	11-29-90	11-30-90
MW-1A	NOT DRILLED									
MW-2A	---	---	12.0	---	---	---	15.0	9.0	---	---
MW-3A	22.5	17.0	---	---	24.0	---	5.0	---	---	---
MW-4A	---	---	18.0	---	---	---	20.0	---	---	---
MW-5A	---	---	10.0	---	---	---	10.0	10.0	---	---
MW-6A	---	---	30.0	---	---	---	40.0	---	---	---
MW-7A	---	---	5.0	---	---	25.0	---	10.0	---	---
MW-8A	---	---	27.0	---	---	30.0	10.0	---	---	---
MW-9A	---	---	17.0	---	30.0	---	---	10.0	---	---
MW-10A	---	13.0	---	---	20.0	20.0	10.0	10.0	10.0	20.0
MW-11A	20.0	---	---	---	---	---	---	15.0	10.0	---
MW-12A	40.0	---	---	---	---	---	---	---	---	---
MW-13A	15.0	---	---	---	13.0	---	---	---	---	---
MW-14A	18.0	---	---	---	---	---	---	10.0	15.0	---
MW-15A	NOT DRILLED									
MW-16A	6.0	5.0	---	---	7.0	---	---	---	---	---
MW-17A	7.0	---	---	---	8.0	---	---	---	---	---
MW-18A	12.0	---	---	---	---	---	---	10.0	5.0	---
MW-19A	20.0	21.0	---	---	8.5	---	7.0	7.0	7.0	7.0
MW-20A	---	---	---	---	---	20.0	---	20.0	---	---
MW-21A	---	---	---	---	---	30.0	---	---	---	---
MW-22A	---	47.0	---	---	45.0	---	---	---	---	---
MW-23A	NOT DRILLED									
MW-24A	---	---	---	26.0	---	---	---	---	10.0	10.0
MW-25A	---	---	---	26.0	---	---	---	---	10.0	---
MW-26A	---	---	---	33.0	---	---	---	---	7.0	7.0
MW-27A	---	---	---	27.0	---	---	---	---	10.0	---
MW-28A	15.0	5.0	---	---	6.0	---	---	---	---	---
MW-29A	NOT DRILLED									
MW-30A	---	---	---	---	12.0	---	---	8.0	---	---
MW-31A	---	---	---	---	---	---	---	17.0	---	---
MW-32A	7.0	---	---	---	18.0	---	---	9.0	---	---

TABLE 17: CONTINUED

WELL NUMBER	DATE DEVELOPED AND PURGE VOLUME (GAL) 12-3-90	12-4-90	12-5-90	12-6-90	12-7-90	12-10-90	TOTAL PURGE VOLUME
MW-1A	NOT DRILLED						
MW-2A	---	---	10.0	---	---	---	46.0
MW-3A	---	---	26.0	---	---	---	94.5
MW-4A	---	---	27.0	---	---	---	65.0
MW-5A	---	---	20.0	---	---	---	50.0
MW-6A	---	---	---	---	---	---	70.0
MW-7A	---	---	2.0	---	---	---	42.0
MW-8A	---	---	---	10.0	---	---	77.0
MW-9A	---	---	---	20.0	---	---	77.0
MW-10A	20.0	10.0	---	30.0	10.0	---	173.0
MW-11A	---	---	---	---	---	12.0	57.0
MW-12A	20.0	---	---	---	---	---	60.0
MW-13A	10.0	---	---	---	---	---	38.0
MW-14A	---	---	---	---	---	13.0	56.0
MW-15A	NOT DRILLED						
MW-16A	7.0	---	---	---	---	---	25.0
MW-17A	6.0	---	---	---	---	---	21.0
MW-18A	8.0	---	---	---	---	---	35.0
MW-19A	7.0	---	---	7.0	9.0	---	100.5
MW-20A	---	---	---	15.0	---	---	55.0
MW-21A	--	---	---	27.0	---	---	57.0
MW-22A	20.0	---	---	---	---	---	112.0
MW-23A	NOT DRILLED						
MW-24A	---	---	---	---	12.5	---	58.5
MW-25A	---	---	---	---	8.0	---	44.0
MW-26A	---	---	---	---	5.0	---	52.0
MW-27A	---	---	---	---	10.0	---	47.0
MW-28A	6.0	---	---	---	---	---	32.0
MW-29A	NOT DRILLED						
MW-30A	---	---	---	8.0	---	---	28.0
MW-31A	---	---	---	12.0	---	---	29.0
MW-32A	---	---	---	10.5	---	---	44.5

TABLE 18. SUMMARY OF HORIZONTAL HYDRAULIC CONDUCTIVITY TEST RESULTS, SHALLOW SHALE AND DEEP SANDSTONE WELLS, SEQUOYAH FUELS CORP.

WELL NUMBER	FORMATION	TEST DATE	FALLING HEAD TEST DATA FT/DAY	FALLING HEAD TEST DATA CM/SEC	RISING HEAD TEST DATA FT/DAY	RISING HEAD TEST DATA CM/SEC
MW-1	UPPER SHALE	12/04/90	4.77E-03	1.68E-06	-	-
MW-2	UPPER SHALE	12/04/90	5.47E-02	1.93E-05	-	-
MW-5	UPPER SHALE	12/04/90	4.31E-02	1.52E-05	-	-
MW-8	UPPER SHALE	12/04/90	1.56E-02	5.49E-06	-	-
MW-11	UPPER SHALE	12/06/90	2.12E+00	7.47E-04	-	-
MW-12	UPPER SHALE	12/06/90	5.56E-03	1.96E-06	-	-
MW-13	UPPER SHALE	12/06/90	1.10E-02	3.89E-06	-	-
MW-14	UPPER SHALE	12/06/90	3.61E+01	1.28E-02	-	-
MW-15	UPPER SHALE	12/06/90	1.38E-02	4.87E-06	-	-
MW-16	UPPER SHALE	12/06/90	3.82E-02	1.35E-05	-	-
MW-16	UPPER SHALE	12/06/90	4.80E-02	1.69E-05	-	-
MW-17	UPPER SHALE	12/06/90	3.11E-02	1.10E-05	-	-
MW-17	UPPER SHALE	12/06/90	1.26E-01	4.43E-05	-	-
MW-18	UPPER SHALE	12/06/90	4.41E+00	1.55E-03	-	-
MW-19	UPPER SHALE	11/08/90	7.65E-02	2.70E-05	-	-
MW-19	UPPER SHALE	12/06/90	5.16E-02	1.82E-05	-	-
MW-30	UPPER SHALE	12/04/90	5.86E-04	2.07E-07	-	-
		RANGE: MINIMUM	5.86E-04	2.07E-07		
		MAXIMUM	3.61E+01	1.28E-02		
		ARITHMETIC AVERAGE	2.54E+00	8.96E-04		
		GEOMETRIC MEAN	5.70E-02	2.02E-05		

TABLE 18 - CONTINUED

WELL NUMBER	FORMATION	TEST DATE	FALLING HEAD TEST DATA FT/DAY	FALLING HEAD TEST DATA CM/SEC	RISING HEAD TEST DATA FT/DAY	RISING HEAD TEST DATA CM/SEC
MW-2A	UPPER SANDSTONE	11/01/90	8.88E-02	3.13E-05	3.15E-02	1.11E-05
MW-3A	UPPER SANDSTONE	11/01/90	6.03E-02	2.13E-05	4.41E-02	1.55E-05
MW-4A	UPPER SANDSTONE	11/01/90	3.53E-01	1.24E-04	3.64E-01	1.29E-04
MW-5A	UPPER SANDSTONE	11/01/90	3.66E-01	1.29E-04	5.46E-01	1.93E-04
MW-6A	UPPER SANDSTONE	11/01/90	5.47E-01	1.93E-04	6.02E-01	2.12E-04
MW-8A	UPPER SANDSTONE	11/07/90	3.33E-01	1.17E-04	2.92E-01	1.03E-04
MW-9A	UPPER SANDSTONE	11/06/90	4.33E-01	1.53E-04	6.87E-01	2.42E-04
MW-10A	UPPER SANDSTONE	11/06/90	7.24E-02	2.56E-05	4.98E-02	1.76E-05
MW-11A	UPPER SANDSTONE	11/08/90	3.27E-01	1.15E-04	-	-
MW-12A	UPPER SANDSTONE	11/08/90	5.33E-01	1.88E-04	3.69E-01	1.30E-04
MW-13A	UPPER SANDSTONE	11/08/90	2.49E-01	8.79E-05	-	-
MW-14A	UPPER SANDSTONE	11/08/90	6.15E-01	2.17E-04	3.97E-01	1.40E-04
MW-17A	UPPER SANDSTONE	11/14/90	2.06E-02	7.26E-06	1.21E-01	4.26E-05
MW-20A	UPPER SANDSTONE	11/06/90	2.91E-01	1.03E-04	2.38E-01	8.38E-05
MW-21A	UPPER SANDSTONE	11/06/90	8.48E-01	2.99E-04	9.89E-01	3.49E-04
MW-22A	UPPER SANDSTONE	11/07/90	5.56E-01	1.96E-04	6.03E-01	2.13E-04
MW-24A	UPPER SANDSTONE	12/04/90	1.10E-01	3.87E-05	-	-
MW-28A	UPPER SANDSTONE	11/06/90	1.27E-02	4.47E-06	-	-
MW-30A	UPPER SANDSTONE	11/14/90	-	-	8.99E-02	3.17E-05
MW-30A	UPPER SANDSTONE	11/14/90	-	-	9.85E-02	3.47E-05
MW-31A	UPPER SANDSTONE	11/07/90	-	-	2.97E-02	1.05E-05
MW-32A	UPPER SANDSTONE	11/07/90	-	-	3.02E-02	1.07E-05
		RANGE: MINIMUM	1.27E-02	4.47E-06	2.97E-02	1.05E-05
		MAXIMUM	8.48E-01	2.99E-04	9.89E-01	3.49E-04
		ARITHMETIC AVERAGE	3.23E-01	1.14E-04	2.96E-01	1.05E-04
		GEOMETRIC MEAN	2.05E-01	7.23E-05	1.78E-01	6.28E-05

TABLE 19: PRELIMINARY SUMMARY OF WATER LEVEL AND WELL DEPTH DATA COLLECTED ON SHALLOW SHALE WELLS
SEQUOYAH FUELS CORPORATION

WELL NO.	WATER LEVEL, FEET FROM TOP OF PVC CASING								
	10-6-90	10-7-90	10-8-90	10-9-90	10-13-90	10-15-90	10-17-90	10-19-90	10-22-90
MW-1	7.60	---	---	---	8.44	8.45	8.41	8.23	8.32
MW-2	12.84	---	---	---	13.30	11.97	11.17	10.56	9.89
MW-3	8.45	---	---	---	9.04	7.95	7.51	7.28	7.02
MW-4	7.17	---	---	---	6.90	6.66	6.66	6.84	6.94
MW-5	12.70	---	---	---	10.14	7.06	6.28	5.60	5.42
MW-6	13.31	---	---	---	13.72	12.39	11.60	11.07	10.43
MW-7	16.51	---	---	---	14.12	13.05	12.70	12.55	12.41
MW-8	8.64	---	---	---	6.42	5.76	5.24	5.53	5.54
MW-9	---	---	---	---	3.54	3.74	3.94	4.07	4.17
MW-10	4.64	---	---	---	5.20	5.33	5.17	5.33	5.42
MW-11	---	---	---	0.29	4.70	4.57	8.53	4.53	4.59
MW-12	---	---	---	6.78	7.48	7.52	7.49	7.72	7.78
MW-13	---	---	---	5.51	9.04	8.71	8.62	8.91	8.95
MW-14	---	---	4.63	---	4.66	4.73	4.79	4.73	4.71
MW-15	---	---	9.85	---	10.10	9.76	9.32	10.50	10.08
MW-16	---	---	7.20	---	7.14	6.47	6.45	6.72	6.75
MW-17	---	---	---	7.02	6.60	5.91	5.47	5.51	5.48
MW-18	---	---	---	5.19	5.30	5.27	5.1[illegible]	5.23	5.34
MW-19	---	---	---	3.33	4.74	4.22	4.18	4.30	4.50
MW-20	---	---	---	---	8.16	7.79	7.17	6.73	6.27
MW-21	8.92	---	---	---	8.00	7.79	7.65	7.55	7.41
MW-22	---	---	---	---	3.58	3.79	3.86	3.99	3.99
MW-23	---	---	---	---	7.82	7.31	7.12	7.08	7.01
MW-24	---	---	12.90	---	12.30	11.93	11.86	12.04	12.08
MW-25	---	---	DRY	---	17.10	16.29	15.76	15.35	14.80
MW-26	---	---	10.79	---	10.82	10.78	10.71	10.92	11.02
MW-27	---	---	15.45	---	13.22	12.01	11.58	11.46	11.30
MW-28	3.67	---	---	---	4.30	3.86	4.15	4.22	4.29
MW-29	3.16	---	---	---	3.12	3.20	3.16	3.23	3.23
MW-30	DRY	DRY	---	DRY	DRY	8.01	7.79	8.00	7.61
MW-31	6.49	---	---	---	4.48	4.66	4.72	4.81	4.81
MW-32	DRY	DRY	---	DRY	9.24	8.88	8.67	9.06	8.68
MW-33T	---	---	---	---	---	6.93	6.91	6.97	7.08

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
** MEASURED ON 10-6-90
T - UTILITY TRENCH BACKFILL MONITOR WELL
SX - WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 19: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP OF PVC CASING 10-24-90	10-26-90	10-29-90	10-30-90	10-31-90	11-2-90	11-5-90	11-6-90	11-7-90
MW-1	8.32	8.46	8.66	---	8.63	8.59	8.66	---	8.85
MW-2	9.54	9.22	8.90	8.81	8.73	8.58	8.38	---	8.29
MW-3	6.90	6.78	6.63	6.55	6.47	6.21	5.60	5.42	5.36
MW-4	7.02	7.12	7.34	---	7.45	7.56	7.48	---	7.45
MW-5	5.53	5.63	5.82	---	5.88	5.93	5.42	---	5.55
MW-6	10.20	10.02	9.88	9.84	9.81	9.76	9.68	9.99	9.75
MW-7	12.41	12.48	12.58	---	12.60	12.59	12.61	---	12.66
MW-8	5.62	5.85	6.02	---	6.02	6.10	5.85	---	6.10
MW-9	4.25	4.18	4.30	---	4.24	4.19	3.93	---	4.20
MW-10	5.53	5.37	5.58	---	5.47	5.43	5.36	---	5.75
MW-11	4.67	4.65	4.72	---	4.74	4.72	4.68	---	4.77
MW-12	7.86	7.91	8.01	---	7.99	7.96	7.92	---	8.13
MW-13	8.99	9.10	9.21	---	9.20	9.07	9.07	---	9.26
MW-14	4.86	4.76	4.80	---	4.86	4.88	4.54	---	4.78
MW-15	9.83	9.54	9.19	9.11	9.01	8.84	8.56	8.51	8.46
MW-16	6.80	6.88	7.02	---	6.99	6.93	6.94	---	7.01
MW-17	5.57	5.61	5.77	---	5.78	5.71	5.18	---	5.78
MW-18	5.49	5.30	5.41	---	5.45	5.42	---	---	5.68
MW-19	4.56	4.56	4.72	---	4.76	4.58	4.07	---	4.32
MW-20	6.09	5.96	5.72	5.92	5.90	5.70	5.87	5.85	5.86
MW-21	7.34	7.27	7.23	7.22	7.20	7.17	7.04	7.02	7.07
MW-22	3.96	3.92	3.93	---	3.83	3.75	3.49	---	3.64
MW-23	6.95	6.96	7.09	7.01	7.01	6.94	6.95	6.92	6.95
MW-24	12.14	12.22	12.36	---	12.38	12.33	12.35	---	12.47
MW-25	14.51	14.23	13.91	13.83	13.75	13.60	13.44	13.42	13.43
MW-26	11.11	11.12	11.30	---	11.29	11.26	11.23	---	11.50
MW-27	11.37	11.42	11.50	---	11.52	11.48	11.49	---	11.57
MW-28	4.35	4.34	4.40	---	4.34	4.28	4.00	---	4.23
MW-29	3.34	3.29	3.40	---	3.36	3.36	3.14	---	3.35
MW-30	7.19	7.14	6.84	---	6.66	6.49	6.19	---	5.97
MW-31	4.81	4.81	4.92	---	4.94	4.95	4.73	---	4.70
MW-32	8.45	8.19	7.90	---	7.70	7.52	7.21	---	7.07
MW-33T	7.18	7.20	7.16	---	7.21	7.20	7.17	---	7.35

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
** MEASURED ON 10-6-90
T - UTILITY TRENCH BACKFILL MONITOR WELL
SX - WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 19: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP OF PVC CASING							
	11-8-90	11-9-90	11-12-90	11-13-90	11-14-90	11-15-90	11-16-90	11-19-90
MW-1	---	8.64	8.96	---	8.95	---	8.94	8.83
MW-2	8.24	8.18	8.01	7.96	7.93	7.89	7.86	7.79
MW-3	5.34	5.22	4.93	4.95	5.00	5.03	5.04	5.04
MW-4	---	7.34	7.09	---	7.15	---	7.23	7.34
MW-5	---	5.01	4.91	---	5.01	---	5.34	5.26
MW-6	9.79	9.79	9.88	9.89	9.92	9.94	9.95	9.97
MW-7	---	12.74	12.89	---	12.96	---	13.01	13.02
MW-8	---	5.86	6.29	---	6.34	---	6.41	6.39
MW-9	---	3.98	4.20	---	4.21	---	4.25	4.16
MW-10	---	5.93	5.63	---	5.50	---	5.54	5.31
MW-11	---	4.65	4.71	---	4.68	---	4.72	4.65
MW-12	---	8.06	8.23	---	8.23	---	8.25	8.14
MW-13	---	9.26	9.51	---	9.49	---	9.49	9.34
MW-14	---	4.51	4.48	---	4.60	---	4.66	4.69
MW-15	8.41	8.34	8.21	8.18	8.15	8.12	8.08	7.99
MW-16	---	7.02	7.19	---	7.24	---	7.25	7.14
MW-17	---	5.62	5.93	---	5.96	---	5.99	5.94
MW-18	---	5.31	5.54	---	5.36	---	5.50	5.28
MW-19	---	4.15	4.33	---	4.36	---	4.36	4.28
MW-20	5.84	5.79	5.51	5.49	5.49	5.50	5.52	5.58
MW-21	7.04	6.93	6.95	6.97	6.96	7.00	7.02	7.03
MW-22	---	3.34	3.67	---	3.72	---	3.70	3.67
MW 23	6.96	6.93	7.03	7.04	7.08	7.08	7.07	7.00
MW-24	---	12.53	12.68	---	12.74	---	12.75	12.68
MW-25	13.40	13.37	16.30	15.93	15.72	---	15.37	14.93
MW-26	---	11.41	11.77	---	11.76	---	11.80	11.64
MW-27	---	11.58	11.77	---	11.82	15.54	11.85	11.81
MW-28	---	4.06	4.24	---	4.28	---	4.31	4.22
MW-29	---	3.10	3.17	---	3.15	---	3.21	3.30
MW-30	---	5.75	5.11	---	4.73	---	4.56	4.42
MW-31	---	4.55	4.44	---	4.53	---	4.64	4.70
MW-32	---	6.90	6.64	---	6.49	---	6.34	6.10
MW-33T	---	7.24	7.31	---	7.24	---	7.27	7.23

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
** MEASURED ON 10-6-90
T - UTILITY TRENCH BACKFILL MONITOR WELL
SX - WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 19: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP OF PVC CASING								
	11-20-90	11-21-90	11-22-90	11-23-90	11-26-90	11-27-90	11-28-90	11-29-90	11-30-90
MW-1	---	---	---	8.83	8.66	---	8.62	---	8.83
MW-2	7.78	---	7.77	7.76	7.71	7.69	7.68	7.68	7.69
MW-3	5.04	---	4.97	4.89	4.88	4.77	4.64	4.69	4.74
MW-4	---	---	---	7.39	7.37	---	5.58	---	5.90
MW-5	---	---	---	5.16	5.20	---	3.91	---	4.40
MW-6	9.97	---	10.01	10.03	10.02	10.00	10.08	10.19	10.28
MW-7	---	---	---	13.07	13.01	---	13.09	---	13.43
MW-8	---	---	---	6.52	6.43	---	6.84	---	7.22
MW-9	---	---	---	4.21	4.10	---	4.09	---	4.20
MW-10	---	---	---	5.51	5.22	---	5.88	---	5.65
MW-11	---	4.63	---	4.72	4.62	---	4.78	---	4.74
MW-12	---	8.16	---	8.26	8.10	---	8.36	---	5.56
MW-13	---	9.47	---	9.45	9.27	---	9.55	---	9.95
MW-14	---	4.71	---	4.68	4.70	---	4.36	---	4.48
MW-15	7.96	7.89	7.92	7.90	7.80	7.76	7.81	7.84	7.84
MW-16	---	7.06	---	7.20	7.01	---	7.23	---	7.54
MW-17	---	5.89	---	5.93	5.85	---	5.94	---	6.22
MW-18	---	5.27	---	5.45	5.18	---	5.79	---	5.55
MW-19	---	4.35	---	4.43	4.48	---	4.31	---	4.28
MW-20	5.62	---	5.67	5.68	5.68	5.66	5.59	5.53	5.45
MW-21	7.04	---	7.06	7.06	7.05	7.04	6.87	6.91	6.95
MW-22	---	---	---	3.61	3.63	---	3.20	---	3.60
MW-23	7.01	6.98	6.98	7.03	6.96	6.95	7.05	7.13	7.17
MW-24	---	12.65	---	12.73	12.62	---	12.78	---	13.14
MW-25	14.77	14.64	14.55	14.45	14.13	14.03	14.00	14.02	13.98
MW-26	---	11.61	---	11.75	11.54	---	11.99	---	12.25
MW-27	---	11.76	---	11.80	11.70	---	11.81	---	12.01
MW-28	---	---	---	4.24	4.16	---	4.06	---	4.24
MW-29	---	---	---	3.30	3.12	---	3.05	---	3.02
MW-30	---	---	---	4.29	4.14	---	3.91	---	3.87
MW-31	---	---	---	4.80	4.73	---	4.06	---	4.20
MW-32	---	---	---	5.83	5.62	---	5.51	---	5.39
MW-33T	---	---	---	7.36	7.22	---	7.43	---	---

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
** MEASURED ON 10-6-90
T - UTILITY TRENCH BACKFILL MONITOR WELL
SK - WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 19: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP OF PVC CASING						*WELL DEPTH, FT.	*WELL DEPTH, FT
	12-3-90	12-4-90	12-5-90	12-6-90	12-7-90	12-10-90	10-13-90	10-15-90
MW-1	8.31	---	8.91	---	13.12	8.65	19.46	19.52
MW-2	7.51	7.46	7.41	12.96	13.88	12.05	16.46	16.28
MW-3	4.73	4.72	4.74	11.12	10.73	9.18	13.10	12.92
MW-4	5.84	---	5.53	---	7.79	6.44	13.32	13.14
MW-5	3.28	---	3.45	---	3.70	3.92	13.42	13.29
MW-6	10.25	10.33	15.27	15.45	14.60	13.27	17.06	17.03
MW-7	13.33	---	13.54	---	14.61	13.87	19.43**	20.43
MW-8	7.22	---	7.22	---	7.20	10.25	17.20	17.19
MW-9	4.08	---	4.15	---	4.30	4.07	17.96	17.77
MW-10	5.47	---	5.44	---	5.49	5.44	20.66	20.47
MW-11	4.64	---	4.60	---	4.61	4.67	18.60	18.50
MW-12	8.31	---	8.62	---	8.61	11.58	19.30	19.14
MW-13	9.65	---	9.99	---	9.86	13.11	20.58	20.38
MW-14	4.31	---	4.50	---	4.70	4.74	13.76	13.61
MW-15	7.76	7.80	7.80	7.83	7.84	9.67	11.70	11.58
MW-16	7.32	---	7.53	---	7.50	8.20	16.74	16.58
MW-17	6.01	---	6.22	---	6.30	8.56	15.95	15.83
MW-18	5.45	---	5.36	---	5.45	5.36	17.30	17.22
MW-19	4.10	---	4.08	---	3.68	4.00	20.60	20.40
MW-20	5.52	5.43	5.30	5.17	9.26	8.94	11.46	11.33
MW-21	6.24	6.40	6.50	6.56	8.44	8.44	9.50	9.40
MW-22	3.40	---	3.65	---	3.68	3.82	15.60	15.42
MW-23	7.08	7.15	7.21	7.14	7.18	8.02	9.66	9.52
MW-24	12.97	---	SX	SX	SX	SX	19.76	19.59
MW-25	13.78	13.78	SX	SX	SX	SX	18.70	18.62
MW-26	12.00	---	SX	SX	SX	SX	24.30	24.10
MW-27	11.97	---	SX	SX	SX	SX	21.62	21.44
MW-28	4.15	---	4.22	---	4.29	4.38	18.20	18.02
MW-29	3.11	---	2.98	---	3.10	2.78	9.88	9.75
MW-30	4.36	---	4.14	---	7.46	7.38	8.70	8.58
MW-31	4.04	---	4.06	---	6.49	4.69	12.40	12.27
MW-32	5.54	---	5.48	---	8.65	8.41	10.00	---
MW-33T	7.44	---	7.34	---	7.28	7.14	---	11.54

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
** MEASURED ON 10-6-90
T - UTILITY TRENCH BACKFILL MONITOR WELL
SX - WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 20: SUMMARY OF WATER LEVEL AND WELL DEPTH DATA COLLECTED ON DEEP SANDSTONE WELLS
SEQUOYAH FUELS CORPORATION

WELL NO.	WATER LEVEL, FEET FROM TOP PVC CASING							
	10-7-90	10-13-90	10-15-90	10-17-90	10-19-90	10-22-90	10-24-90	10-26-90
MW-1A	NOT DRILLED	---	--	---	---	---	---	---
MW-2A	15.47	7.52	7.52	7.45	7.67	7.77	7.84	7.91
MW-3A	---	7.64	7.60	7.49	7.88	7.86	8.00	7.97
MW-4A	---	6.50	6.45	6.42	6.63	6.72	6.77	6.91
MW-5A	6.53	7.00	7.54	7.52	7.69	7.75	7.79	7.85
MW-6A	7.98	11.38	11.28	11.21	11.35	11.39	11.42	11.51
MW-7A	11.96	13.50	13.52	13.39	13.59	13.66	13.74	15.64
MW-8A	13.88	7.30	6.01	5.51	5.74	5.86	5.98	6.26
MW-9A	---	9.22	9.09	9.02	9.23	9.22	9.26	9.35
MW-10A	9.36	8.20	8.24	8.24	7.64	8.61	8.68	8.81
MW-11A	7.29	10.64	9.51	9.37	9.58	9.66	9.75	9.67
MW-12A	---	8.30	8.27	8.21	8.34	8.48	8.50	8.50
MW-13A	---	9.00	8.91	8.81	8.98	9.08	9.20	9.12
MW-14A	---	7.20	5.93	5.88	6.00	6.10	6.24	6.12
MW-15A	NOT DRILLED	---	---	---	---	---	---	---
MW-16A	---	14.20	7.36	7.22	12.68	7.53	7.47	7.54
MW-17A	---	6.36	6.26	6.13	6.42	6.43	6.46	6.46
MW-18A	---	11.42	9.85	9.65	9.94	9.90	9.95	9.99
MW-19A	---	11.34	11.14	11.03	11.43	11.32	11.32	11.28
MW-20A	9.03	5.66	5.74	5.6[illegible]	5.82	5.96	6.11	6.13
MW-21A	---	6.86	6.72	6.63	6.76	6.79	6.82	6.92
MW-22A	---	8.38	7.94	7.81	8.30	8.22	8.31	8.28
MW-23A	NOT DRILLED	---	---	---	---	---	---	---
MW-24A	TO BE DRILLED LATER, SX WELL		---	---	---	---	---	---
MW-25A	TO BE DRILLED LATER, SX WELL		---	---	---	---	---	---
MW-26A	TO BE DRILLED LATER, SX WELL		---	---	---	---	---	---
MW-27A	TO BE DRILLED LATER, SX WELL		---	---	---	---	---	---
MW-28A	---	2.23	9.93	8.77	15.62	9.08	8.92	9.11
MW-29A	NOT DRILLED	---	---	---	---	---	---	---
MW-30A	---	0.42	FLOWING	FLOWING	FLOWING	FLOWING	FLOWING	FLOWING
MW-31A	---	1.02	0.50	0.50	0.60	0.65	0.71	0.72
MW-32A	3.55	1.42	0.98	0.64	0.80	0.70	0.74	0.82
MW-33A	---	---	---	---	---	---	---	---

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
SX-WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 20: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP PVC CASING							
	10-29-90	10-30-90	10-31-90	11-2-90	11-5-90	11-6-90	11-7-90	11-8-90	11-9-90
MW-1A	---	---	---	---	---	---	---	---	---
MW-2A	8.09	---	8.09	8.11	8.14	---	8.33	---	8.25
MW-3A	6.16	---	8.11	8.07	8.03	---	8.31	---	8.12
MW-4A	7.06	---	7.08	7.08	7.11	---	7.27	---	7.19
MW-5A	7.98	---	7.98	7.95	8.01	---	8.14	---	8.10
MW-6A	11.59	---	11.57	11.54	11.52	---	11.62	---	11.57
MW-7A	13.85	---	13.80	13.76	13.68	---	13.98	---	13.79
MW-8A	6.42	---	6.39	6.37	6.42	---	6.46	---	6.17
MW-9A	9.47	---	9.45	9.42	9.39	---	9.58	---	9.48
MW-10A	8.94	---	8.90	8.85	8.80	---	9.11	---	8.97
MW-11A	9.81	---	9.79	9.71	9.68	---	10.02	---	9.79
MW-12A	8.65	---	8.68	8.62	8.61	---	8.84	---	8.76
MW-13A	9.29	---	9.27	9.20	9.14	---	9.51	---	9.23
MW-14A	6.28	---	6.31	6.26	6.15	---	6.55	---	6.33
MW-15A	---	---	---	---	---	---	---	---	---
MW-16A	7.65	---	7.58	7.51	7.49	---	7.63	---	7.58
MW-17A	6.60	---	6.56	6.49	6.52	---	6.69	---	6.54
MW-18A	10.09	---	10.07	10.00	---	---	10.22	---	10.10
MW-19A	11.42	---	11.33	11.26	11.20	---	11.50	---	11.39
MW-20A	6.36	---	6.36	6.38	6.42	---	6.68	---	6.56
MW-21A	6.94	---	7.02	7.08	7.05	---	6.97	---	6.95
MW-22A	8.50	---	8.43	8.38	8.32	---	8.68	---	8.44
MW-23A	---	---	---	---	---	---	---	---	---
MW-24A	---	---	---	---	---	---	---	---	13.20
MW-25A	---	---	---	---	---	---	---	---	13.10
MW-26A	---	---	---	---	---	---	---	---	11.88
MW-27A	---	---	---	---	---	---	---	---	11.58
MW-28A	9.14	---	8.94	9.01	8.95	---	9.11	---	9.04
MW-29A	---	---	---	---	---	---	---	---	---
MW-30A	FLOWING	---	FLOWING	FLOWING	FLOWING	---	FLOWING	---	FLOWING
MW-31A	0.90	---	0.83	0.77	0.77	---	1.01	---	0.93
MW-32A	0.94	---	0.80	0.86	0.83	---	1.01	---	0.93
MW-33A	---	---	---	---	---	---	---	---	---

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
SX-WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 20: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP PVC CASING								
	11-12-90	11-13-90	11-14-90	11-15-90	11-16-90	11-19-90	11-20-90	11-21-90	11-22-90
MW-1A	---	---	---	---	---	---	---	---	---
MW-2A	8.47	---	8.45	---	8.48	8.41	---	---	---
MW-3A	8.40	---	8.36	---	8.38	8.24	---	---	---
MW-4A	7.39	---	7.33	---	7.40	7.34	---	---	---
MW-5A	8.99	---	8.31	---	8.32	8.29	---	---	---
MW-6A	11.75	---	11.75	---	11.78	11.72	---	---	---
MW-7A	14.12	---	14.07	---	14.11	13.96	---	---	---
MW-8A	6.39	---	6.40	---	6.50	6.38	---	---	---
MW-9A	9.74	---	9.72	---	9.78	9.70	---	---	---
MW-10A	9.19	---	9.18	---	9.21	8.65	---	---	---
MW-11A	10.18	---	10.13	---	10.16	9.95	---	9.90	---
MW-12A	9.06	---	9.01	---	9.06	8.85	---	8.80	---
MW-13A	9.66	---	9.61	---	9.65	9.43	---	9.41	---
MW-14A	6.63	---	6.62	---	6.68	6.49	---	6.46	---
MW-15A	---	---	---	---	---	---	---	---	---
MW-16A	7.84	---	7.82	---	7.80	7.65	---	7.64	---
MW-17A	6.94	---	6.82	---	6.85	6.70	---	6.89	---
MW-18A	10.37	---	10.31	---	10.39	10.53	---	10.42	---
MW-19A	11.63	---	11.58	---	11.62	11.46	---	9.90	---
MW-20A	6.86	---	6.85	---	6.92	6.83	---	---	---
MW-21A	7.05	---	7.15	---	7.20	7.18	---	---	---
MW-22A	8.75	---	8.71	---	8.76	8.58	---	---	---
MW-23A	---	---	---	---	---	---	---	---	---
MW-24A	13.54	---	13.48	---	13.53	13.28	---	13.22	---
MW-25A	13.37	---	13.55	---	13.40	13.16	---	13.10	---
MW-26A	12.53	---	13.74	---	12.30	12.05	---	12.01	---
MW-27A	12.00	---	11.93	---	11.98	11.72	---	11.68	---
MW-28A	9.09	---	9.23	---	9.26	9.36	---	---	---
MW-29A	---	---	---	---	---	---	---	---	---
MW-30A	FLOWING	---	---	---	FULL	FULL	---	---	---
MW-31A	1.24	---	1.24	---	1.28	1.17	---	---	---
MW-32A	1.17	---	1.16	---	1.21	1.12	---	---	---
MW-33A	---	---	---	---	---	---	---	---	---

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
SX-WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 20: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP PVC CASING								
	11-23-90	11-26-90	11-27-90	11-28-90	11-29-90	11-30-90	12-3-90	12-4-90	12-5-90
MW-1A	---	---	---	---	---	---	---	---	---
MW-2A	8.54	8.40	---	8.76	---	8.80	8.51	---	8.56
MW-3A	8.63	8.26	---	8.75	---	8.78	8.59	---	8.69
MW-4A	7.47	7.34	---	7.64	---	7.66	7.36	---	7.43
MW-5A	8.40	8.31	---	8.46	---	8.44	8.13	---	8.24
MW-6A	11.77	11.65	---	12.07	---	12.04	11.76	---	11.96
MW-7A	14.08	13.84	---	14.44	---	14.47	14.22	---	14.39
MW-8A	6.56	6.29	---	7.44	---	7.43	7.40	---	7.30
MW-9A	10.13	9.796	---	10.16	---	10.48	10.14	---	10.39
MW-10A	9.72	9.18	---	---	---	---	PURGED	---	10.34
MW-11A	10.16	9.83	---	10.47	---	11.25	10.46	---	11.05
MW-12A	8.98	8.71	---	9.31	---	9.41	9.60	---	9.42
MW-13A	9.58	9.32	---	9.[illegible]	---	10.01	9.78	---	10.04
MW-14A	6.64	6.36	---	6.96	---	7.13	6.93	---	7.02
MW-15A	---	---	---	---	---	---	---	---	---
MW-16A	8.85	7.72	---	8.10	---	8.31	9.46	---	17.98
MW-17A	7.06	6.66	---	7.10	---	17.28	8.26	---	7.30
MW-18A	10.68	10.32	---	10.73	---	11.24	10.74	---	13.06
MW-19A	11.72	11.49	---	12.21	---	12.29	12.06	---	12.36
MW-20A	6.93	6.76	---	7.28	---	7.34	8.51	---	7.90
MW-21A	7.15	7.05	---	7.46	---	7.44	7.22	---	7.39
MW-22A	9.09	8.61	---	9.20	---	9.23	9.08	---	9.47
MW-23A	---	---	---	---	---	---	---	---	---
MW-24A	13.40	13.12	---	13.72	---	19.43	13.69	---	SX
MW-25A	13.29	13.02	---	13.57	---	13.65	13.52	---	SX
MW-26A	12.18	11.90	---	12.4[illegible]	---	19.18	12.46	---	SX
MW-27A	11.87	11.59	---	12.19	---	12.34	12.15	---	SX
MW-28A	15.56	10.30	---	9.53	---	9.95	9.94	---	21.91
MW-29A	---	---	---	---	---	---	---	---	---
MW-30A	FULL	FULL	---	FULL	---	FULL	FULL	---	FULL
MW-31A	1.32	1.12	---	---	---	2.40	1.81	---	2.00
MW-32A	1.92	1.50	---	1.71	---	1.96	1.61	---	1.69
MW-33A	---	---	---	---	---	---	---	---	---

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
SX-WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 20: CONTINUED

WELL NO.	WATER LEVEL, FEET FROM TOP PVC CASING			*WELL DEPTH, FT.	*WELL DEPTH, FT.	*WELL DEPTH, FT.
	12-6-90	12-7-90	12-10-90	10-15-90	10-14-90	11-17-90
MW-1A	---	---	---	---	---	
MW-2A	---	8.79	8.49	33.44	33.25	
MW-3A	---	8.82	8.68	36.22	36.03	
MW-4A	---	7.44	7.38	35.08	34.89	
MW-5A	---	8.14	8.08	35.45	35.27	
MW-6A	---	12.02	11.87	35.78	31.99	
MW-7A	---	14.44	14.41	37.84	37.65	
MW-8A	---	7.45	7.34	20.96	30.78	
MW-9A	---	10.55	10.23	32.60	32.43	
MW-10A	---	10.54	10.01	7.00	36.81	
MW-11A	---	10.88	10.70	7.20	36.94	
MW-12A	---	9.44	9.34	38.28	38.03	
MW-13A	---	10.05	10.02	29.86	29.71	
MW-14A	---	7.11	7.20	31.74	31.53	
MW-15A	---	---	---	---	---	
MW-16A	---	8.57	8.31	30.72	30.53	
MW-17A	---	7.33	7.24	31.74	31.52	
MW-18A	---	12.70	11.50	38.56	38.37	
MW-19A	---	12.44	4.71	34.50	34.28	
MW-20A	---	7.81	7.30	33.20	33.02	
MW-21A	---	7.44	7.26	33.66	33.59	
MW-22A	---	9.78	9.22	34.40	34.20	
MW-23A	---	---	---	---	---	
MW-24A	SX	SX	SX	---	---	38.25
MW-25A	SX	SX	SX	---	---	35.06
MW-26A	SX	SX	SX	---	---	36.51
MW-27A	SX	SX	SX	---	---	35.85
MW-28A	---	12.29	9.92	31.54	31.33	
MW-29A	---	---	---	---	---	
MW-30A	---	FULL	FULL	21.66	21.51	
MW-31A	---	3.66	2.24	29.10	28.95	
MW-32A	---	2.35	1.82	29.82	29.65	
MW-33A	---	---	---	---	---	

NOTE:
--- WATER LEVELS NOT MEASURED
* MEASURED FROM TOP OF PVC CASING, FEET
SX-WELL LOCATED IN SX BUILDING - NO DATA TAKEN AFTER 12-4-90

TABLE 21: PRELIMINARY GROUNDWATER QUALITY DATA FROM SHALLOW SHALE WELLS
SEQUOYAH FUELS CORPORATION

WELL NUMBER	DATE SAMPLED	SPEC COND UMHOS/CM	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
MW-1	9/28/90	642	1.1	121.0	2.3	7.9
	10/2/90	607	2.2	29.0	1.8	7.4
	10/8/90	648	1.5	12.9	1.4	7.5
	12/7/90	667	1.9	7.9	1.7	7.6
MW-2	9/28/90	720	0.2	60.0	2.8	8.1
	10/2/90	738	0.6	7.4	0.7	7.2
	10/8/90	728	<0.1	<1.0	0.5	6.9
	12/8/90	589	0.5	<5.0	0.4	6.7
MW-3	9/28/90	954	0.9	19.9	1.8	8.1
	10/2/90	1308	1.0	16.9	1.5	7.3
	10/8/90	1122	0.3	1.4	1.1	7.4
	12/8/90	1315	0.4	5.3	0.9	7.0
MW-4	9/28/90	968	0.5	23.7	2.0	8.0
	10/2/90	902	0.4	14.0	1.0	7.4
	10/8/90	985	<0.1	5.8	1.9	7.5
	12/8/90	928	0.5	5.6	1.5	7.3
MW-5	10/2/90	462	1.4	27.4	1.1	8.0
	10/8/90	432	0.2	25.4	QNS	7.6
	12/8/90	162	0.3	<5.0	0.3	6.0
MW-6	10/2/90	592	0.0	6.7	1.6	7.8
	10/8/90	602	<0.1	<1.0	1.2	7.2
	12/5/90	462	0.2	<5.0	1.1	7.3
MW-7	10/2/90	594	0.6	4.5	1.2	7.8
	10/8/90	610	0.5	3.5	0.8	7.3
	12/5/90	462	0.2	<5.0	1.1	7.3
	12/8/90	562	2.2	<5.0	0.7	6.9
MW-8	10/2/90	740	23.0	4.0	1.0	7.2
	10/7/90	775	24.0	6.5	3.0	7.3
	12/8/90	970	40.2	<5.0	0.7	7.4
MW-9	10/2/90	564	1.4	5.5	2.0	6.8
	10/8/90	476	0.2	39.2	1.2	6.5
	12/7/90	528	3.3	<5.0	1.3	6.8
MW-10	10/2/90	1035	78.0	30,500	5.2	5.5
	10/4/90	1010	84.0	22,951	6.0	5.3
	10/8/90	1050	44.0	17	6.7	5.3
	10/10/90	1049	93.0	30,000	7.2	5.2
	12/8/90	1003	91.6	21,170	7.1	5.2
MW-11	10/2/90	760	1.4	21.6	2.4	6.6
	10/9/90	533	0.1	10.5	1.9	6.5
	12/8/90	453	<0.1	12.0	3.3	6.3
MW-12	10/2/90	968	4.6	15,990	3.2	7.3
	10/9/90	636	0.8	4995	2.2	7.8
	12/8/90	864	15.7	4403	2.1	7.2
MW-13	10/2/90	487	3.8	29.0	1.3	7.3
	10/9/90	520	6.4	28.2	1.3	7.3
	12/8/90	778	52.2	24.0	1.5	6.4
MW-14	10/2/90	4100	280	10,948	11.2	6.2
	10/7/90	5010	208	40,000	12.5	6.3
	12/8/90	3700	190	34,560	10.0	7.4
MW-15	10/2/90	DRY	DRY	DRY	DRY	DRY
	10/7/90	1200	45.8	60,000	1.4	7.7
	12/8/90	4280	285	12	1.1	7.2

TABLE 21: CONTINUED

WELL NUMBER	DATE SAMPLED	SPEC COND UMHOS/CM	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
MW-16	10/2/90	1820	10.6	7.4	0.8	7.2
	10/7/90	3080	24.5	51.9	0.9	7.0
	12/8/90	761	7.0	7.8	1.3	7.5
MW-17	10/2/90	1068	1.2	21.8	1.4	7.9
	10/9/90	1048	0.9	15.5	1.0	7.9
	12/6/90	1039	6.7	14.0	1.5	6.7
MW-18	10/2/90	892	33.0	18,118	3.6	6.4
	10/4/90	1010	84.0	22,951	6.0	5.3
	10/9/90	880	12.6	10,468	3.2	7.3
	12/8/90	721	16.6	2534	2.5	6.2
MW-19	10/2/90	558	2.0	12.8	0.4	6.6
	10/9/90	592	0.7	3.8	0.7	6.8
	12/8/90	450	1.1	<5.0	0.6	7.0
MW-20	10/2/90	DRY	DRY	DRY	DRY	DRY
	10/7/90	759	0.1	6.2	1.9	7.7
	10/8/90	753	0.3	16.3	2.5	8.5
	12/7/90	700	0.5	<5.0	0.6	6.9
MW-21	10/2/90	DRY	DRY	DRY	DRY	DRY
	10/7/90	1105.0	0.1	41.1	1.2	7.8
	12/8/90	950	0.4	24.0	2.0	7.1
MW-22	10/2/90	467	1.2	9.6	1.7	7.2
	10/9/90	484	0.2	13.5	1.5	7.8
	12/8/90	515	0.6	20.0	1.2	7.1
MW-23	10/2/90	DRY	DRY	DRY	DRY	DRY
	10/9/90	818	0.9	7.3	1.6	7.6
	12/8/90	838	1.0	18	2.2	7.5
MW-24	10/7/90	7820	1055	20,000	0.6	7.6
	12/8/90	6880	1168	709	1.1	6.6
MW-25	10/8/90	QNS	10,100	10,035	QNS	6.3
	12/8/90	19,200	4464	35,840	1.5	6.0
MW-26	10/7/90	616	0.5	7.0	1.3	7.2
	12/8/90	737	0.9	14.0	1.0	7.1
MW-27	10/7/90	651	0.3	<5.0	1.0	7.4
	12/8/90	815	6.12	34	1.2	6.9
MW-28	10/9/90	713	0.1	5.9	1.4	7.3
	12/8/90	750	0.1	<5.0	1.1	6.6
MW-29	10/7/90	548	0.1	4.7	0.7	6.8
	12/7/90	537	1.5	<5.0	0.7	7.1
MW-30	10/8/90	640	0.1	2.6	1.2	7.6
	10/18/90	1084	0.4	14.6	0.5	7.9
	12/7/90	1070	0.2	<5.0	0.6	7.1
MW-31	10/8/90	640	0.1	2.6	1.2	7.6
	12/7/90	409	0.5	<5.0	0.5	7.0
MW-32	10/18/90	839	0.5	19.2	1.4	7.8
	12/7/90	637	0.3	<5.0	1.1	7.5

TABLE 21: CONTINUED

WELL NUMBER	DATE SAMPLED	SPEC COND UMHOS/CM	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
MW-33T	10/17/90	291	14.0	11,397	5.6	6.1
	10/23/90	259	8.1	90,708	0.3	5.9
	10/26/90 (AM)	352	0.6	12,749	2.6	6.3
	10/26/90 (PM)	278	1.3	5,342	2.0	6.0
	10/27/90	344	1.6	4,252	2.5	6.6
MW-34T	10/31/90	536	15.0	2532	18.2	7.2
RW-1	11/16/90	NA	3.2	23,137	2.1	6.4

NOTES:
QNS - QUANTITY NOT SUFFICIENT TO ANALYZE
NA - NOT ANALYZED

TABLE 22: PRELIMINARY GROUNDWATER QUALITY DATA FROM SANDSTONE WELLS
SEQUOYAH FUELS CORPORATION

WELL NUMBER	DATE SAMPLED	SPEC COND UMHOS/CM	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
MW-1A	NOT DRILLED					
MW-2A	10/8/90	707	1.0	10.8	1.2	7.9
	12/8/90	802	1.5	<5.0	0.7	7.4
MW-3A	10/11/90	339	1.7	12.6	2.4	8.9
	12/8/90	447	3.2	<5.0	0.6	7.0
MW-4A	10/8/90	741	1.6	37.5	2.6	7.6
	12/8/90	652	1.4	<5.0	0.8	7.1
MW-5A	10/8/90	501	2.0	2.2	0.6	7.6
	12/8/90	432	2.1	<5.0	0.7	6.9
MW-6A	10/8/90	503	3.8	0.5	0.9	7.8
	10/9/90	476	3.5	<1.0	0.6	7.4
	12/5/90	514	3.8	<5.0	0.8	7.3
MW-7A	10/8/90	517	3.0	<1.0	0.7	7.8
	12/8/90	499	1.5	<5.0	0.5	7.1
MW-8A	10/9/90	972	1.8	5.7	1.1	7.8
	12/8/90	693	3.1	<5.0	0.7	7.6
MW-9A	10/8/90	525	1.8	51.7	2.3	7.9
	12/7/90	466	1.5	<5.0	1.0	7.1
MW-10A	10/8/90	10,900	1.2	18.3	2.4	12.7
	10/10/90	6220	2.0	15.4	2.8	12.3
	11/16/90	11,300	1.2	33.0	9.8	12.7
	11/20/90	6010	2.2	<5.0	2.1	12.4
	12/5/90	418	2.7	<5.0	1.1	8.6
	12/8/90	874	2.6	<0.01 g/l	1.1	11.6
	12/8/90	921	2.6	5.3	1.4	11.3
MW-11A	10/11/90	3010	5.7	41.1	3.0	7.4
	12/10/90	2440	4.9	<5.0	0.4	6.5
MW-12A	10/11/90	28,900	15.2	15,991	1.7	6.2
	11/16/90	---	62.6	8619	0.8	6.2
	12/5/90	20,600	93.1	19,179	0.4	6.5
MW-13A	10/11/90	1950	3.7	153.2	2.3	8.4
	12/05/90	3720	2.8	22.0	1.1	6.7
MW-14A	10/11/90	16,000	23.0	28.8	2.1	7.3
	11/16/90	---	21.9	90.0	1.2	7.8
	12/10/90	9450	51.1	18.0	0.8	7.0
MW-15A	NOT DRILLED					
MW-16A	10/11/90	654	2.3	150.6	4.8	9.8
	12/5/90	6620	0.9	<5.0	0.6	7.1
MW-17A	10/11/90	1580	1.2	17.6	4.5	11.8
	11/20/90	1327	0.1	59.0	4.5	8.5
	12/5/90	1806	0.7	6.8	0.8	7.4
MW-18A	10/11/90	940	1.8	71.7	2.6	7.6
	11/16/90	---	0.9	158.0	1.1	7.6
	12/5/90	486	3.2	15.0	0.8	7.2
MW-19A	10/11/90	256	0.7	16.4	2.3	9.5
	12/5/90	379	1.3	<5.0	1.0	8.4
	12/8/90	462	1.0	<0.01 g/l	1.0	10.5
	12/8/90	457	0.8	<5.0	1.4	10.4

TABLE 22: CONTINUED

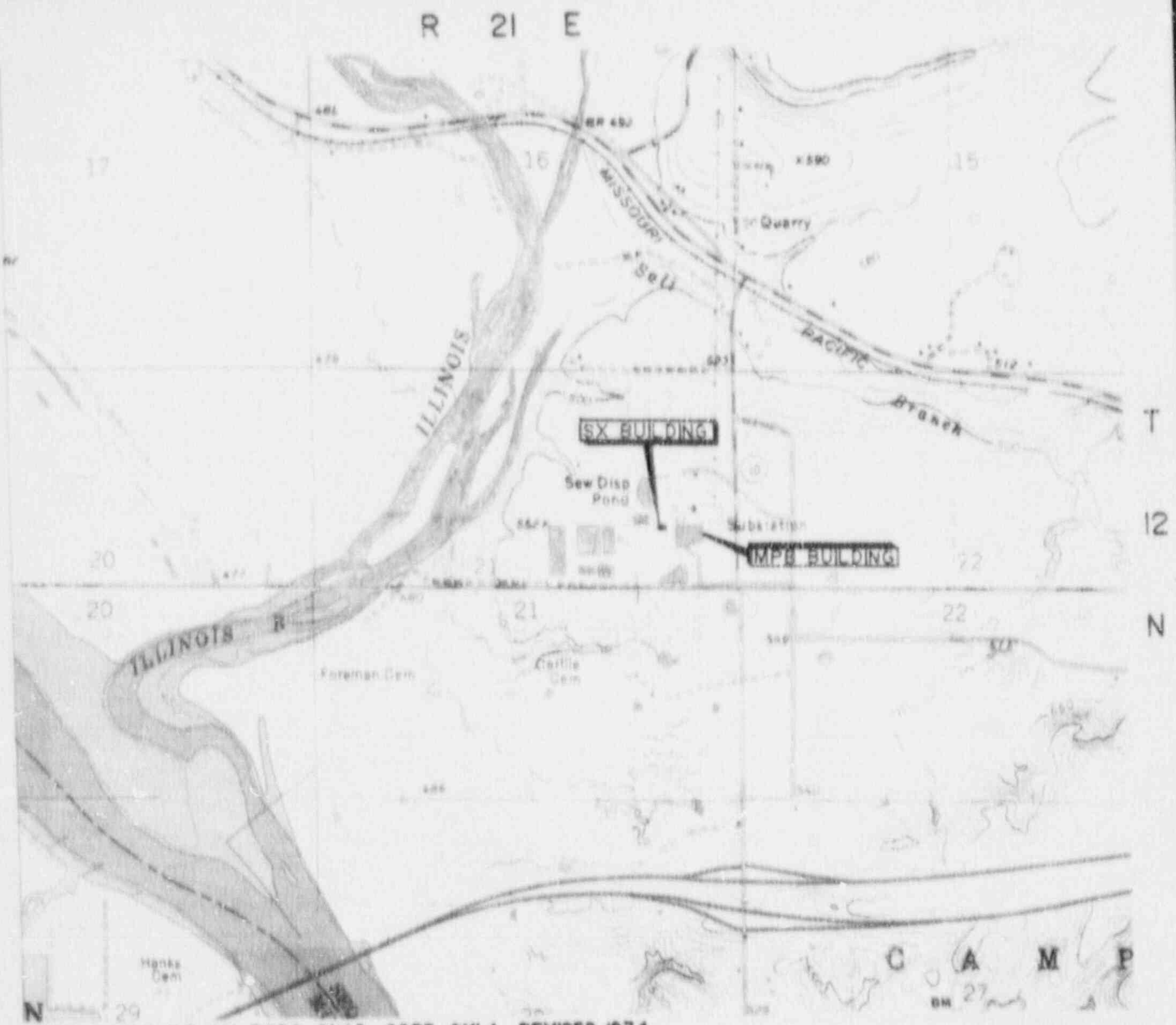
WELL NUMBER	DATE SAMPLED	SPEC COND UMHOS/CM	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
MW-20A	10/15/90	806	0.2	9.7	0.7	8.1
	12/8/90	769	1.7	<5.0	0.8	7.3
MW-21A	10/9/90	1333	0.4	1.4	1.0	8.2
	12/8/90	769	1.5	7.3	2.0	7.6
MW-22A	10/9/90	1021	5.5	2.6	0.9	11.5
	11/20/90	388	8.4	<5.0	0.9	8.4
	12/5/90	386	6.0	<5.0	0.6	7.6
MW-23A	NOT DRILLED					
MW-24A	12/8/90	14,560	60.6	107	1.0	6.3
MW-25A	12/8/90	12,240	325	2242	2.8	6.8
MW-26A	12/8/90	16,480	32.1	13	1.5	6.3
MW-27A	12/8/90	14,600	63.1	12	0.7	6.4
MW-28A	10/11/90	413	1.9	97.0	5.6	8.8
	12/5/90	580	1.9	<5.0	1.3	7.4
MW-29A	NOT DRILLED					
MW-30A	10/11/90	352	2.2	4.9	1.5	7.3
	10/15/90	345	2.1	<1.0	0.9	7.1
	12/7/90	342	2.7	<5.0	0.8	7.9
MW-31A	10/8/90	451	0.2	11.7	1.8	7.7
	12/7/90	470	1.0	<5.0	0.7	7.7
MW-32A	10/11/90	433	1.9	9.3	1.4	8.4
	12/7/90	365	2.1	<5.0	0.9	7.3
RW-1	11/16/90	...	3.19	.02	2.14	6.4

TABLE 23: PRELIMINARY WATER ANALYTICAL DATA FROM OPEN BOREHOLES
SEQUOYAH FUELS CORPORATION

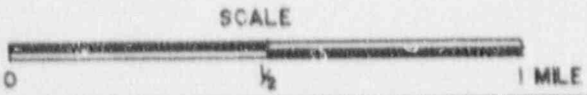
SAMPLE LOCATION	DATE SAMPLED	TIME SAMPLED	NITRATE MG/L	URANIUM UG/L	FLUORIDE MG/L	PH STD UNITS
BH 1	9/24/90	14:20	0.6	125.1	3.3	7.6
	9/25/90	18:30	0.8	234*	4.3	7.3
BH 1A	9/24/90	15:27	1.0	636	8.5	7.3
	9/25/90	18:32	0.8	121*	4.3	7.5
BH 1B	9/24/90	15:27	0.9	514	4.9	7.6
	9/25/90	18:34	0.6	176*	1.9	7.4
BH 2	9/25/90		0.7	94.6	1.7	7.4
	9/25/90	17:30	5.8	183*	1.6	6.9
BH 3	9/24/90	19:15	70	66650	18.6	5.8
	9/25/90	10:05	26	4131	1.8	6.3
	9/25/90	17:15	16.2	5993*	2.9	6.2
BH 5	9/26/90	08:35	4.8	1.6	0.5	6.3

* RESAMPLE

FIGURES



AFTER U.S.G.S. 7.5 MIN. TOPO. QUAD., GORE, OKLA., REVISED 1974



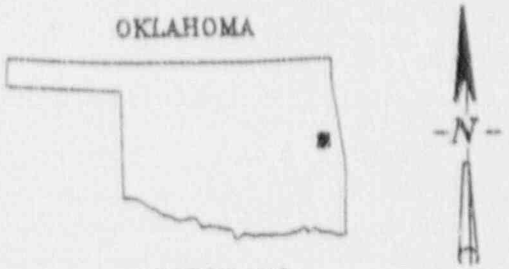


Figure Title: SITE LOCATION AND TOPOGRAPHIC MAP

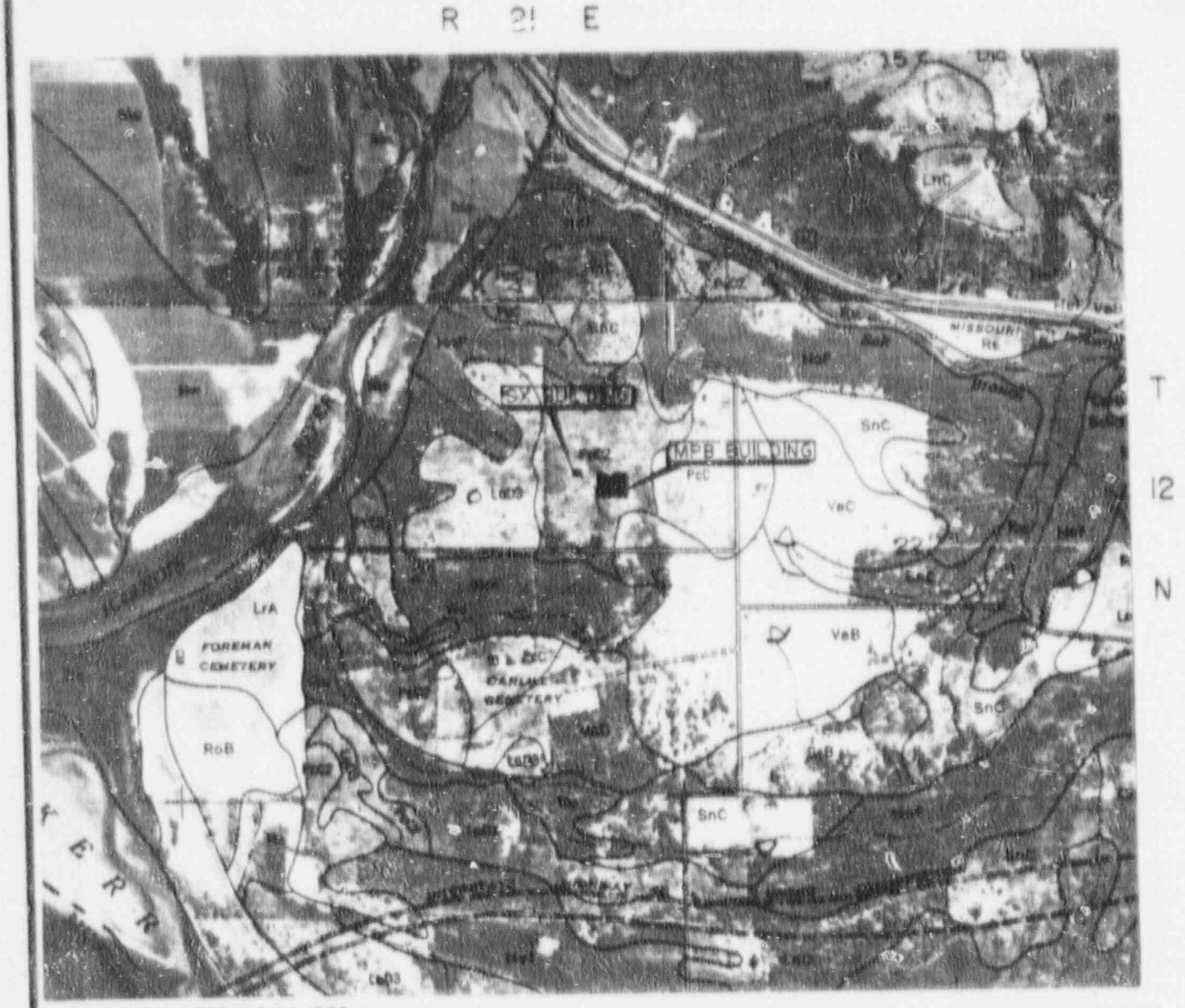
Client: SEQUOYAH FUELS CORPORATION

Document Title: MPB INVESTIGATION MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: AS SHOWN
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 2



AFTER E.J. ABERNATHY, 1965

LEGEND:

PcC2	Pickwick loam, 2-5% slopes, eroded
PcC	Pickwick loam, 3-5% slopes
LoD3	Linker & Stigler soils, 2-8% slopes severly eroded
HeF	Hector-Linker-Enders complex, 5-40% slopes
VaB	Vian silt loam, 3-5% slopes
VaC	Vian silt loam, 3-5% slopes

SCALE

0 ½ 1 MILE

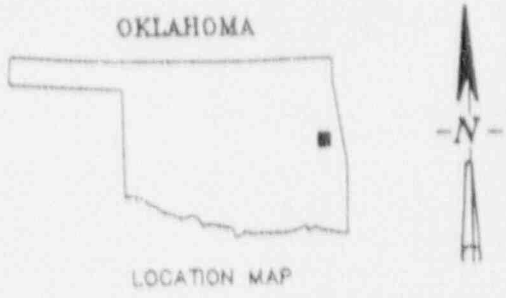


Figure Title: AREA SOILS MAP	Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
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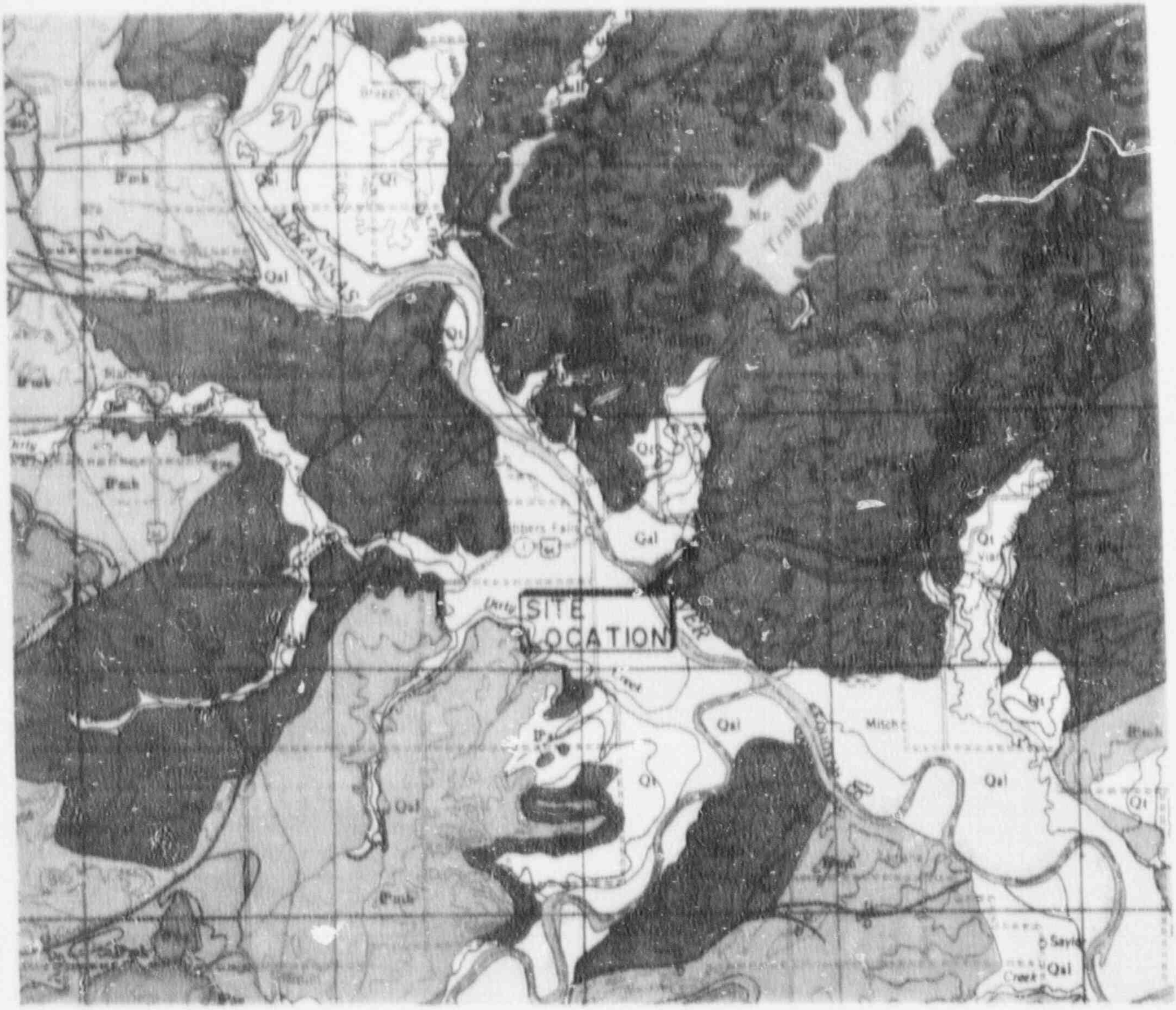
(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
	CHECKED BY: B.J.S.
SCALE: AS SHOWN	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 3



AFTER M.V. MARCHER, 1969

LOCATION MAP

SCALE

0 5 10 MILES

Figure Title: GEOLOGICAL MAP
SEE FIGURE 5 FOR EXPLANATION OF MAP

Client: SEQUOYAH FUELS CORPORATION

Document Title: MPB INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90

SCALE: AS SHOWN

PROJECT NO: 90067

PREPARED BY: W.E.P.

CHECKED BY: B.J.S.

DRAFTED BY: S.A.R.

FIGURE NO.: 4

EXPLANATION

QUATERNARY

Qal

ALLUVIUM

Gravel, sand, silt, and clay. Yields large amounts of water of good quality along the Arkansas River and probably will yield moderate to large amounts along the Canadian River.

Qt

TERRACE DEPOSITS

Gravel, sand, silt, and clay. Yield moderate to large amounts of water of good quality locally along the Arkansas River; smaller amounts elsewhere.

PENNSYLVANIAN

[illegible]

BOGGY FORMATION

Shale, sandstone, and coal; includes Bluejacket Sandstone Member at base. Yields limited amounts of water of poor quality.

IPsv | IPmh

SAVANNA McALESTER, AND HARTSHORNE FORMATIONS

IPsv *Savanna Formation*, shale, sandstone, and coal. Yields limited amounts of water of poor quality.

IPmh *McAlester* and *Hartshorne Formations* (undifferentiated), shale, sandstone, and coal. Yield limited amounts of water of poor quality.

IPsm *Savanna* and *McAlester Formations* (undifferentiated; T. 15 N., Rs. 18, 19 E.), shale and minor sandstones. Yield limited amounts of water of poor quality.

AFTER M.V. MARCHER, 1969

Figure Title: REGIONAL STRATIGRAPHIC COLUMN AND EXPLANATION FOR FIGURE 4 (CONT.)

Client: SEQUOYAH FUELS CORPORATION

Document Title: MPB INVESTIGATION MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: N/A
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 5

PENNSYLVANIAN

▨

ATOKA, BLOYD, AND HALE FORMATIONS

IPu Undifferentiated.

IPa *Atoka Formation*, shale and sandstone. Yields limited amounts of water of poor quality.

IPbh *Bloyd Formation*, shale and limestone; and *Hale Formation*, limestone and sandstone. Probably will yield only small amounts of water of fair to poor quality.

MISSISSIPPIAN

▨

MISSISSIPPIAN ROCKS ABOVE CHATTANOOGA SHALE

Mu Undifferentiated.

Mp *Pitkin Formation*, limestone; *Fayetteville Formation*, shale and limestone; *Hindsville Formation*, limestone and shale; and *Moorefield Formation*, limestone.

Mkr *Keokuk Formation*, chert; *Reeds Spring Formation*, chert and limestone; and *St. Joe "Group,"* limestone and marlstone.

Yield small to moderate amounts of water of fair to good quality.

MISSISSIPPIAN, DEVONIAN
SILURIAN, AND ORDOVICIAN

▨

MISSISSIPPIAN, DEVONIAN, SILURIAN, AND ORDOVICIAN ROCKS, UNDIFFERENTIATED

Mississippian and Devonian. *Chattanooga Shale*, shale.

Devonian. *Sallisaw Formation*, limestone, sandstone, and chert; and *Frisco Formation*, limestone.

Silurian. *Quarry Mountain Formation*, limestone; *Tenkiller Formation*, limestone; and *Blackgum Formation*, limestone and dolomite.

Ordovician. *Sylvan Shale*, shale; *Fernvale Limestone*, limestone; *Fite Limestone*, limestone; *Tyner Formation*, shale, sandstone, dolomite, and limestone; *Burgen Sandstone*, sandstone and minor shales and limestones; and *Cotter Dolomite*, dolomite.

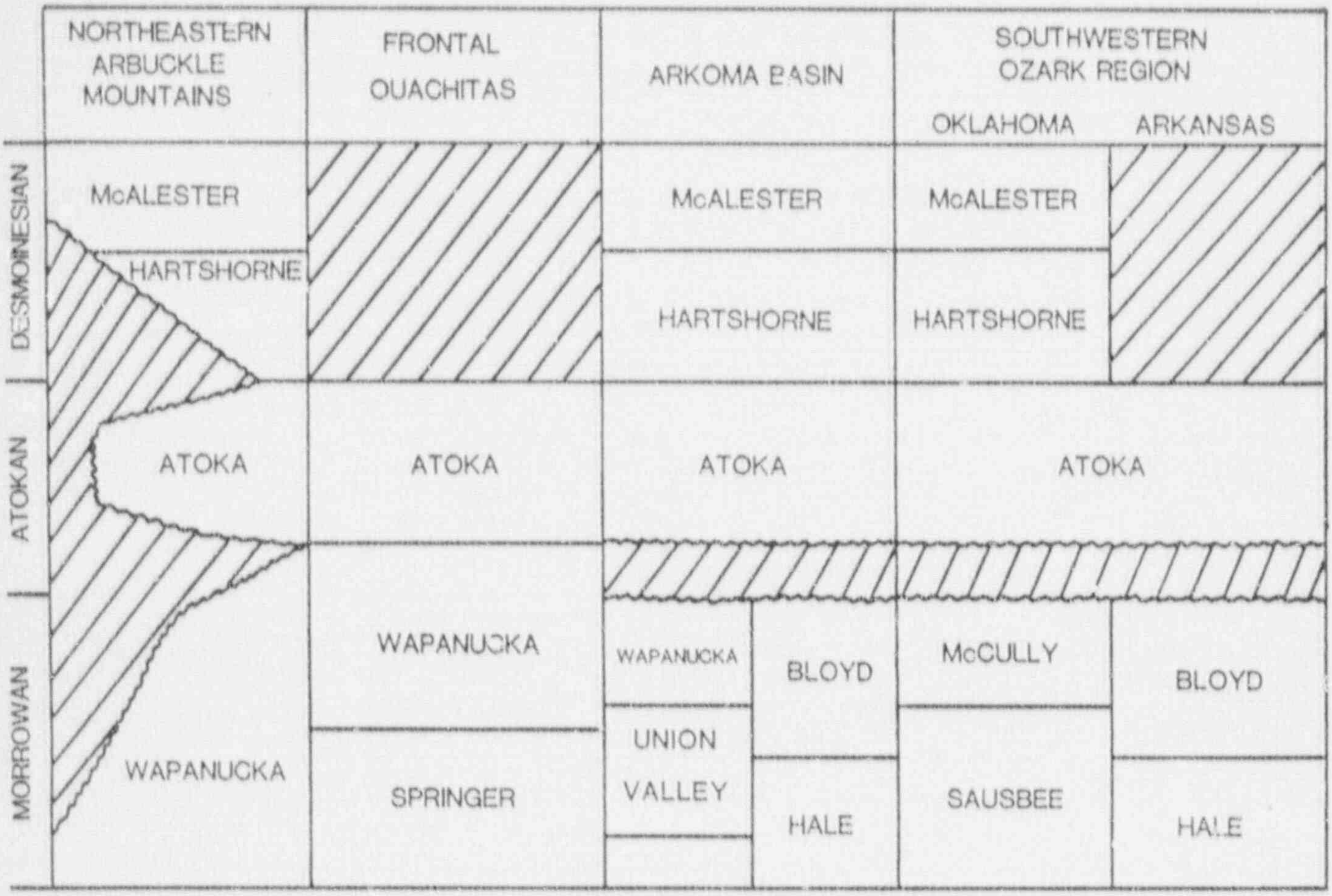
Limestone, dolomite, and sandstone units may yield small to moderate amounts of water of fair to good quality; shale units probably will yield only limited amounts of water of poor to fair quality.

AFTER M.V. MARCHER, 1969

Figure Title:	REGIONAL STRATIGRAPHIC COLUMN AND EXPLANATION FOR FIGURE 4	Client:	SEQUOYAH FUELS CORPORATION
Document Title:	MPB INVESTIGATION MILESTONE REPORT	Location:	GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
	CHECKED BY: B.J.S.
SCALE: N/A	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 5 (Cont.)



AFTER ZACHERY & SUTHERLAND, 1984

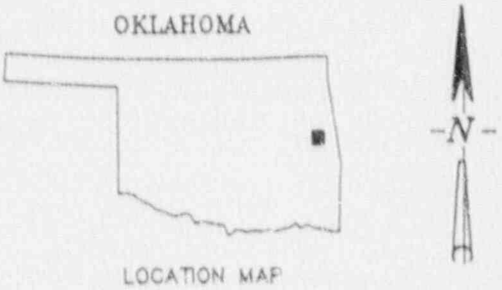
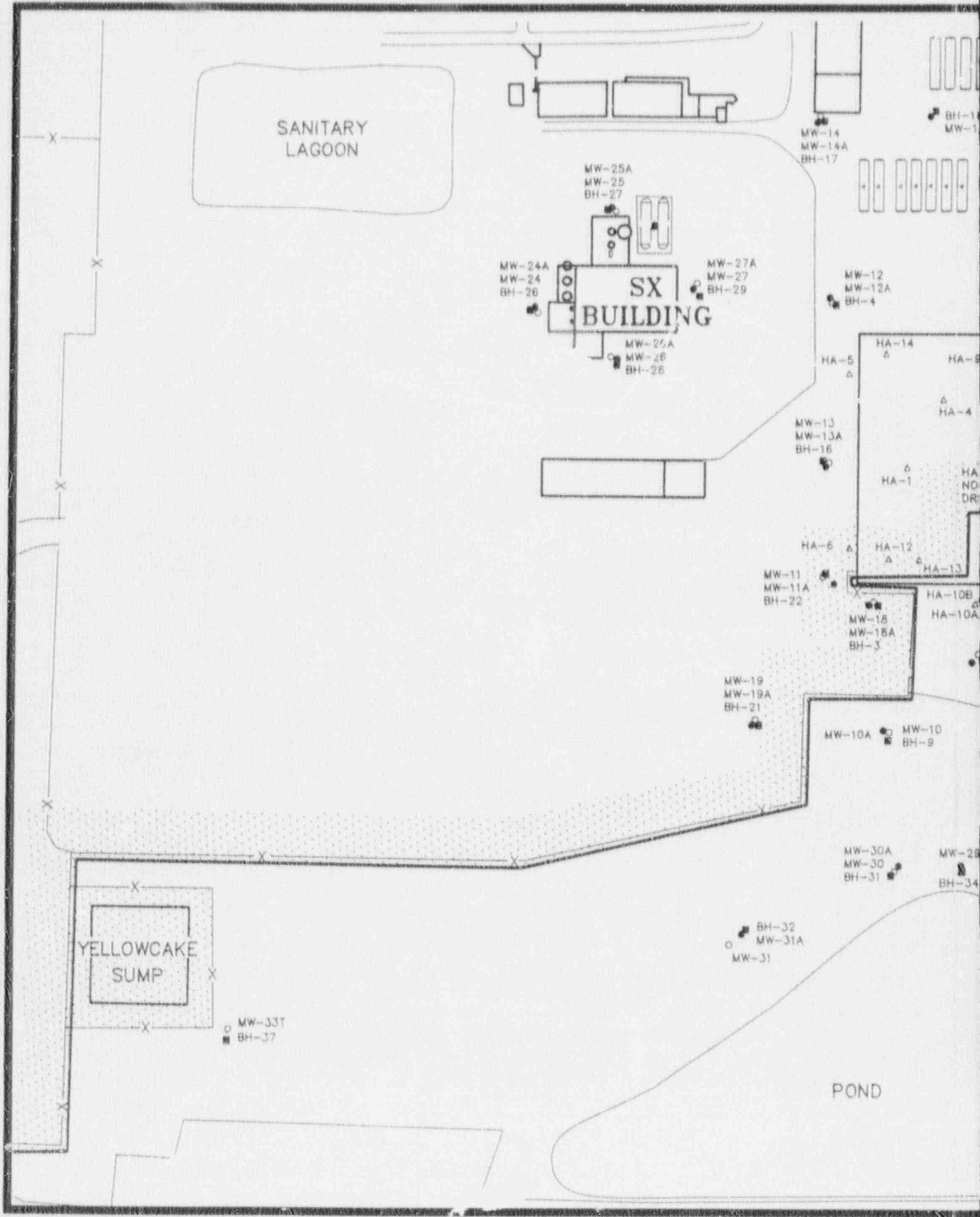


Figure Title: STRATIGRAPHIC RELATIONSHIP BETWEEN ATOKA AND BOUNDING UNITS	Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
	CHECKED BY: B.J.S.
SCALE: AS SHOWN	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 6


SANITARY LAGOON
MW-14
MW-14A
BH-17
BH-1
MW-1
MW-25A
MW-25
BH-27
MW-24A
MW-24
BH-26
SX BUILDING
MW-27A
MW-27
BH-29
MW-12
MW-12A
BH-4
MW-26A
MW-26
BH-28
HA-14
HA-
HA-5
HA-4
MW-13
MW-13A
BH-16
HA-1
HA
NO
DR
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
MW-18
MW-18A
BH-3
HA-10B
HA-10A
MW-19
MW-19A
BH-21
MW-10A
MW-10
BH-9
MW-30A
MW-30
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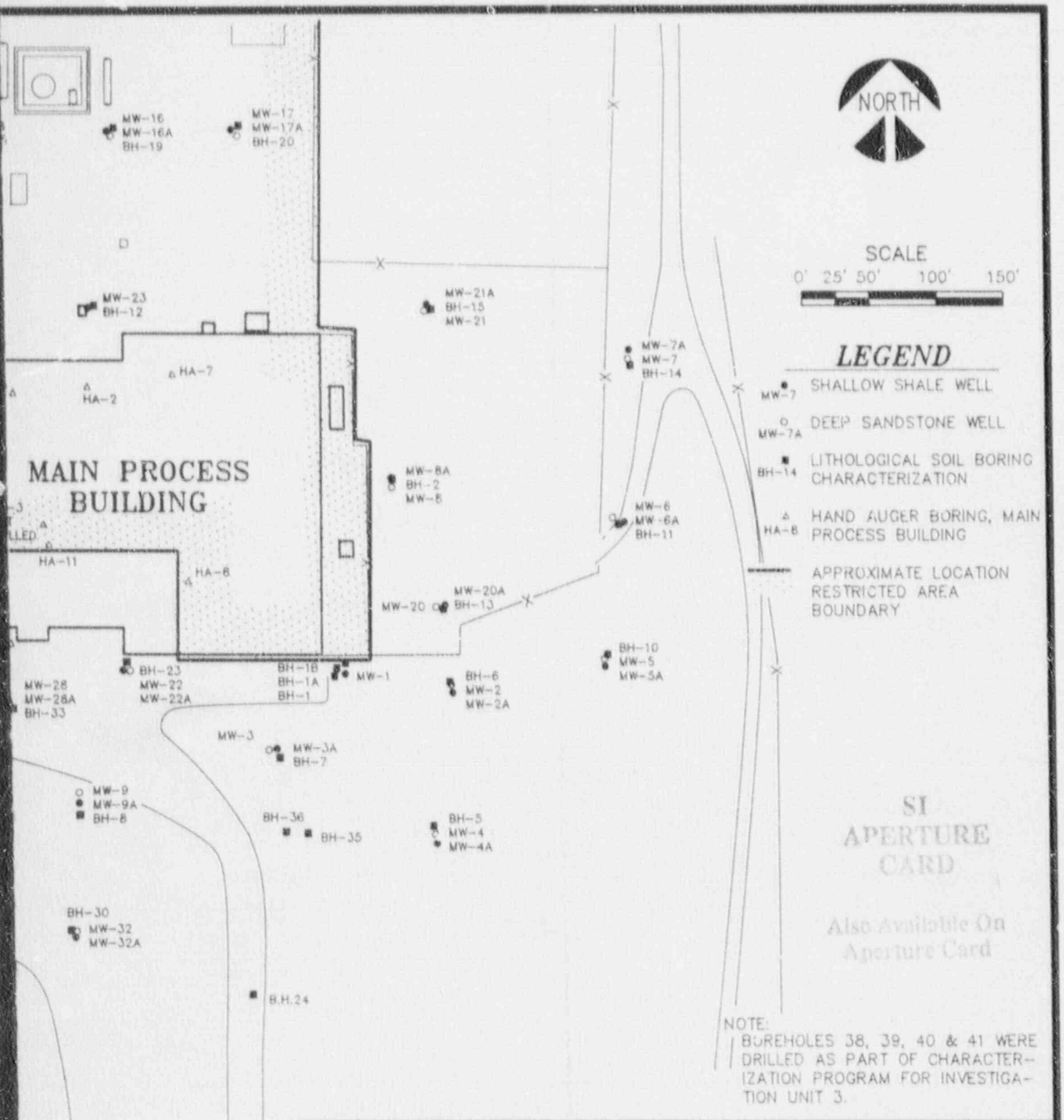
BH-34
YELLOWCAKE SUMP
BH-32
MW-31A
MW-31
MW-33T
BH-37
POND



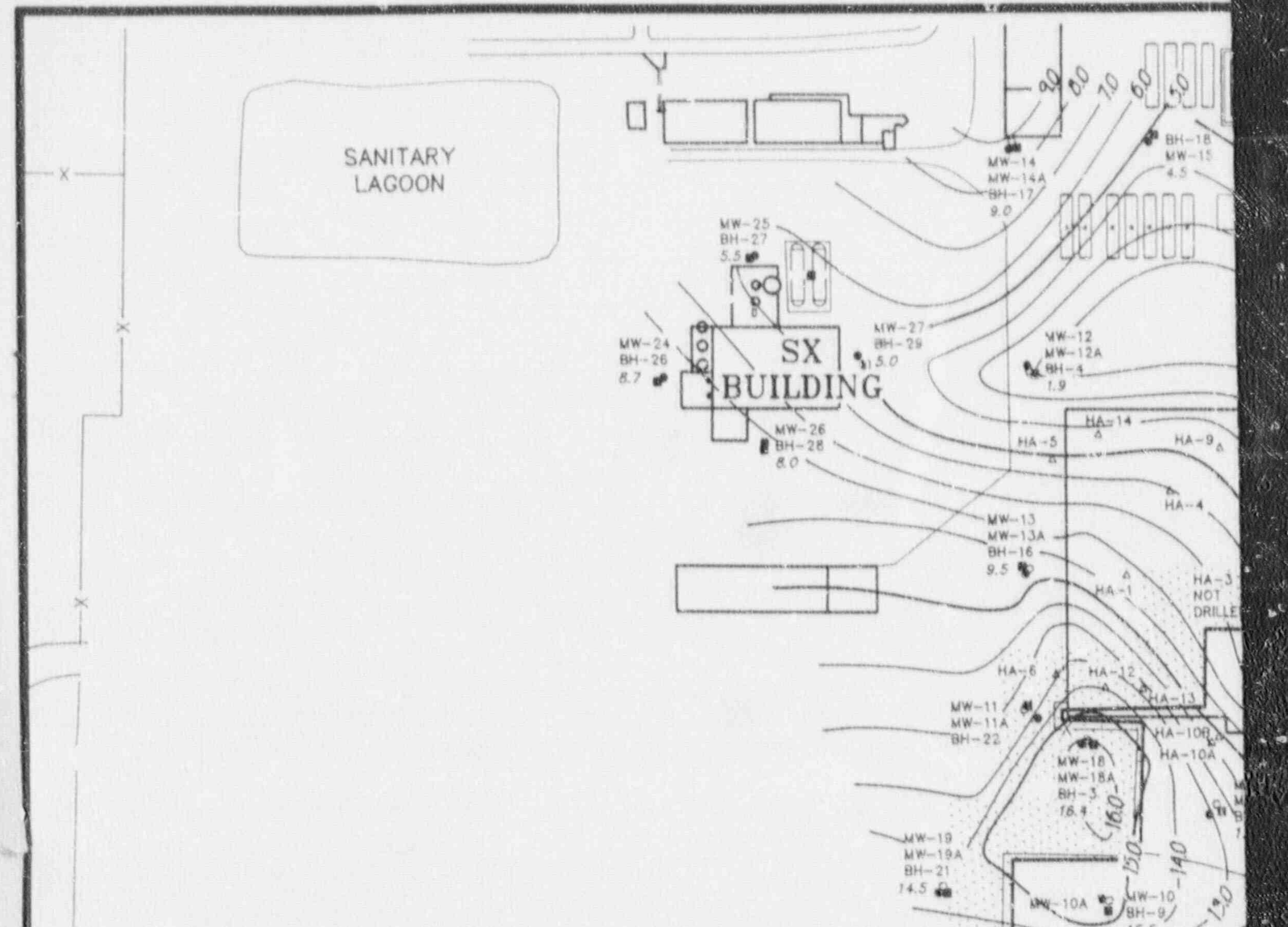
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

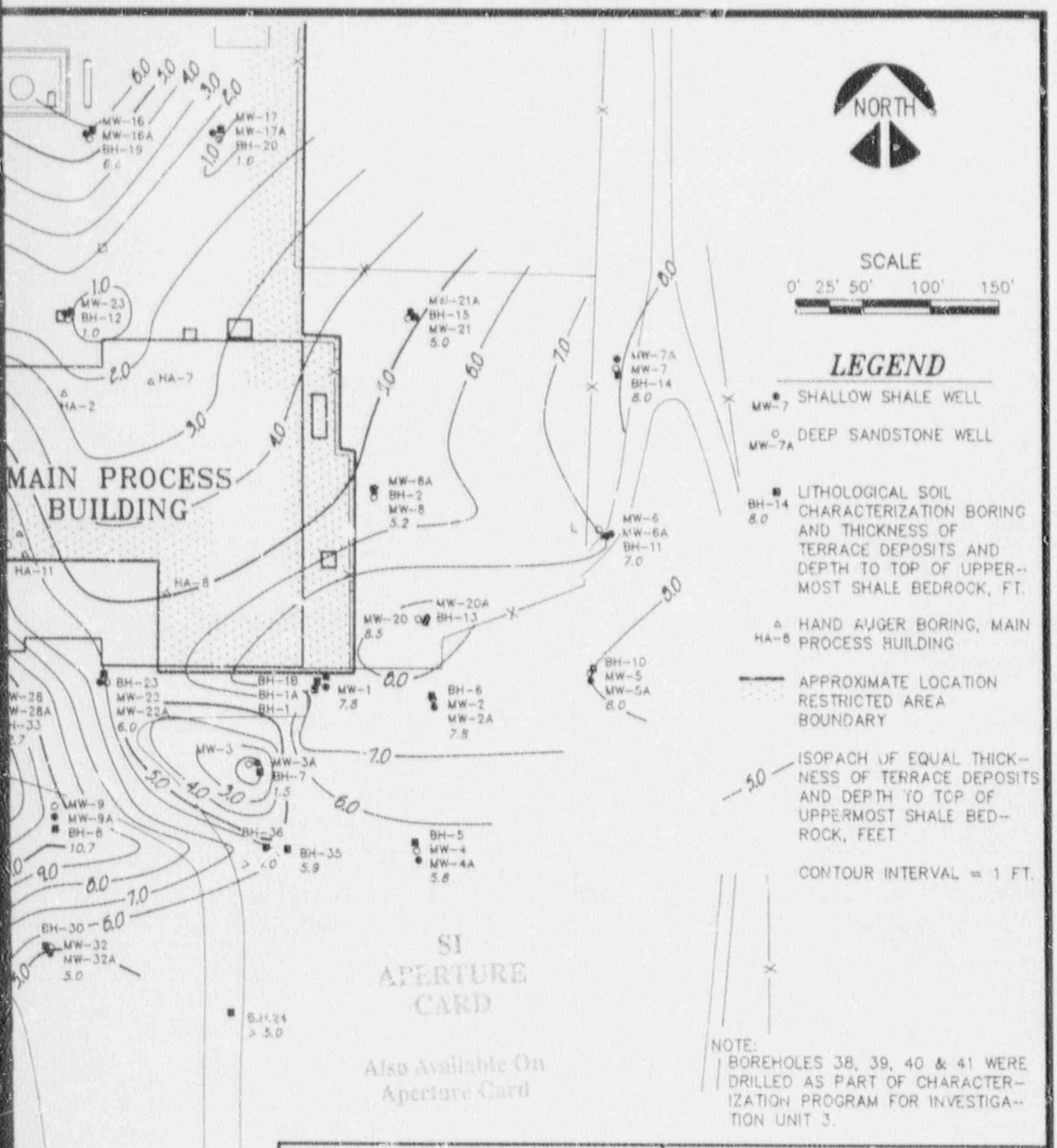
Figure Title: LOCATIONS OF SHALE AND SANDSTONE MONITOR WELLS AND BOREHOLES	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3046

DATE: 10/14/90	PREPARED BY: B.J.S.
SCALE: 1" = 100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M08	FIGURE NO. 1

9012260268-01


SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
9.0
8.0
7.0
6.0
5.0
MW-14
MW-14A
BH-17
9.0
BH-18
MW-15
4.5
MW-25
BH-27
5.5
MW-24
BH-26
8.7
MW-27
BH-29
5.0
MW-26
BH-28
8.0
MW-12
MW-12A
BH-4
1.9
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
9.5
HA-1
HA-3
NOT
DRILLE
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
MW-18A
BH-3
16.4
16.0
15.0
14.0
13.0
12.0
11.0
10
MW-19
MW-19A
BH-21
14.5
MW-10A
MW-10
BH-9
15.5
MW-30A
MW-30
BH-31
7.0 (SHALE ABSENT)
MW-29
BH-34
7.5
BH-32
MW-31A
MW-31
9.0
MW-33T
BH-37



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

SI
APERTURE
CARD

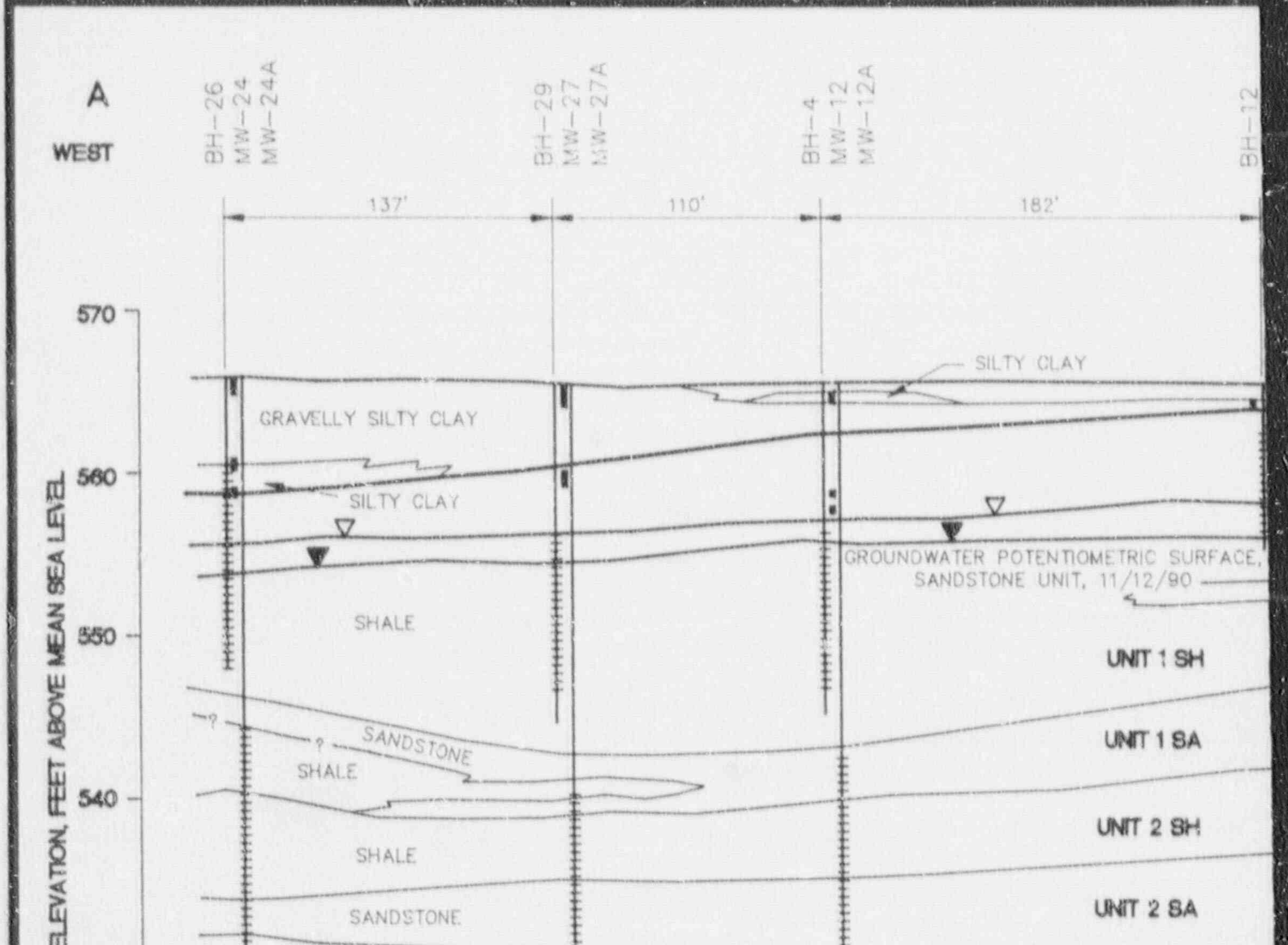
Also Available On
Aperture Card

Figure Title: ISOPACH OF TERRACE DEPOSITS AND DEPTH TO TOP OF UPPERMOST SHALE, FEET	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
SCALE: 1"=100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M15	FIGURE NO. 7

9012260268-02


A
WEST
BH-26
MW-24
MW-24A
BH-29
MW-27
MW-27A
BH-4
MW-12
MW-12A
BH-12
137'
110'
182'
570
560
550
540
530
520
ELEVATION, FEET ABOVE MEAN SEA LEVEL
SILTY CLAY
GRAVELLY SILTY CLAY
SILTY CLAY
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SHALE
UNIT 1 SH
SANDSTONE
UNIT 1 SA
SHALE
UNIT 2 SH
SHALE
SANDSTONE
UNIT 2 SA
SHALE
UNIT 3 SH
?
?
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=70'
VERTICAL EXAGGERATION: x 7

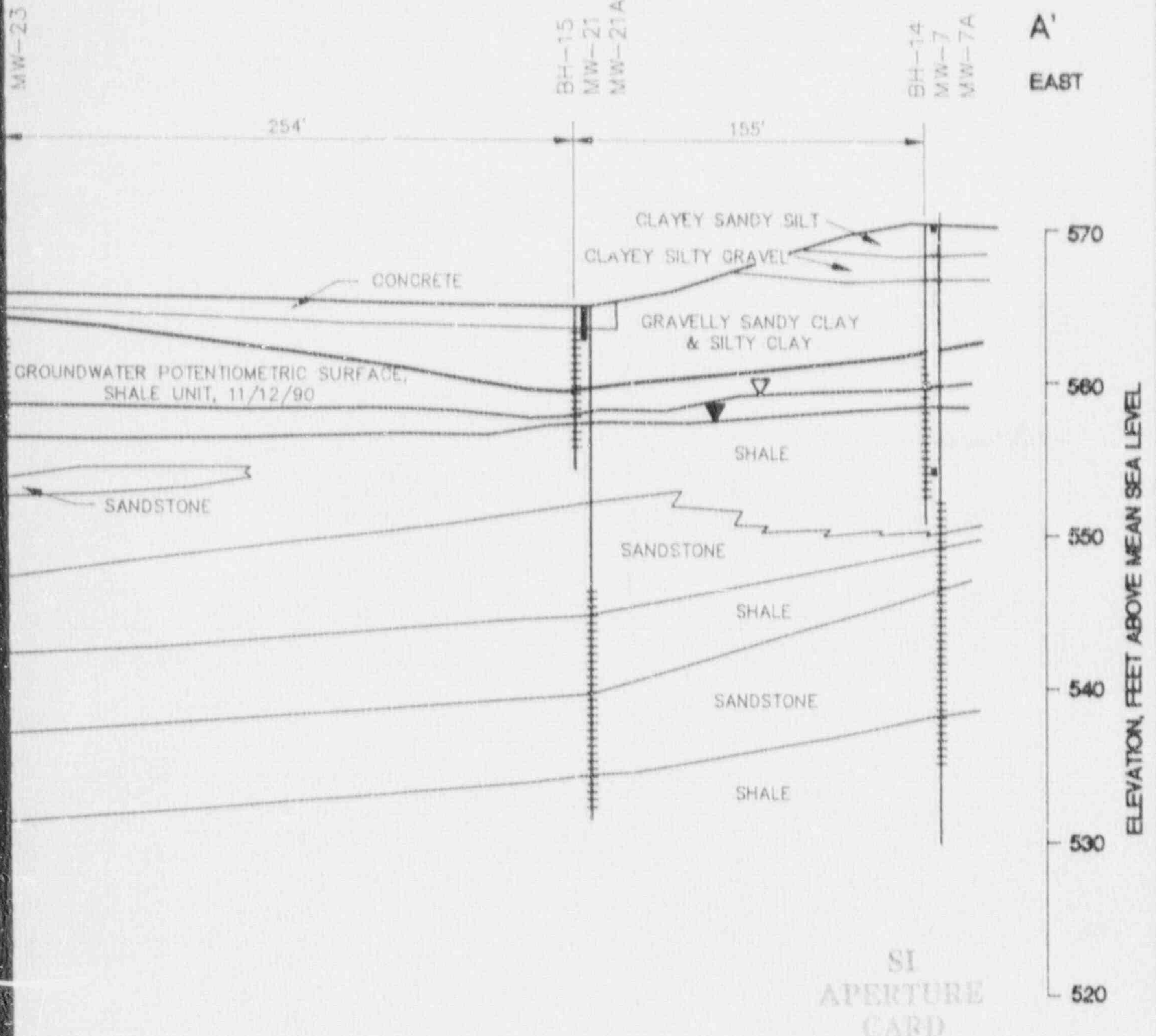


Figure Title: WEST TO EAST
GEOLOGICAL CROSS-SECTION A-A'

Client: SEQUOYAH FUELS, CORP.

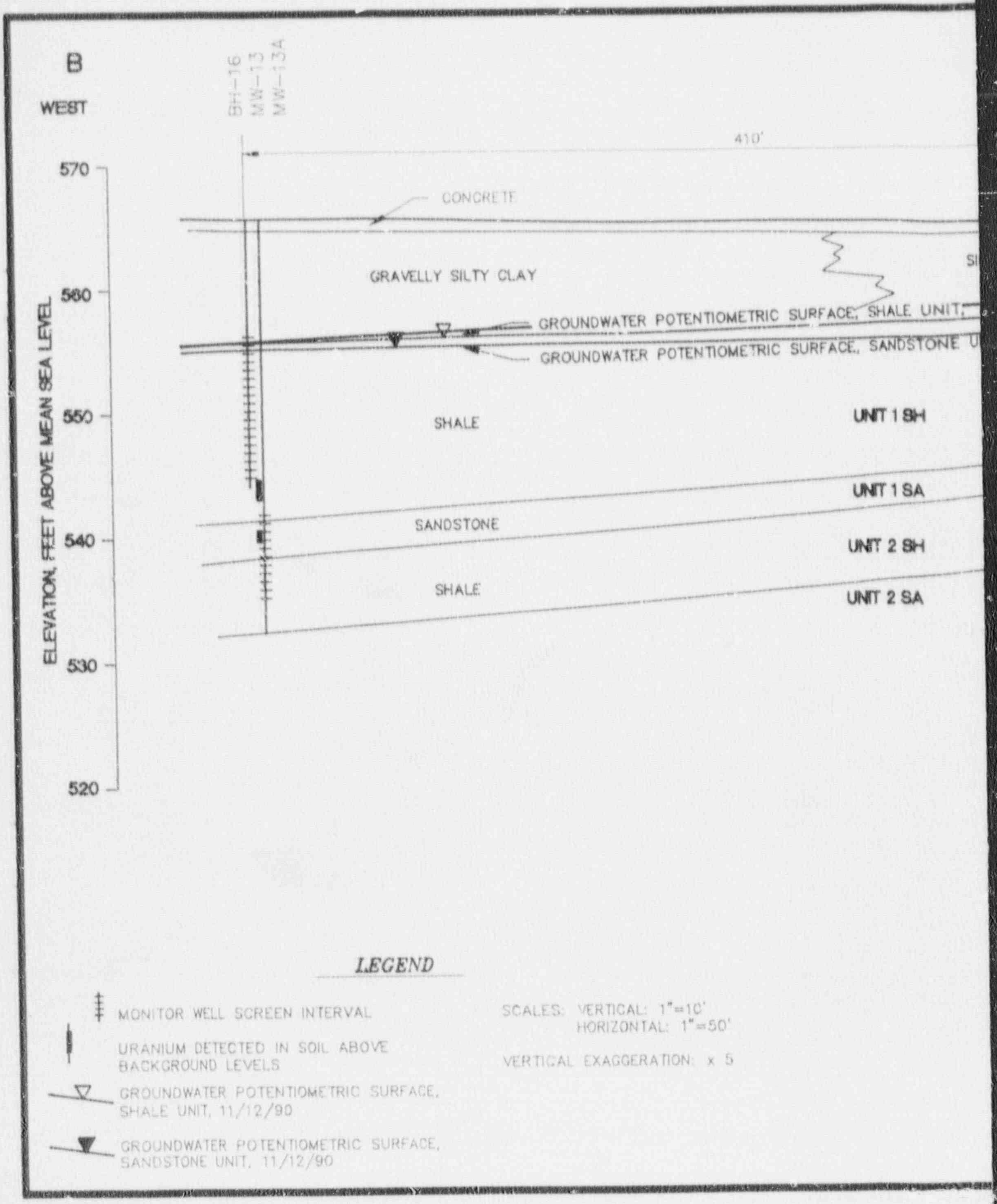
Document Title: MPB INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3893

DATE: 11/9/90
SCALE: NOTED
PROJECT NO.: 90067 M39
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO.: 8

9012260268-03


B
WEST
BH-16
MW-13
MW-13A
410'
570
560
550
540
530
520
ELEVATION, FEET ABOVE MEAN SEA LEVEL
CONCRETE
GRAVELLY SILTY CLAY
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE U
SHALE
UNIT 1 SH
UNIT 1 SA
SANDSTONE
UNIT 2 SH
SHALE
UNIT 2 SA
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

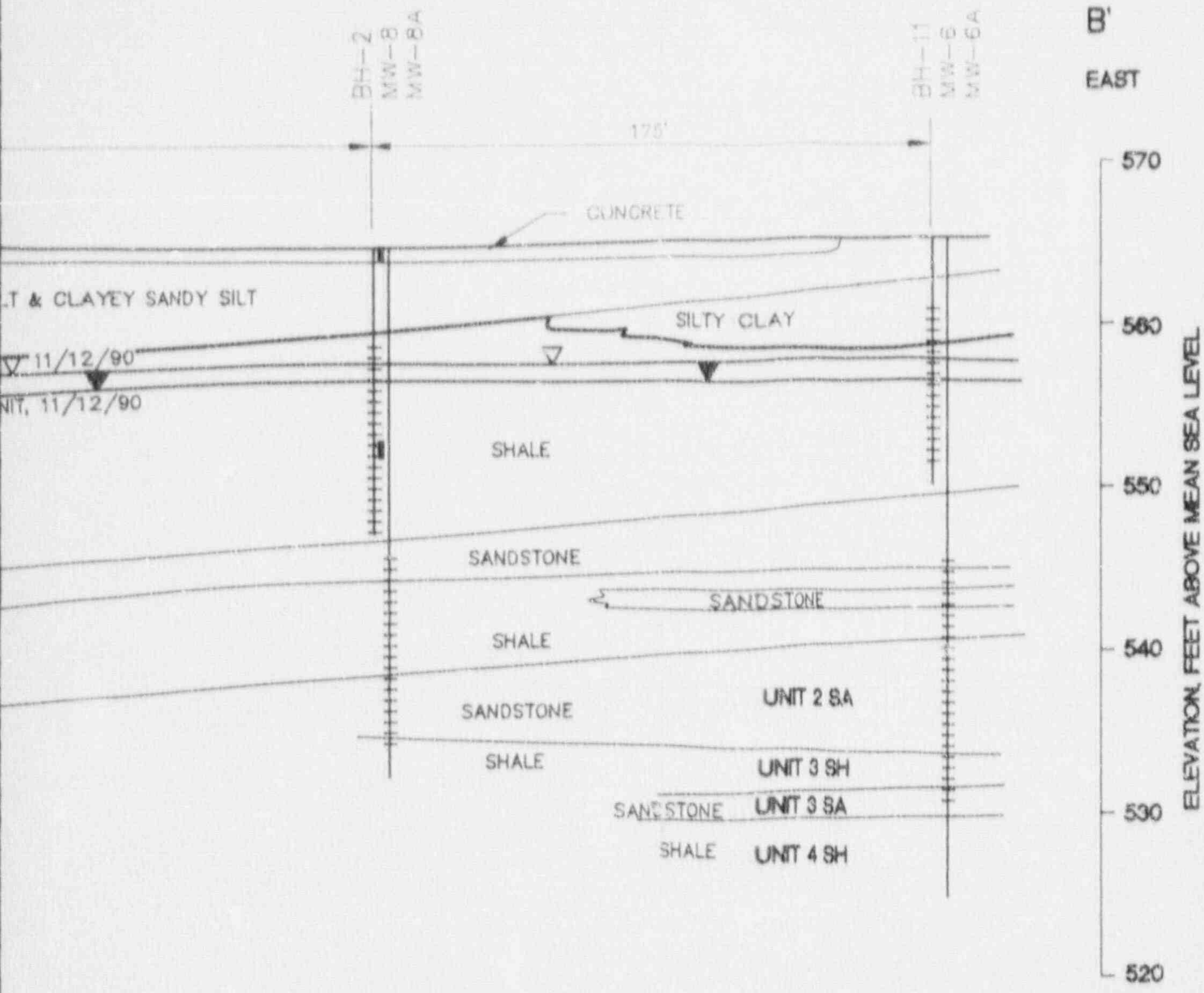
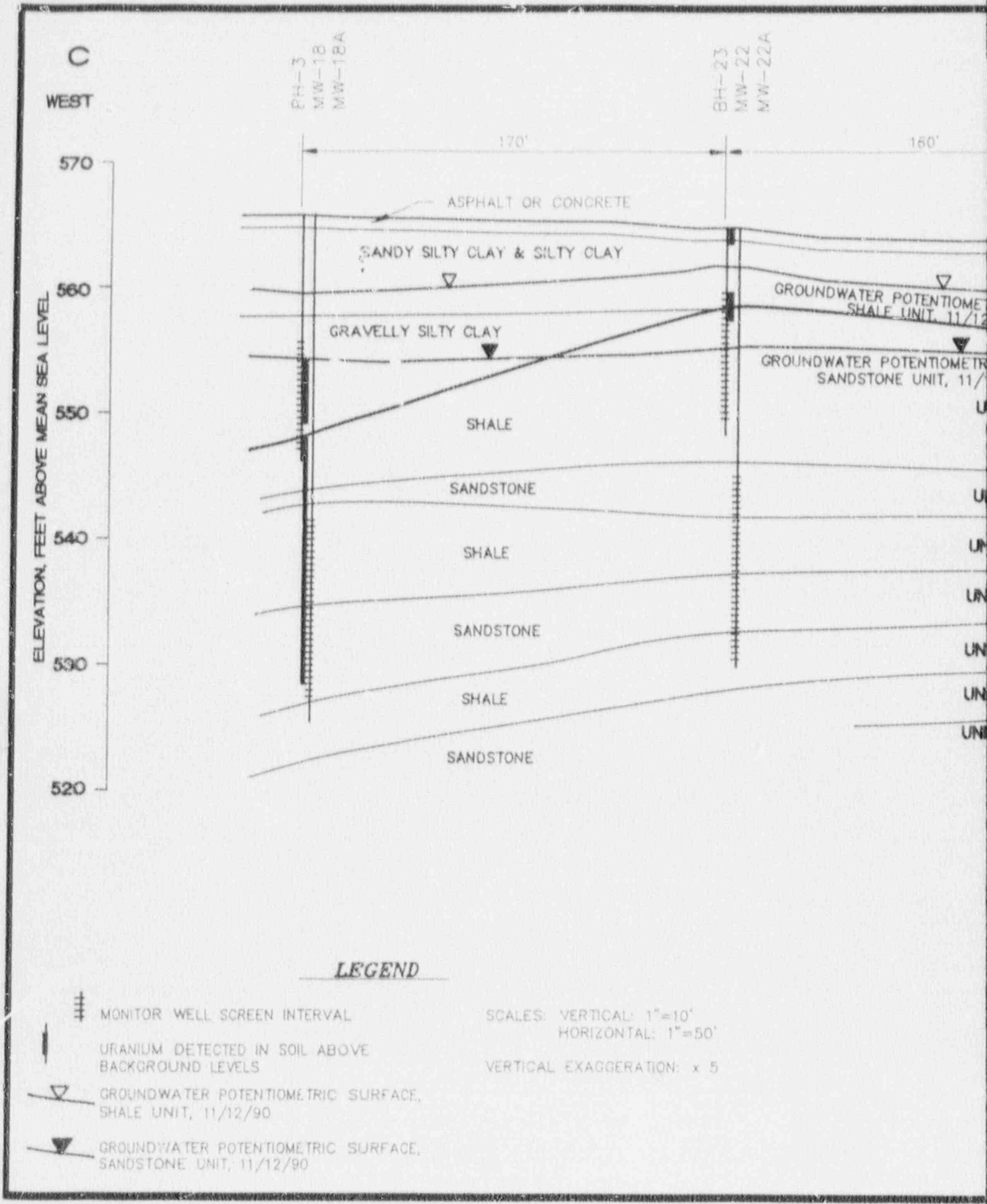


Figure Title: WEST TO EAST GEOLOGICAL CROSS-SECTION B-B'		Client: SEQUOYAH FUELS CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 2700 West Robinson, Suite 209 Norman, Oklahoma 73072 (405) 321-3481		DATE: 11/9/90	PREPARED BY: B.J.S.
		SCALE: NOTED	CHECKED BY: B.J.S. DRAFTED BY: RML
		PROJECT NO: 90067 M40	FIGURE NO.: 9

9012260268-04


C
WEST
PH-3
MW-18
MW-18A
BH-23
MW-22
MW-22A
170'
160'
570
560
550
540
530
520
ELEVATION, FEET ABOVE MEAN SEA LEVEL
ASPHALT OR CONCRETE
SANDY SILTY CLAY & SILTY CLAY
GROUNDWATER POTENTIOMET
SHALE UNIT, 11/12
GRAVELLY SILTY CLAY
GROUNDWATER POTENTIOMETR
SANDSTONE UNIT, 11/
SHALE
SANDSTONE
SHALE
SANDSTONE
SHALE
SANDSTONE
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

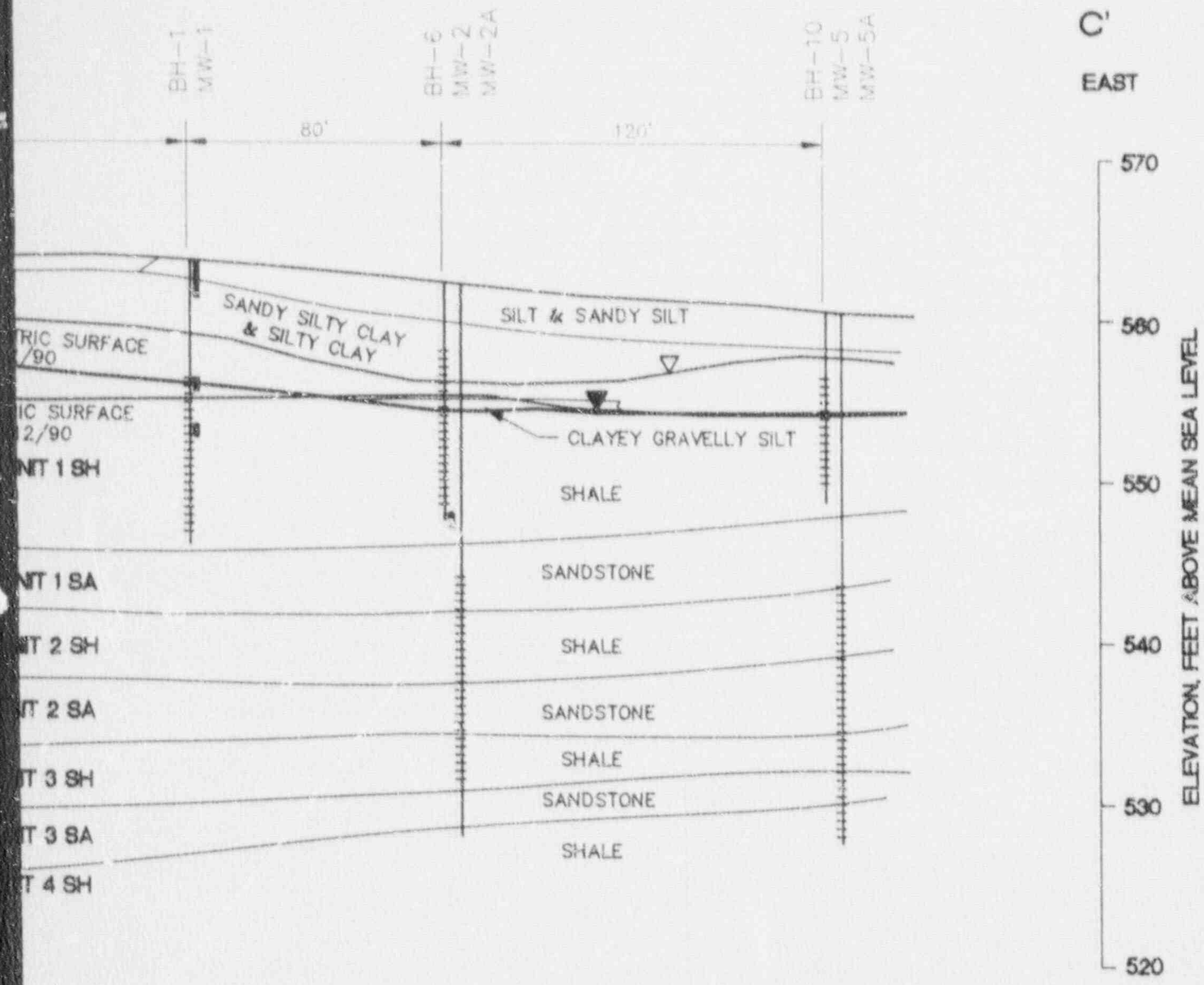


Figure Title: WEST TO EAST
GEOLOGICAL CROSS-SECTION C-C'

Client: SEQUOYAH FUELS CORP.

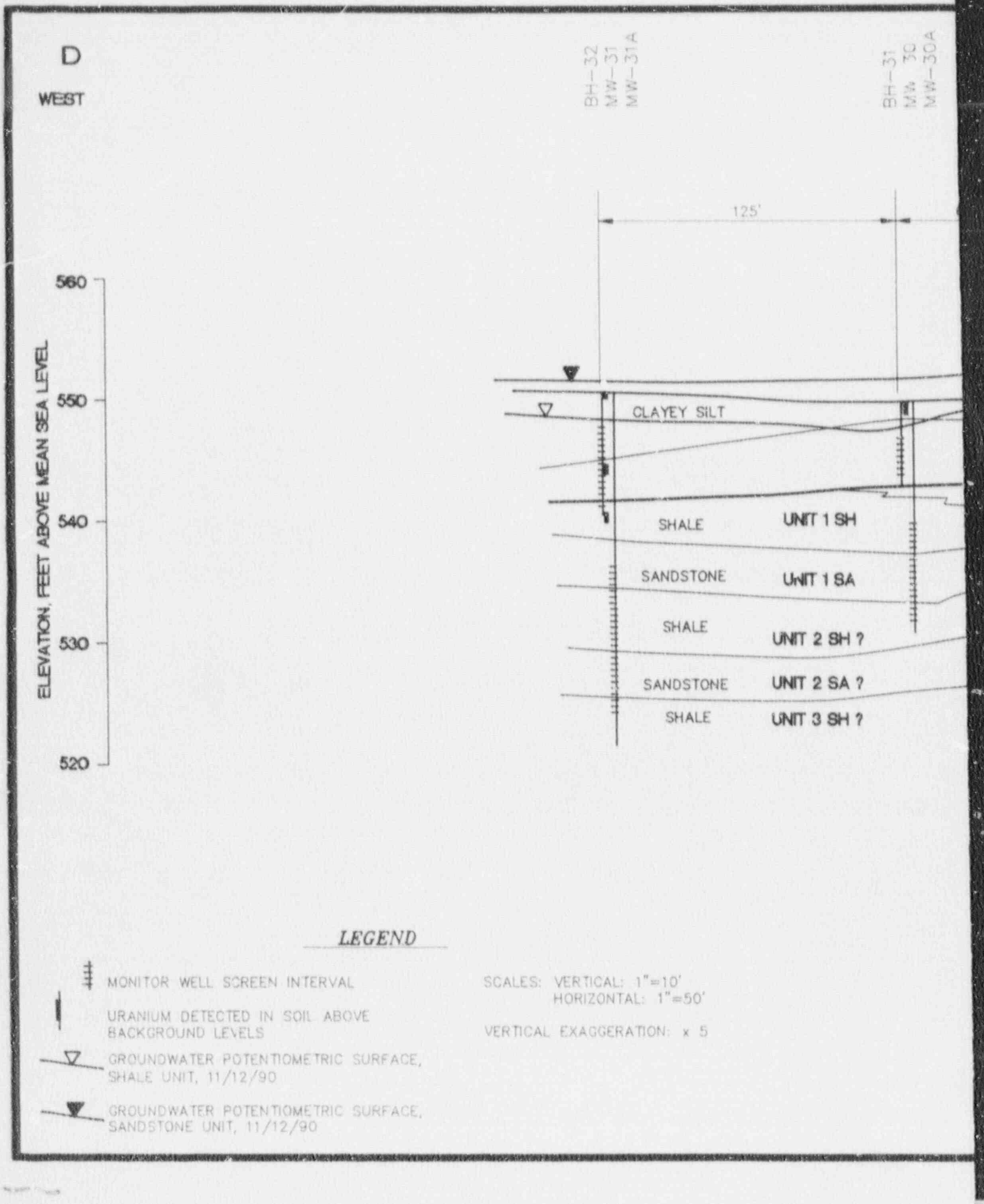
Document Title: MPB INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90
SCALE: NOTED
PROJECT NO: 90067 M41
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO.: 10

9012260268-05


D
WEST
BH-32
MW-31
MW-31A
BH-31
MW 30
MW-30A
125'
ELEVATION, FEET ABOVE MEAN SEA LEVEL
560
550
540
530
520
CLAYEY SILT
SHALE
UNIT 1 SH
SANDSTONE
UNIT 1 SA
SHALE
UNIT 2 SH ?
SANDSTONE
UNIT 2 SA ?
SHALE
UNIT 3 SH ?
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

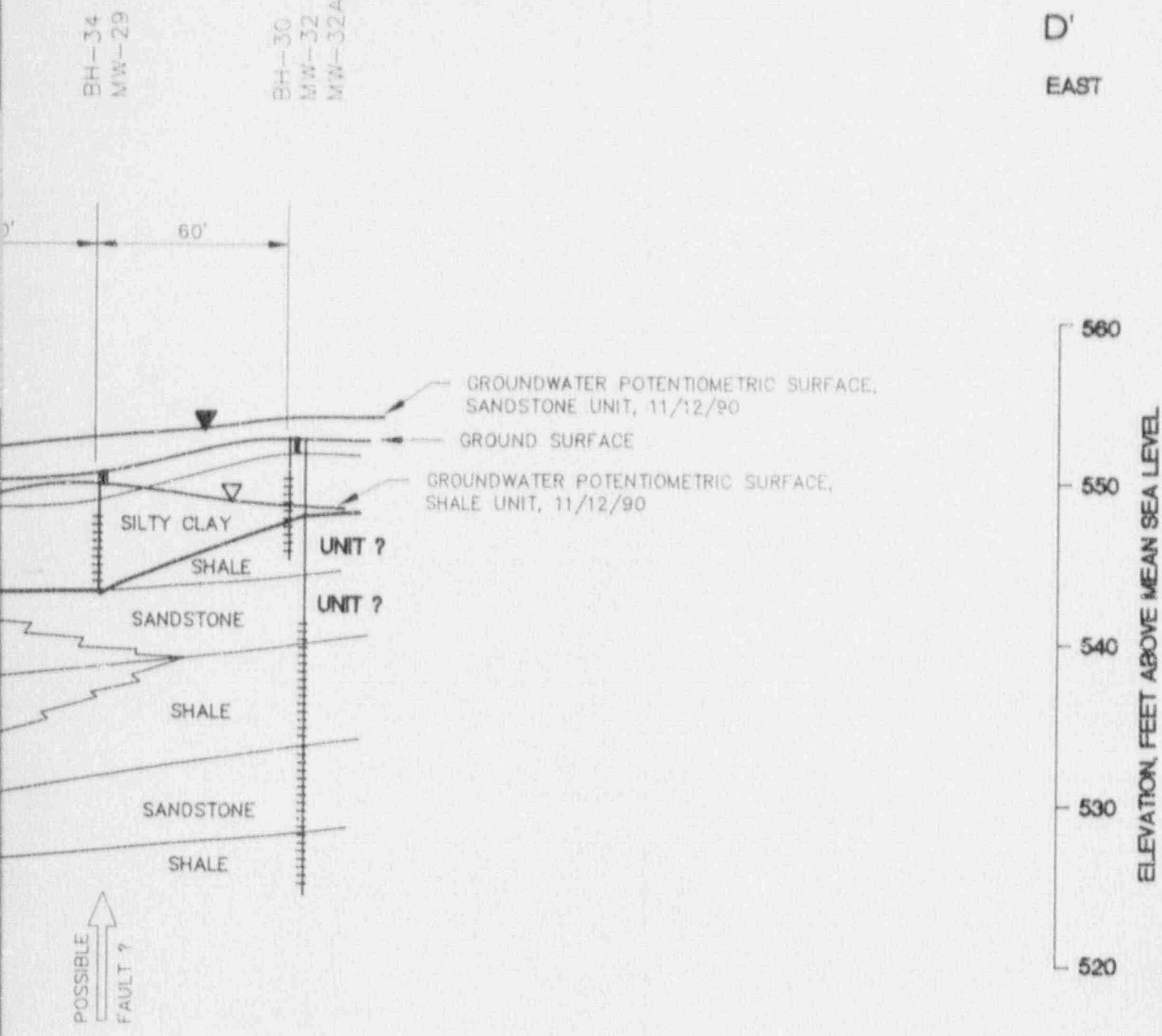
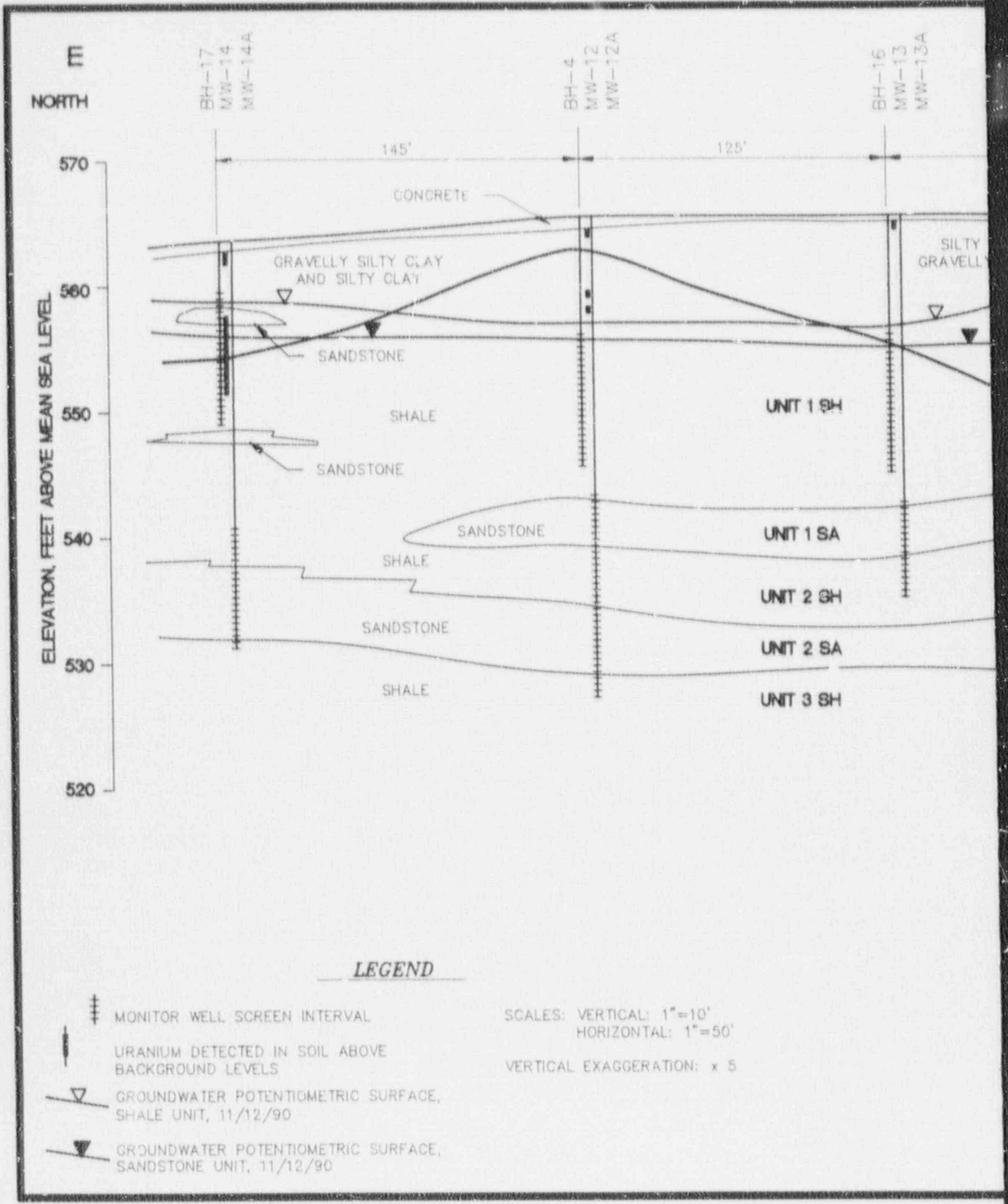


Figure Title: WEST TO EAST GEOLOGICAL CROSS-SECTION D-D'		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPS INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895		DATE: 11/9/90	PREPARED BY: B.J.S.
		SCALE: NOTED	CHECKED BY: B.J.S.
			DRAFTED BY: RML
		PROJECT NO: 90067 M42	FIGURE NO.: 11

9012260268-06


E
NORTH
BH-17
MW-14
MW-14A
BH-4
MW-12
MW-12A
BH-16
MW-13
MW-13A
145'
125'
570
560
550
540
530
520
ELEVATION, FEET ABOVE MEAN SEA LEVEL
CONCRETE
GRAVELLY SILTY CLAY AND SILTY CLAY
SILTY GRAVELLY
SANDSTONE
SHALE
UNIT 1 SH
SANDSTONE
SANDSTONE
UNIT 1 SA
SHALE
UNIT 2 SH
SANDSTONE
UNIT 2 SA
SHALE
UNIT 3 SH
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

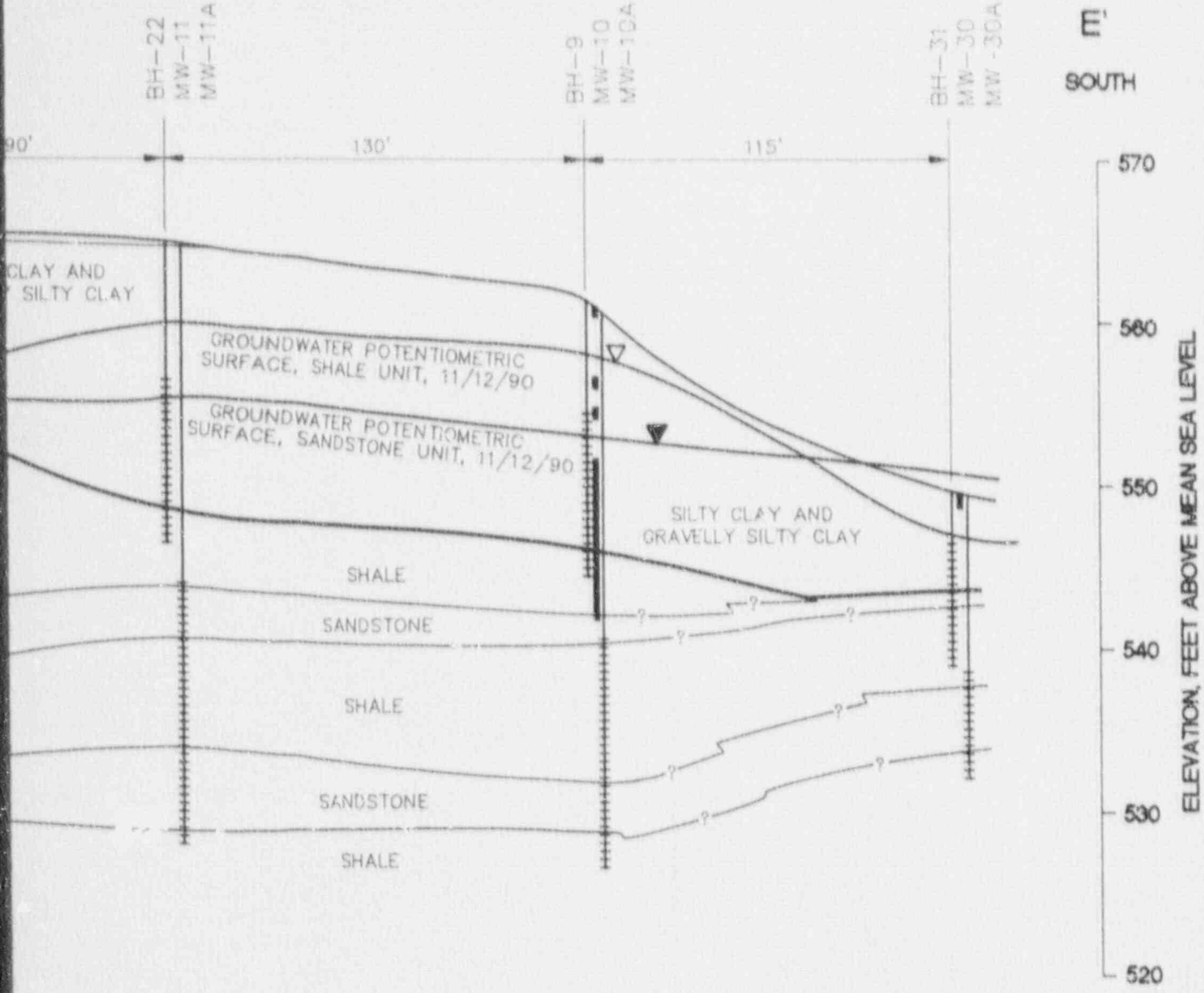


Figure Title: NORTH TO SOUTH GEOLOGICAL CROSS-SECTION E-E'

Client: SEQUOYAH FUELS CORP.

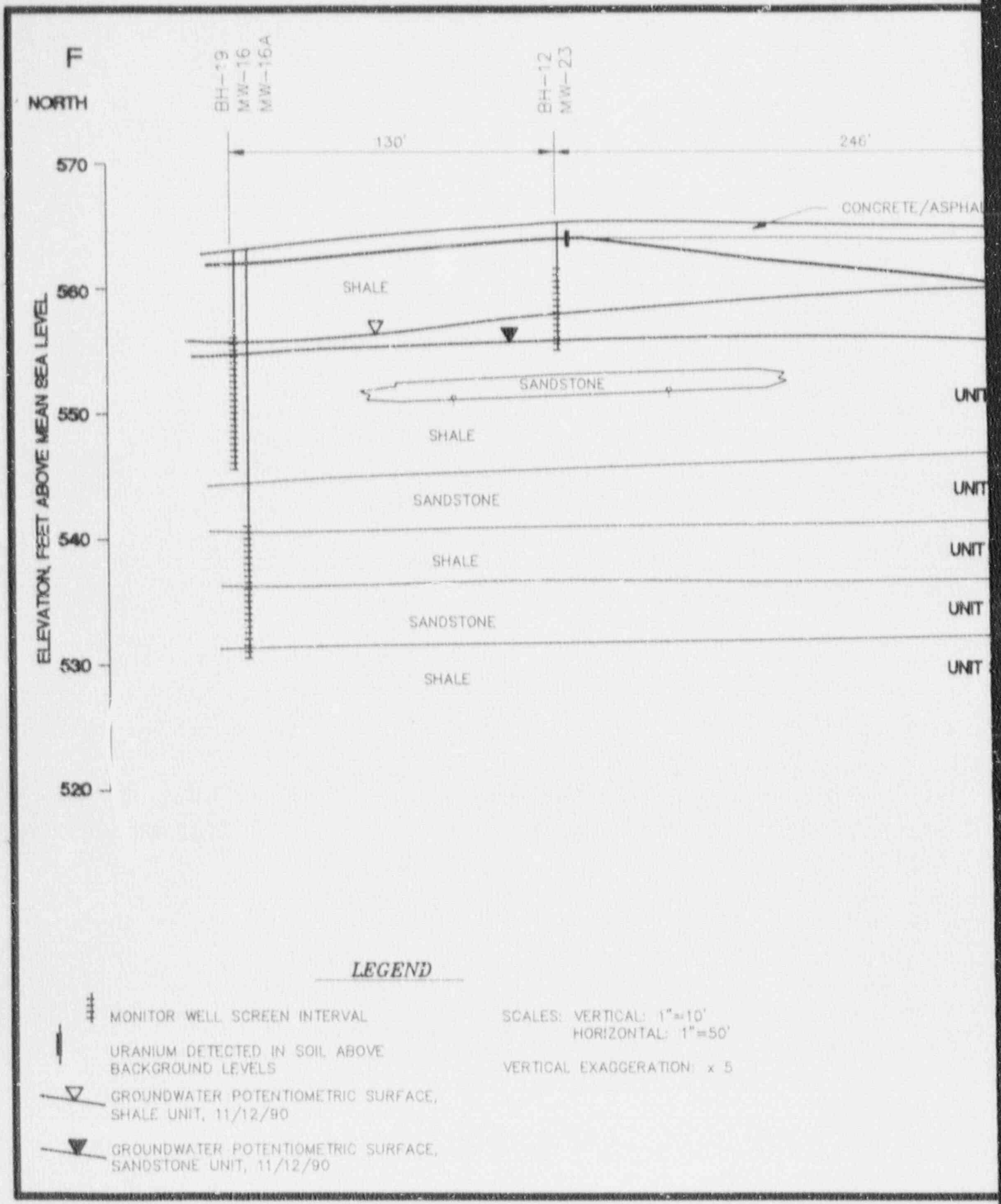
Document Title: MPB INVESTIGATION MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90
SCALE: NOTED
PROJECT NO: 90067 M43
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO.: 12

9012260268-07


F
NORTH
BH-19
MW-16
MW-16A
BH-12
MW-23
130'
246'
CONCRETE/ASPHAL
570
560
550
540
530
520
ELEVATION, FEET ABOVE MEAN SEA LEVEL
SHALE
SANDSTONE
SHALE
SANDSTONE
SHALE
SANDSTONE
SHALE
UNIT
UNIT
UNIT
UNIT
UNIT
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

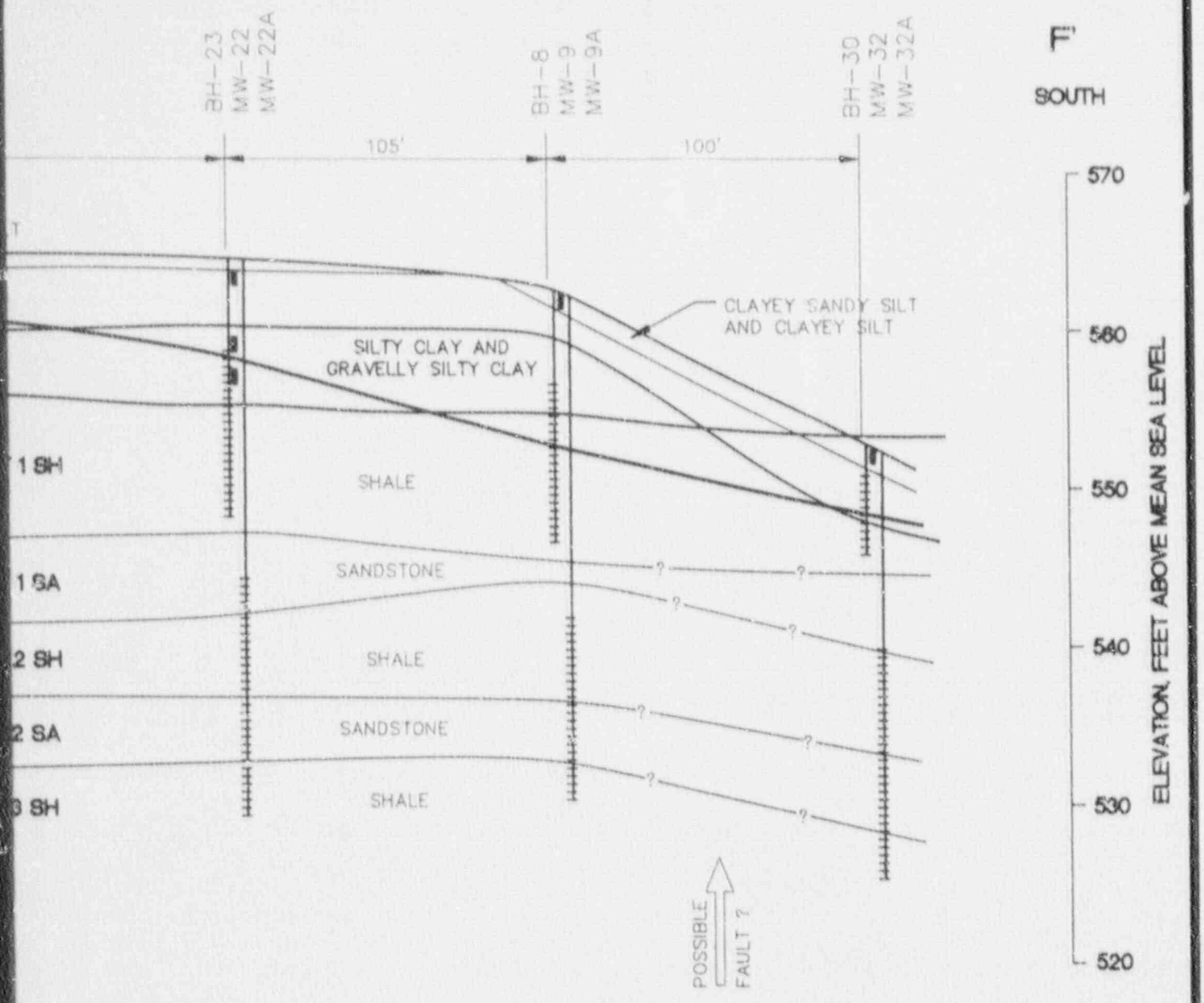


Figure Title: NORTH TO SOUTH
GEOLOGICAL CROSS-SECTION F-F'

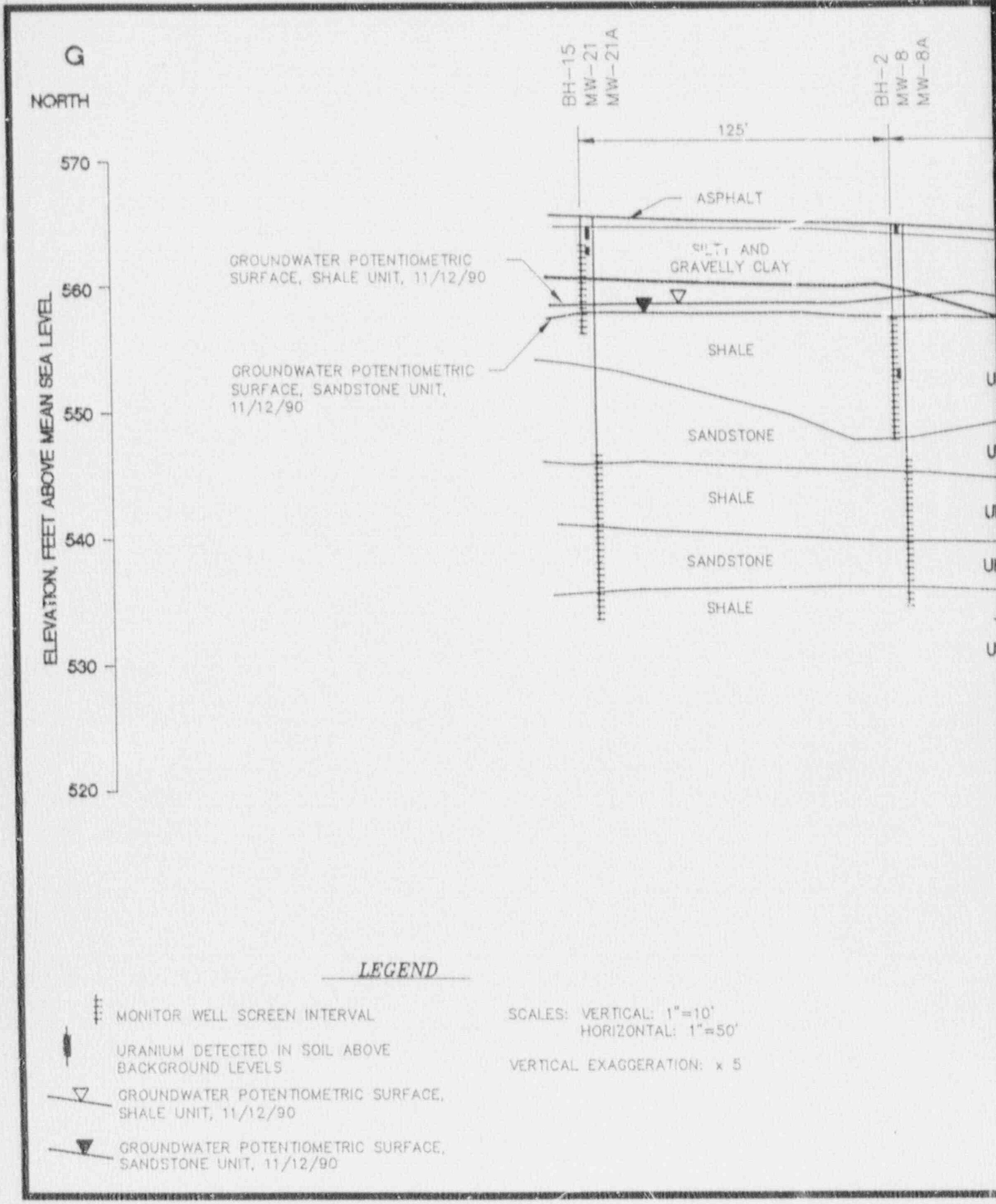
Client: SEQUOYAH FUELS CORP.

Document Title: MPB INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90
SCALE: NOTED
PROJECT NO: 90067 M44
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO.: 13


G
NORTH
ELEVATION, FEET ABOVE MEAN SEA LEVEL
570
560
550
540
530
520
BH-15
MW-21
MW-21A
BH-2
MW-8
MW-8A
125'
ASPHALT
SILTY AND GRAVELLY CLAY
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SHALE
SANDSTONE
SHALE
SANDSTONE
SHALE
LEGEND
MONITOR WELL SCREEN INTERVAL
URANIUM DETECTED IN SOIL ABOVE BACKGROUND LEVELS
GROUNDWATER POTENTIOMETRIC SURFACE, SHALE UNIT, 11/12/90
GROUNDWATER POTENTIOMETRIC SURFACE, SANDSTONE UNIT, 11/12/90
SCALES: VERTICAL: 1"=10'
HORIZONTAL: 1"=50'
VERTICAL EXAGGERATION: x 5

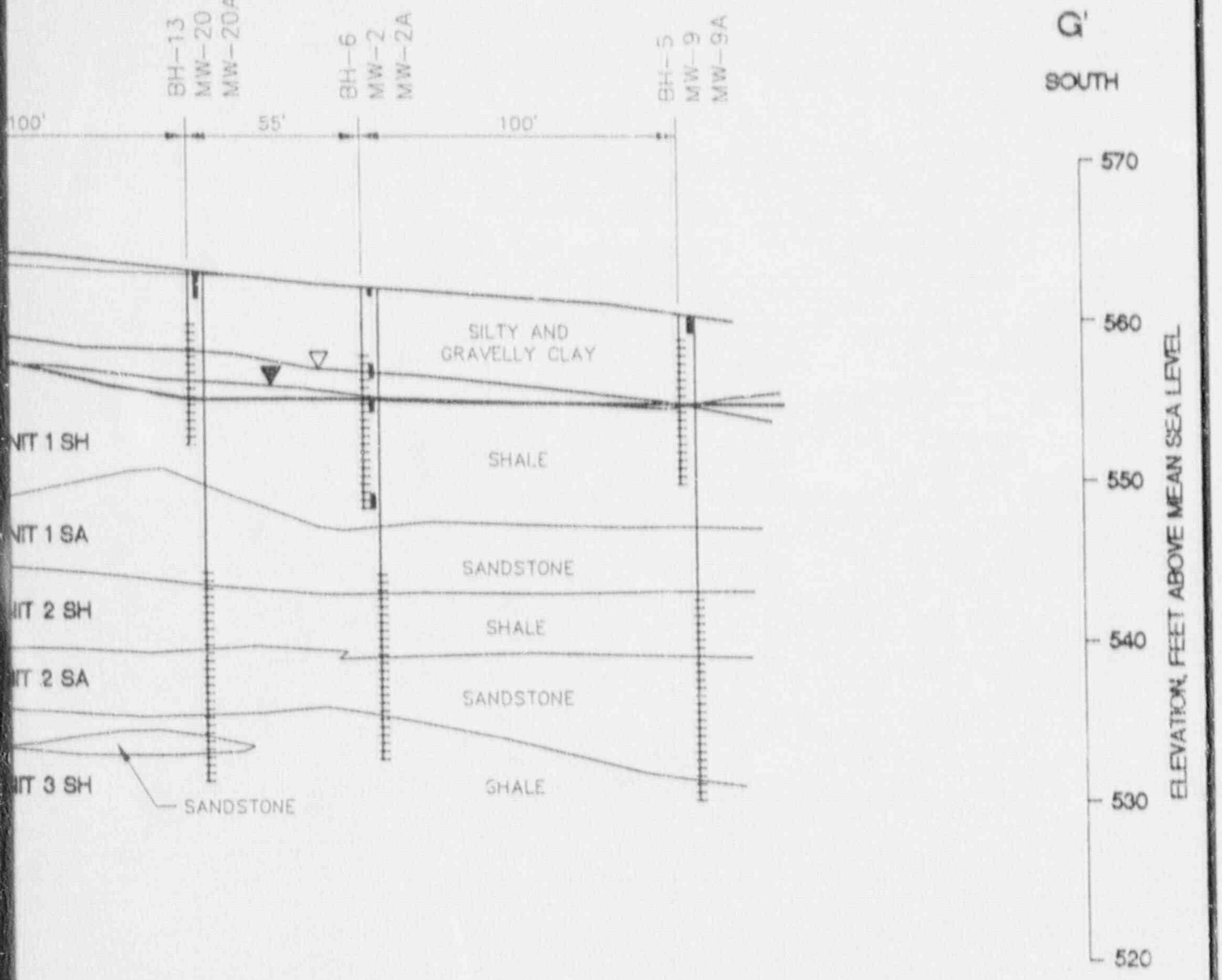


Figure Title: NORTH TO SOUTH
GEOLOGICAL CROSS-SECTION G - G'

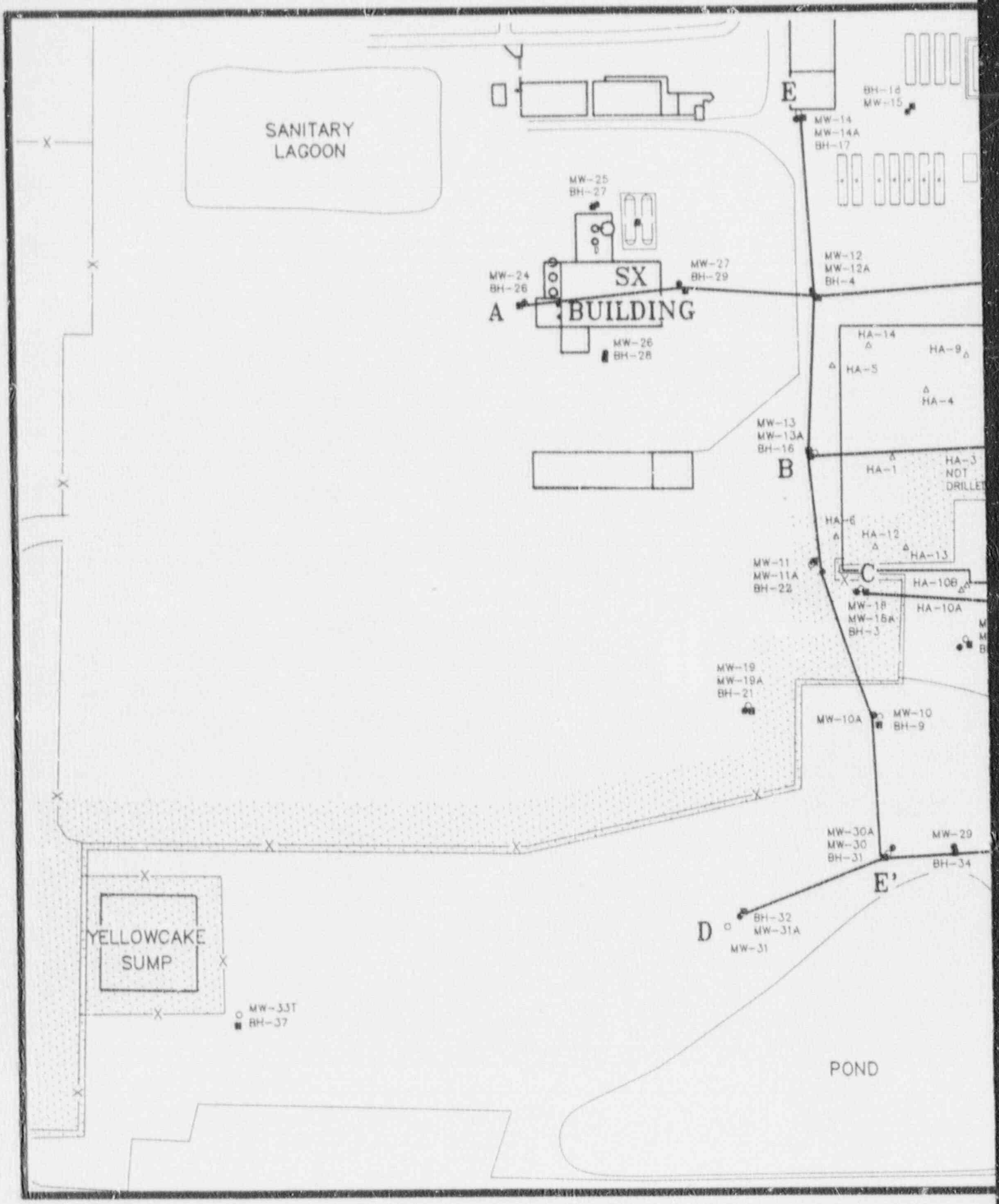
Client: SEQUOYAH FUELS, CORP.

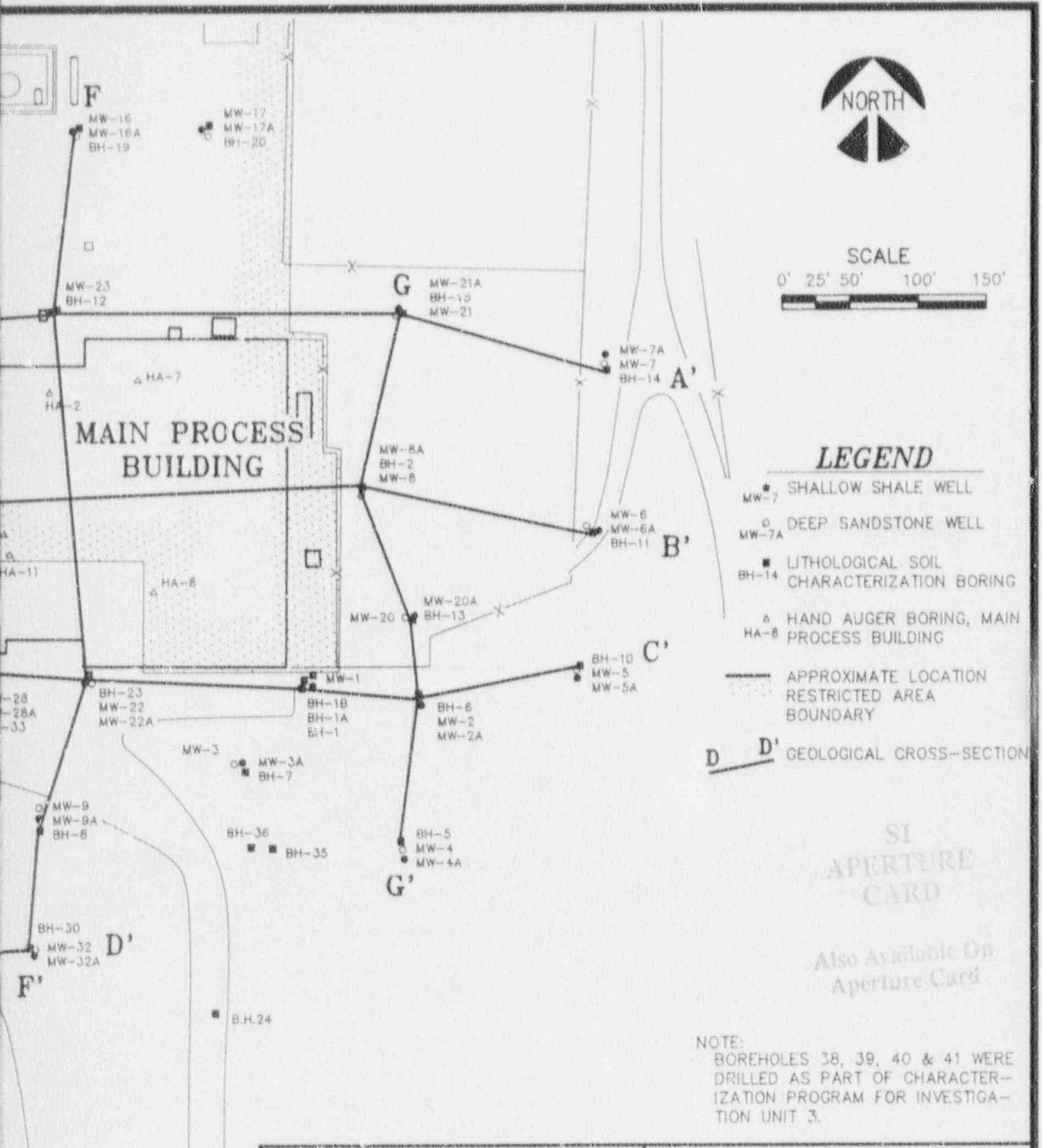
Document Title: MPD INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3701 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90
SCALE: NOTED
PROJECT NO: 90067 M45
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO.: 14


SANITARY LAGOON
E
BH-1d
MW-15
MW-14
MW-14A
BH-17
MW-25
BH-27
MW-24
BH-26
A
SX BUILDING
MW-27
BH-29
MW-12
MW-12A
BH-4
MW-26
BH-28
HA-14
HA-9
HA-5
HA-4
MW-13
MW-13A
BH-16
B
HA-1
HA-3
NOT
DRILLE
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
C
HA-10B
MW-18
MW-18A
BH-3
HA-10A
MW-19
MW-19A
BH-21
MW-10A
MW-10
BH-9
MW-30A
MW-30
BH-31
MW-29
BH-34
E'
BH-32
MW-31A
D
MW-31
YELLOWCAKE SUMP
MW-33T
BH-37
POND
X



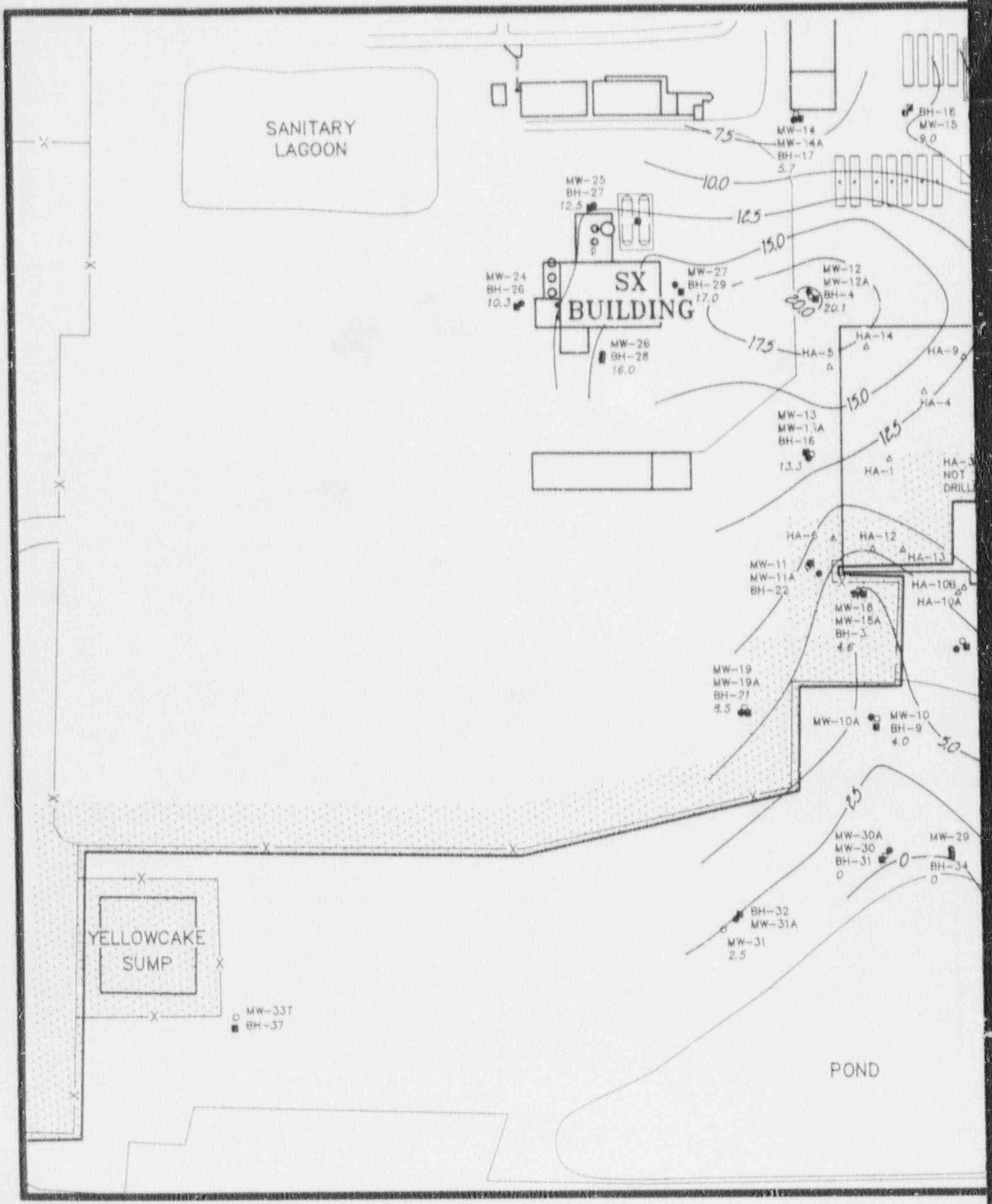
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

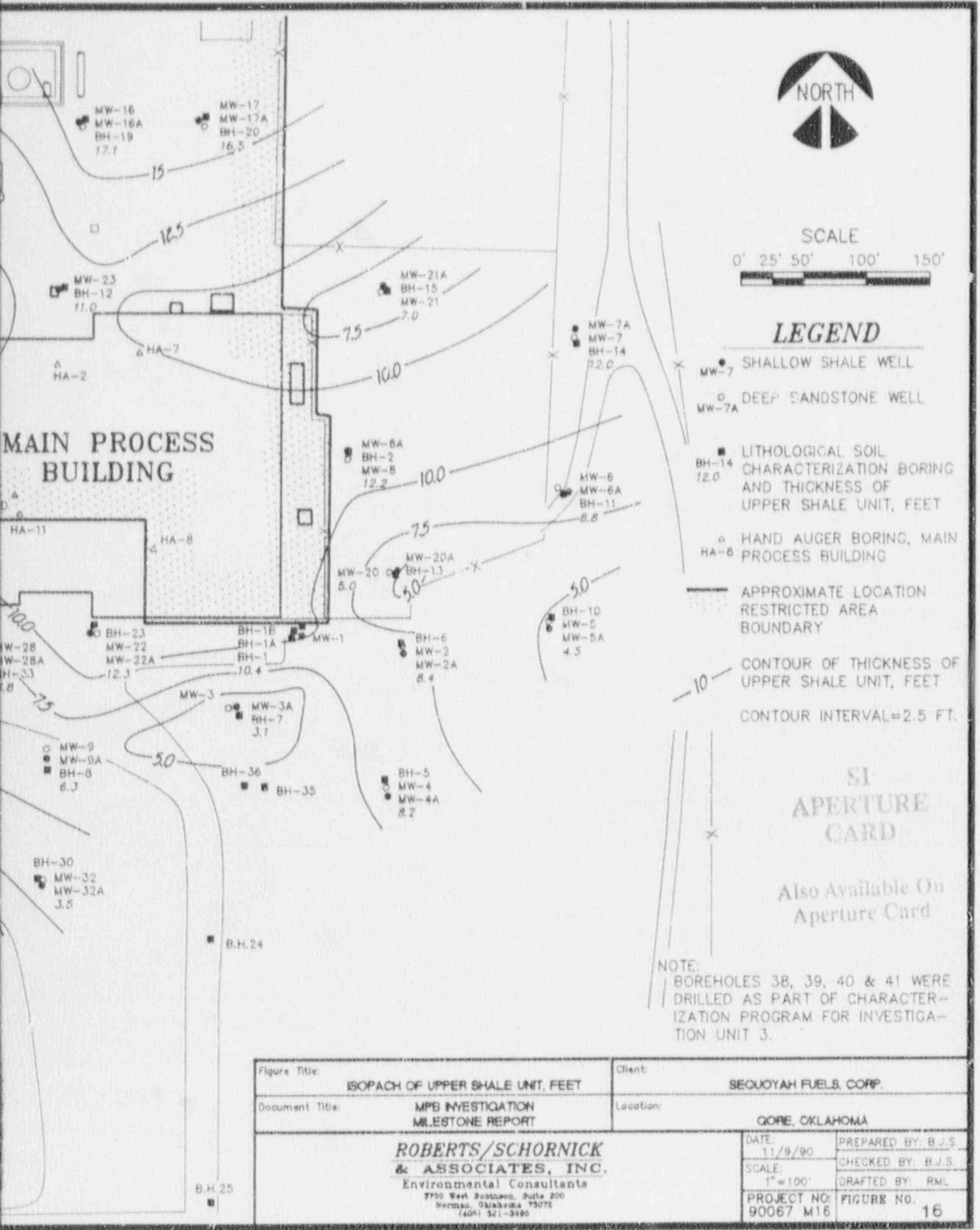
Figure Title: SITE MAP AND LOCATIONS OF GEOLOGICAL CROSS-SECTIONS	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
	CHECKED BY: B.J.S.
SCALE: 1" = 100'	DRAFTED BY: RML
PROJECT NO: 90067 M38	FIGURE NO. 15

9012260268-10


SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-14
MW-14A
BH-17
5.7
BH-18
MW-15
9.0
7.5
10.0
12.5
15.0
20.0
17.5
12.5
5.0
2.5
0
MW-25
BH-27
12.5
MW-24
BH-26
10.3
MW-27
BH-29
17.0
MW-12
MW-12A
BH-4
20.1
MW-26
BH-28
16.0
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
13.3
HA-1
HA-3
NOT
DRILL
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
MW-18A
BH-3
4.6
MW-19
MW-19A
BH-21
8.5
MW-10A
MW-10
BH-9
4.0
MW-30A
MW-30
BH-31
0
MW-29
BH-34
0
BH-32
MW-31A
MW-31
2.5
MW-33T
BH-37



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPACH OF UPPER SHALE UNIT, FEET	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
SCALE: 1" = 100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M16	FIGURE NO. 16

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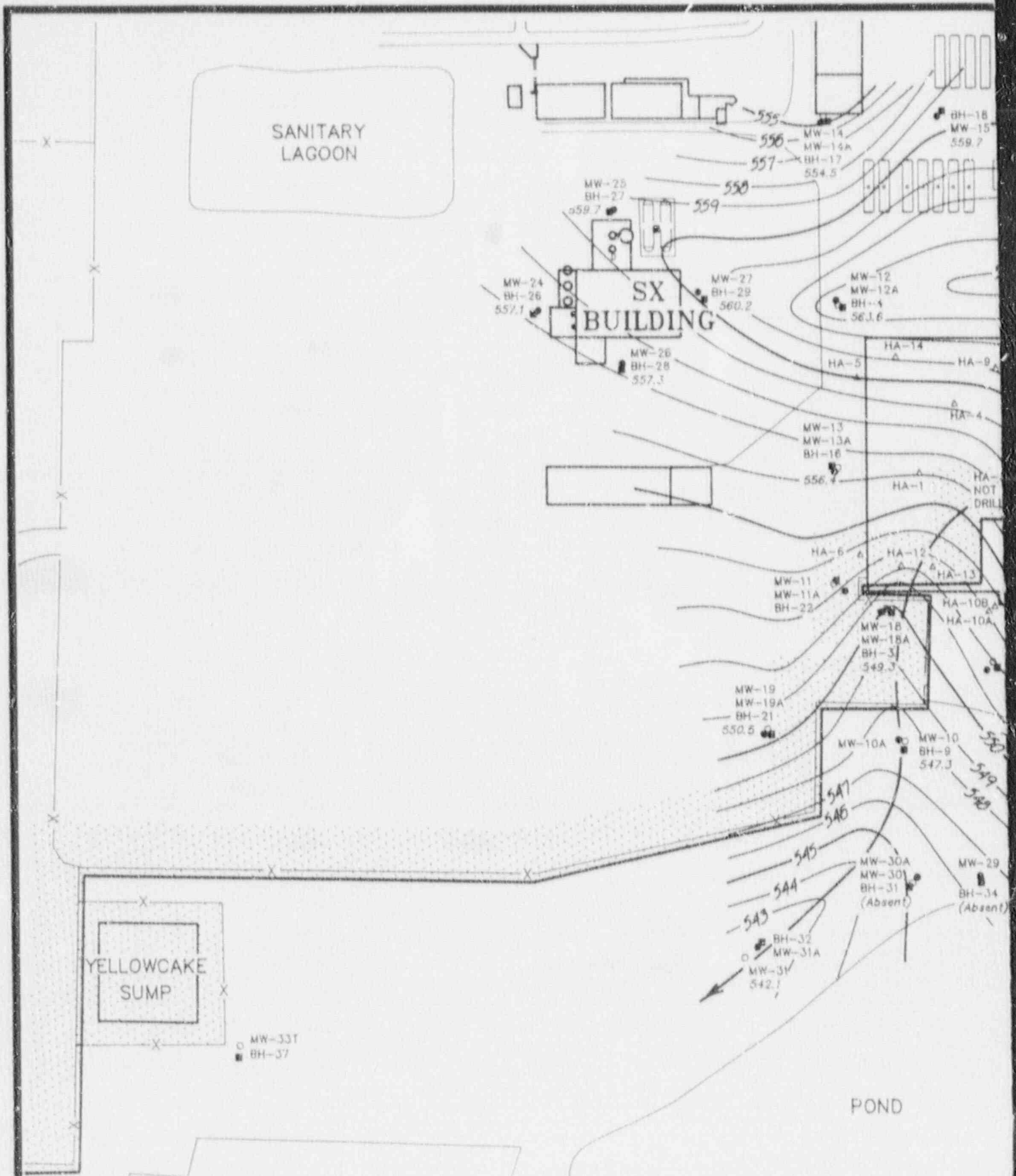
SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-25
BH-27
559.7
MW-24
BH-26
557.1
MW-27
BH-29
560.2
MW-26
BH-28
557.3
MW-14
MW-14A
BH-17
554.5
BH-18
MW-15
559.7
MW-12
MW-12A
BH-4
563.6
MW-13
MW-13A
BH-16
556.4
HA-14
HA-9
HA-5
HA-4
HA-1
NOT
DRILL
HA-6
HA-12
HA-13
HA-10B
HA-10A
MW-11
MW-11A
BH-22
MW-18
MW-18A
BH-3
549.3
MW-19
MW-19A
BH-21
550.5
MW-10A
MW-10
BH-9
547.3
MW-30A
MW-30
BH-31
(Absent)
MW-29
BH-34
(Absent)
BH-32
MW-31A
MW-31
542.1
MW-33T
BH-37
555
556
557
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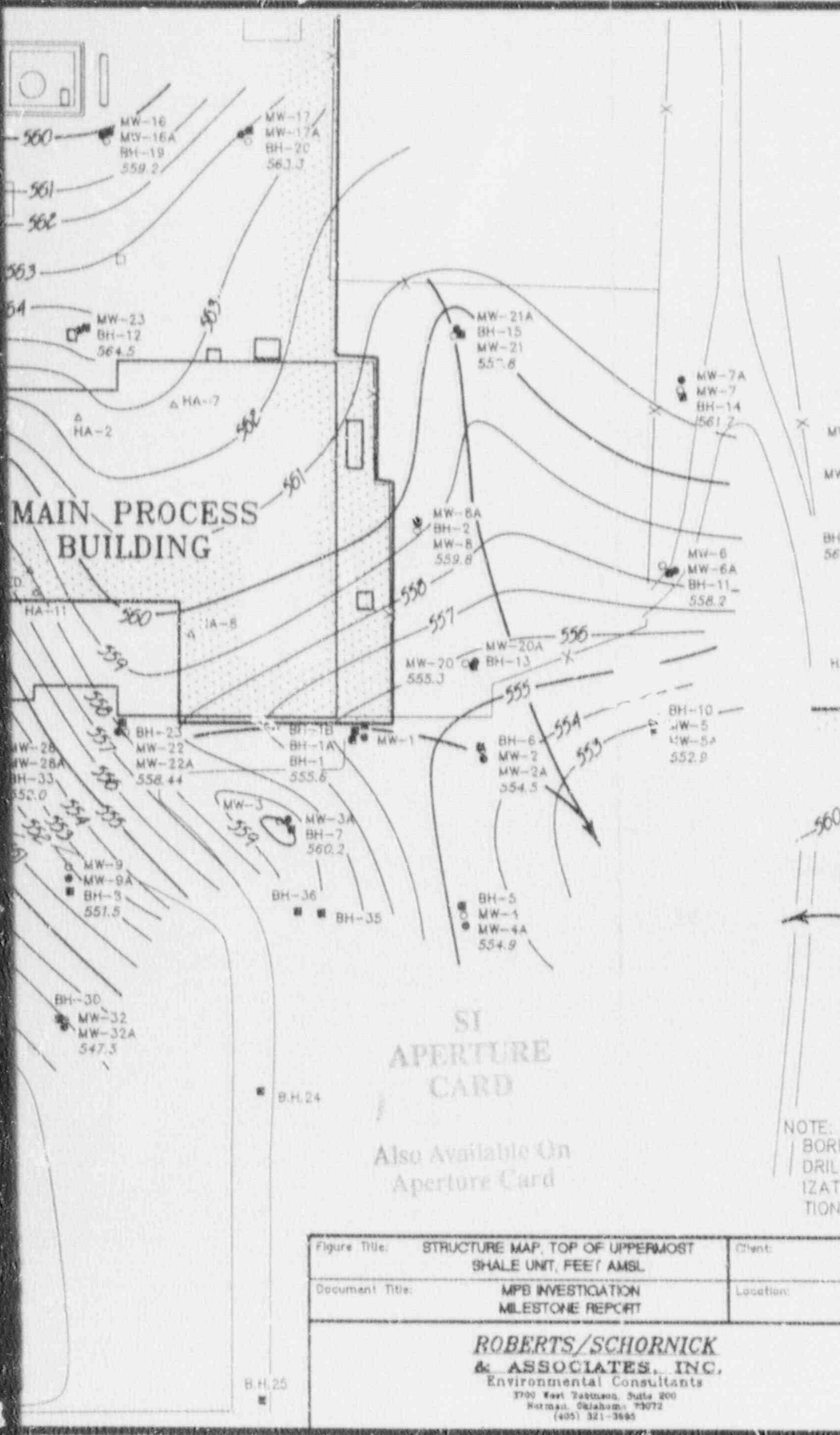
559
550
549
548
547
546
545
544
543



SI APERTURE CARD

Also Available On Aperture Card

LEGEND

● MW-7 SHALLOW SHALE WELL

○ MW-7A DEEP SANDSTONE WELL

■ BH-14 561.7 LITHOLOGICAL SOIL CHARACTERIZATION BORING AND ELEVATION OF TOP OF UPPERMOST SHALE UNIT, FEET AMSL

△ HA-8 HAND AUGER BORING, MAIN PROCESS BUILDING

APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

560 CONTOUR OF ELEVATION OF TOP OF UPPERMOST SHALE UNIT, FEET AMSL

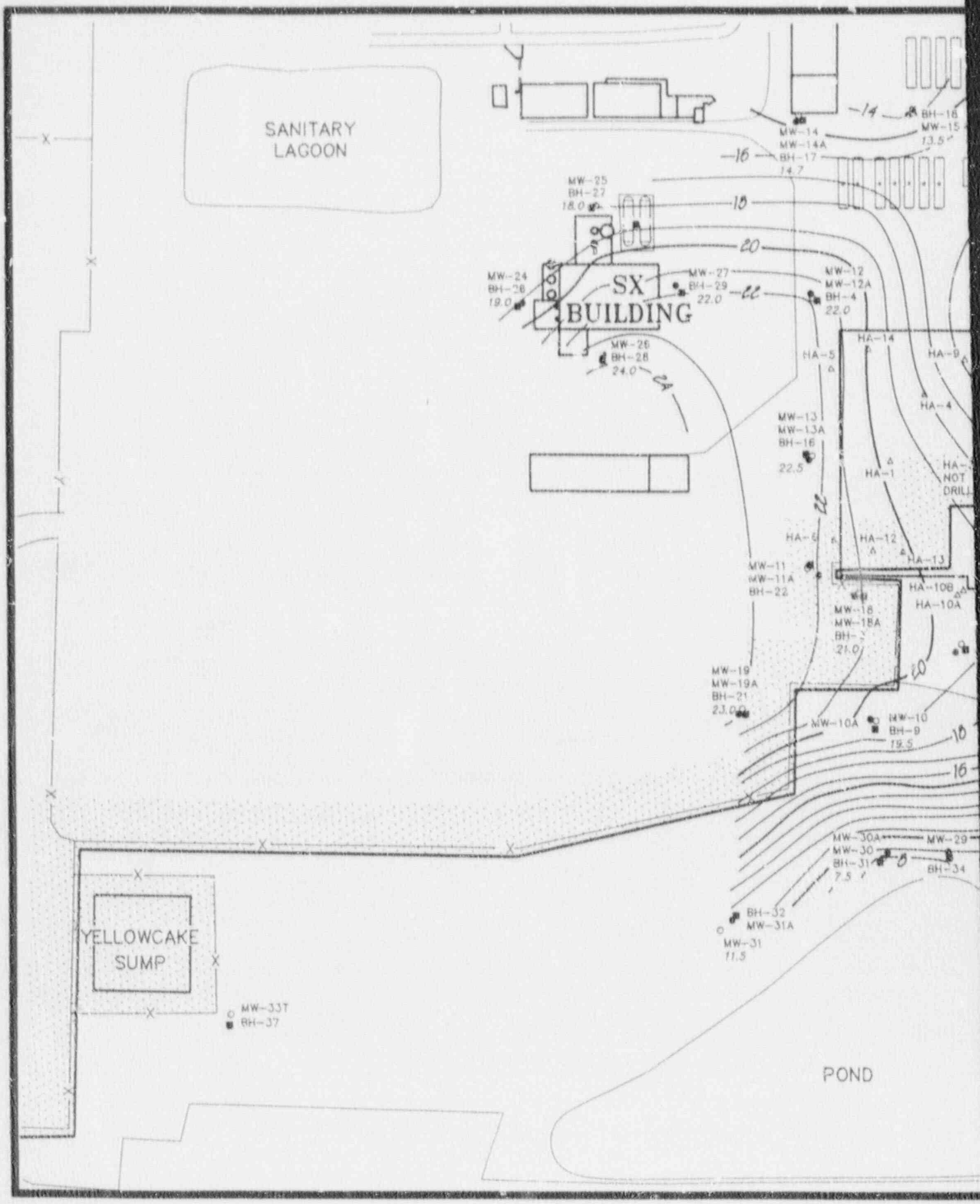
CONTOUR INTERVAL=1.0 FT.

← POSSIBLE PALEOCHANNEL

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: STRUCTURE MAP, TOP OF UPPERMOST SHALE UNIT, FEET AMSL		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 11/9/90	PREPARED BY: B.J.S.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M18	FIGURE NO. 17	

9012260268-12


SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-14
MW-14A
BH-17
14.7
BH-18
MW-15
13.5
MW-25
BH-27
18.0
MW-24
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MW-27
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MW-12
MW-12A
BH-4
22.0
MW-26
BH-28
24.0
MW-13
MW-13A
BH-16
22.5
MW-11
MW-11A
BH-22
MW-18
MW-18A
21.0
MW-19
MW-19A
BH-21
23.0
MW-10A
MW-10
BH-9
19.5
MW-30A
MW-30
BH-31
7.5
MW-29
BH-34
BH-32
MW-31A
MW-31
11.5
MW-33T
BH-37
HA-14
HA-5
HA-9
HA-4
HA-1
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DRILL
HA-6
HA-12
HA-13
HA-10B
HA-10A
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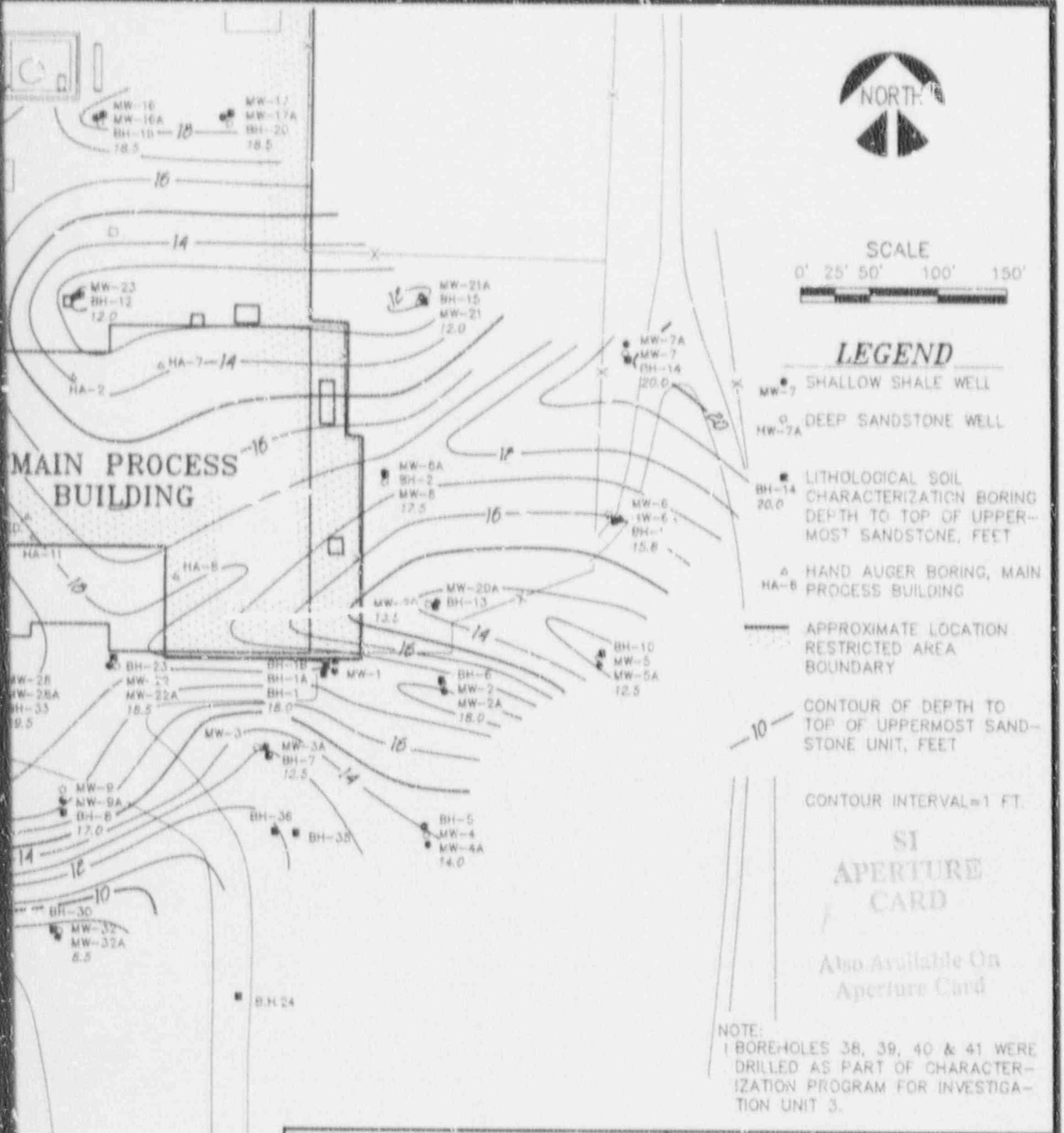

NOTE:
1 BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

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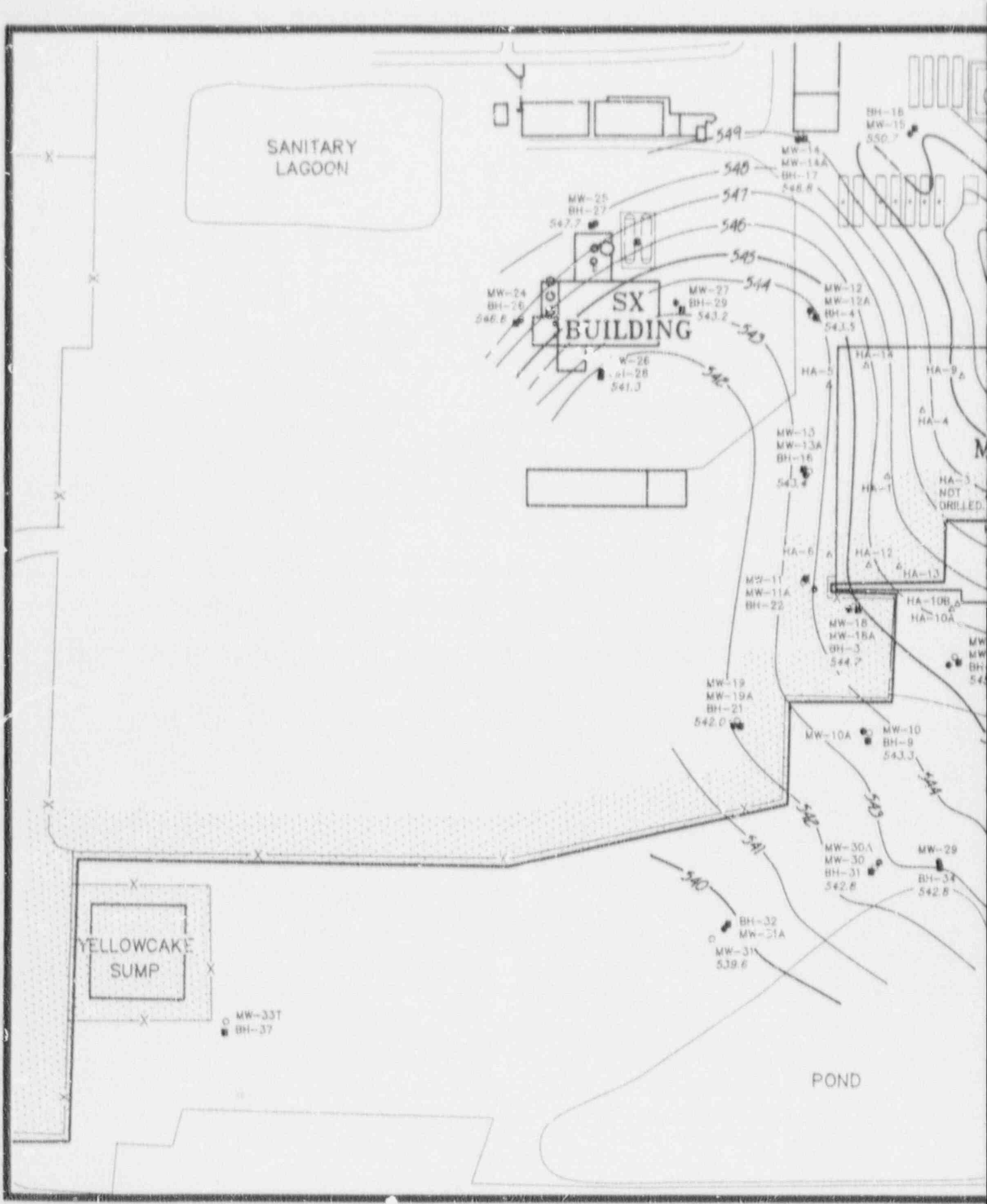
Aperture Card

Figure Title: DEPTH TO TOP OF UPPERMOST SANDSTONE UNIT, FEET
Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT
Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3645

DATE: 11/9/90
SCALE: 1"=100'
PROJECT NO: 90067 M19
PREPARED BY: B.J.S.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO. 18

9012260268-13


SANITARY LAGOON
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548
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540
BH-18
MW-15
550.7
MW-14
MW-14A
BH-17
548.8
MW-25
BH-27
547.7
MW-24
BH-26
546.8
SX BUILDING
MW-27
BH-29
543.2
W-26
-28
541.3
MW-12
MW-12A
BH-4
543.5
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
543.4
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
MW-18A
BH-3
544.7
MW-19
MW-19A
BH-21
542.0
MW-10A
MW-10
BH-9
543.3
MW-30A
MW-30
BH-31
542.8
MW-29
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BH-32
MW-31A
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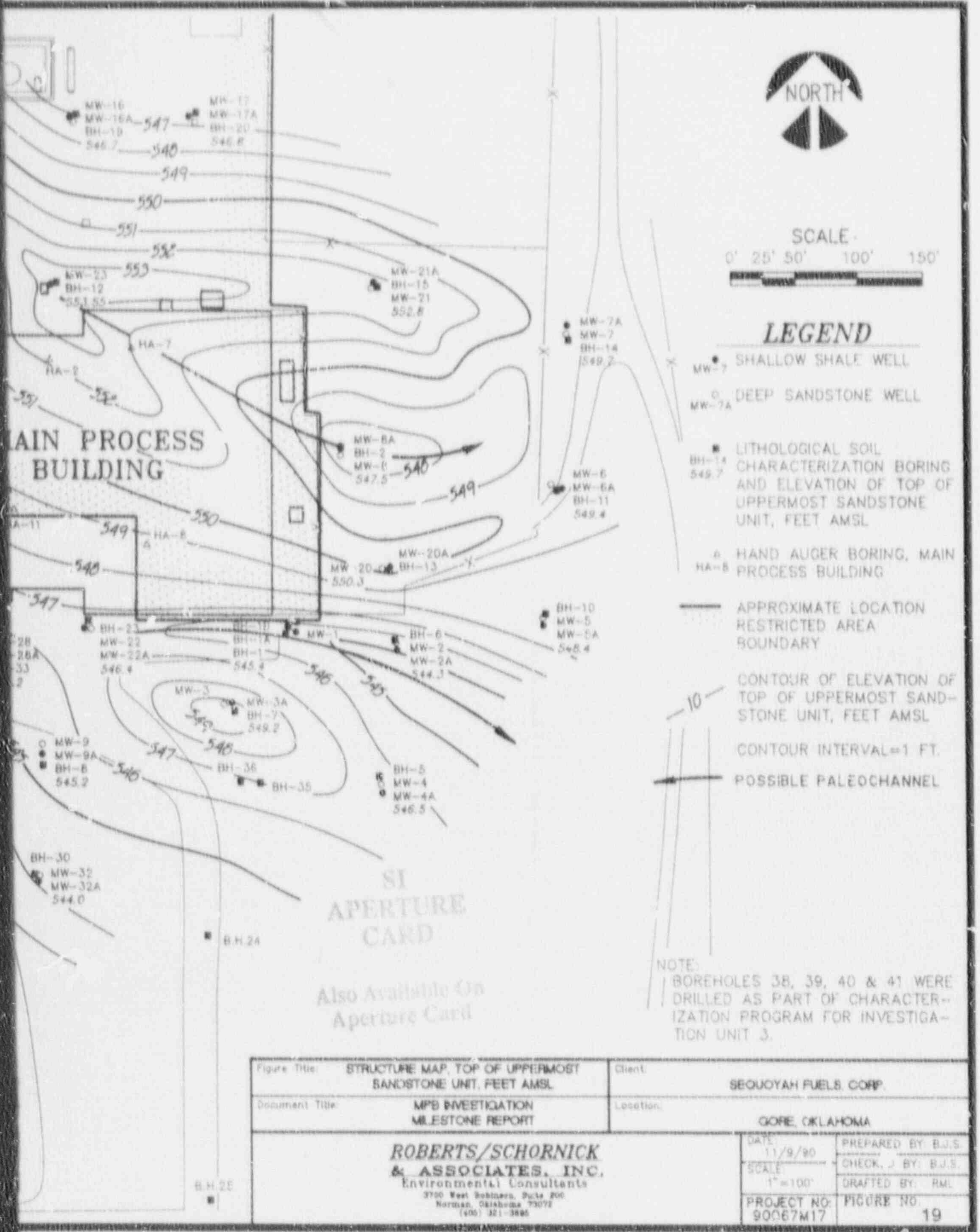
MW-33T
BH-37
POND



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: STRUCTURE MAP, TOP OF UPPERMOST SANDSTONE UNIT, FEET AMSL	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
SCALE: 1"=100'	CHECK. J BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067M17	FIGURE NO. 19

9012260268-14

AGE	FORMATION		DEPTH INTERVAL (FEET)	THICKNESS (FEET)	LITHOLOGIC DESCRIPTION
RECENT	RECENT FILL		0 - 17'	0 - 17'	Recent fill consisting of sand, silty sand, overlain by asphalt and concrete cover. Utility line trenches can be from 2-17 feet deep and consist of fine silty sand, overlain by silty clays. The sands typically surround the utility lines.
QUATERNARY	TERRACE DEPOSITS		0 - 16.4'	0 - 15.5' (Ave. 7.7)	Laterally discontinous deposits of gravelly silty clays, silty clays, sandy silty clays and silt, overlain by gravelly sandy clays, clayey sandy silt, and clayey silt. Gravelly silty clay deposits range in thickness from approximately 3.4 feet to 15 feet thick. Silty clay deposits range from 0.6 feet to 9.4 feet thick.
LOWER PENNSYLVANIAN	ATOKA	Shale Unit SH1	1.0 - 24.0	0 - 20.10' (Ave. 9.2')	Shale, dark grayish brown to dark gray, laterally continuous, fissile, silty.
		Sand-stone Unit SA1	7' - 27.5'	0.4 - 12.5 (Ave 3.2)	Sandstone, Pale brown to dark gray, quartzose, very fine to medium grain, v. well cemented, laterally continuous.
		Shale Unit SH2	8 - 32.5	2.6 - 9.8 (Ave. 5.2)	Sandy Shale - Shale, Dark gray to light brownish gray, fissile, silty, contains minor laterally discontinuous silty sandstone beds, laterally continuous across site.
		Sandstone Unit SA2	12.5 - 38.0	3 - 10.3 (Ave. 5.0)	Sandstone, dark gray to very dark gray, quartzose, very fine grain, well cemented, laterally continuous across site.
		Shale Unit SH3	17.0 ->40.5	1' - 78.0' (Ave. 2.5)	Sandy Shale - Shale, very dark gray, sandy to silty, very fine grain quartz, organic. Laterally continuous across site.
		Sand-stone Unit SA3	30.0 - 37.0	1.5' - 3.0' (Ave. 2.5)	Sandstone, Dark Gray, quartzose, very fine grain, very well cemented.
		Shale Unit SH4	27.5' - 35.5'	>4'	Shale- sandy shale, dark gray to very dark gray, very fine grain quartz, fissile to highly fractured.

Figure Title: SITE SPECIFIC STRATIGRAPHIC COLUMN	*Client:* SEQUOYAH FUELS CORPORATION
Document Title: MPB Investigation Milestone Report	*Location:* Gore, Oklahoma

ROBERTS/SCHORNICK
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Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
405/321-3895

Drawn by: ML	*Scale:* NA
Checked by: BJS	*Date:* 11-15-90
Project No.: 90067	*Figure No.:* 20

AFTER K.S. JOHNSON, 1983

SCALE

0 10 20 MILES

LOCATION MAP

N

Figure Title: MAP SHOWING PRINCIPAL BEDROCK AQUIFERS AND RECHARGE AREAS SEE FIGURE 22 FOR EXPLANATION OF MAP	Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.	
	CHECKED BY: B.J.S.	
SCALE: AS SHOWN	DRAFTED BY: S.A.R.	
PROJECT NO: 90067	FIGURE NO.: 21	

EXPLANATION

RECHARGE AREAS

Patterns of red lines on the map show known or potential recharge areas for the various bedrock aquifers.

▨ Recharge Areas. This pattern shows areas that are known to be part of the recharge area for a bedrock aquifer: includes outcrops of the aquifer and of overlying porous and permeable rocks hydraulically connected with the aquifer.

▨ Potential Recharge Areas. This pattern shows areas that may be part of the recharge area for a bedrock aquifer: includes areas where confining strata may contain pathways for downward movement of water to the aquifer, and safety zones (generally extending 4 miles beyond the known limits of the aquifer) that may overlie unknown extensions of the aquifer or rocks hydraulically connected with the aquifer.

BEDROCK AQUIFERS

Colored areas on the map show distribution of bedrock aquifers, which are the rock units generally considered favorable or moderately favorable for development of ground-water resources. Bedrock aquifers are listed below by geologic age from oldest to youngest. References, listed at the end of each aquifer description, include Hydrologic Atlases (HA) and Other Reports that provide more detailed information. All references are given in the 4-page pamphlet that accompanies this map.

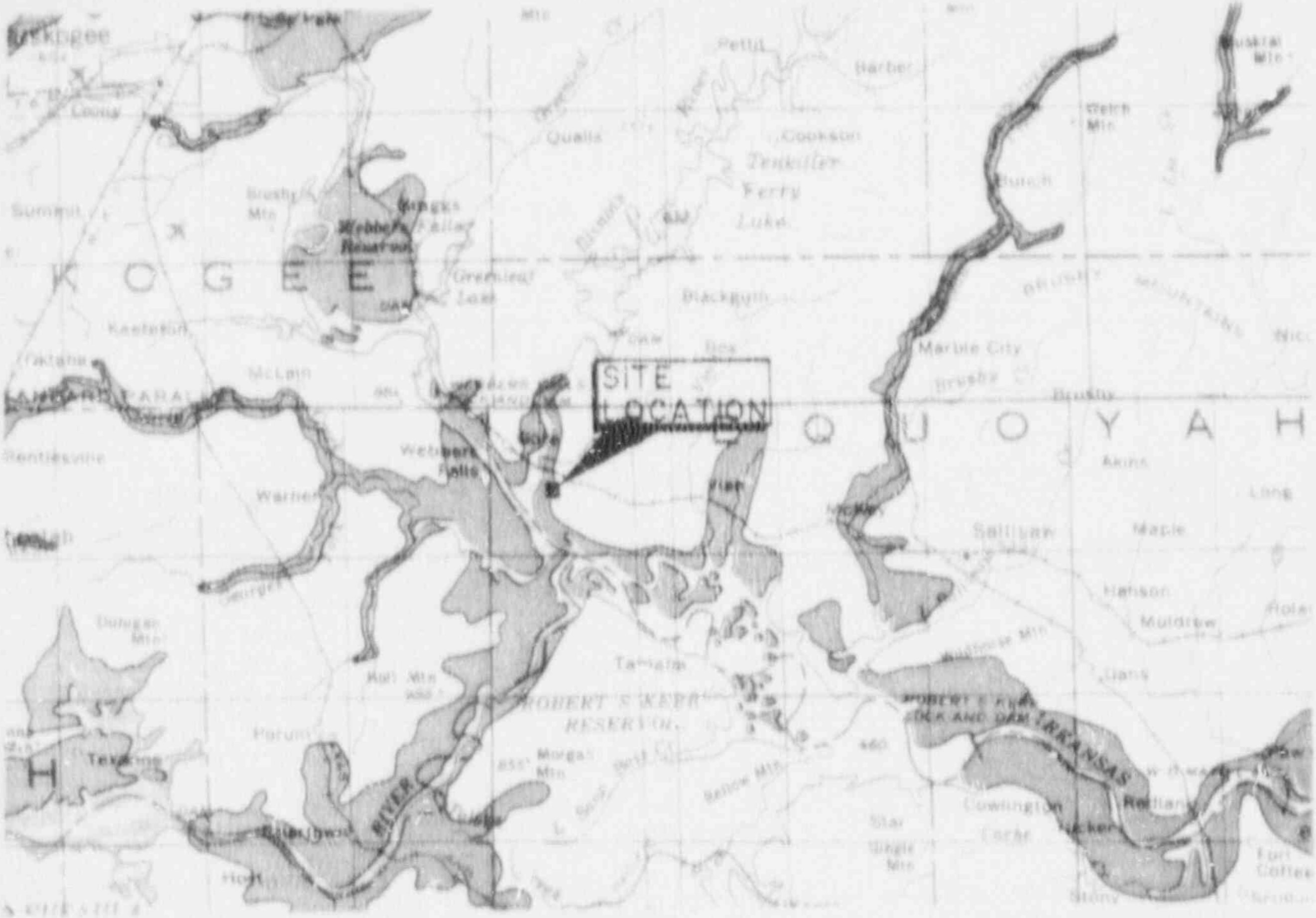
KR Keokuk and Reeds Spring Formations (Mississippian in age). This northeastern Oklahoma unit, also referred to as the "Boone Formation" or "Boone Chert," consists of limestone and cherty limestone beds that locally are fractured or cavernous. Thickness ranges from 250 ft. in south to about 400 ft. in north. Wells consistently yield more than 5 gpm, and some yield as much as 50 gpm. Water is of good quality (generally less than 500 mg/L dissolved solids) although typically it is hard. Recharge areas include outcrops of aquifer and of overlying Mississippian limestones and shales above aquifer. Potential recharge areas include areas in northwest where aquifer underlie younger Pennsylvanian rocks; also areas that extend 4 miles west and south of aquifer limits. References: HA-1, HA-2; also Other Reports 33, 38, 44, 49, 51, 61.

AFTER K.S. JOHNSON, 1983

Figure Title: EXPLANATION FOR FIGURE 21
Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT
Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: N/A
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 22



EXPLANATION

▨ Alluvium and Terrace Deposits (Quaternary in age). Unconsolidated deposits of sand, silt, clay, and gravel that occur along or adjacent to modern and ancient rivers and streams. Thickness generally ranges from 10 to 50 ft. (locally as much as 100 ft.). Wells generally yield 10 to 500 gpm of water (locally several thousand gpm), and most water is of good quality (less than 1,000 mg/L). Recharge areas are essentially the same as distribution of the alluvium and terrace deposits.

AFTER K.S. JOHNSON, 1983

SCALE
0 10 20 MILES

Figure Title: MAP SHOWING PRINCIPAL ALLUVIAL AND TERRACE AQUIFERS
Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT
Location: GORE, OKLAHOMA

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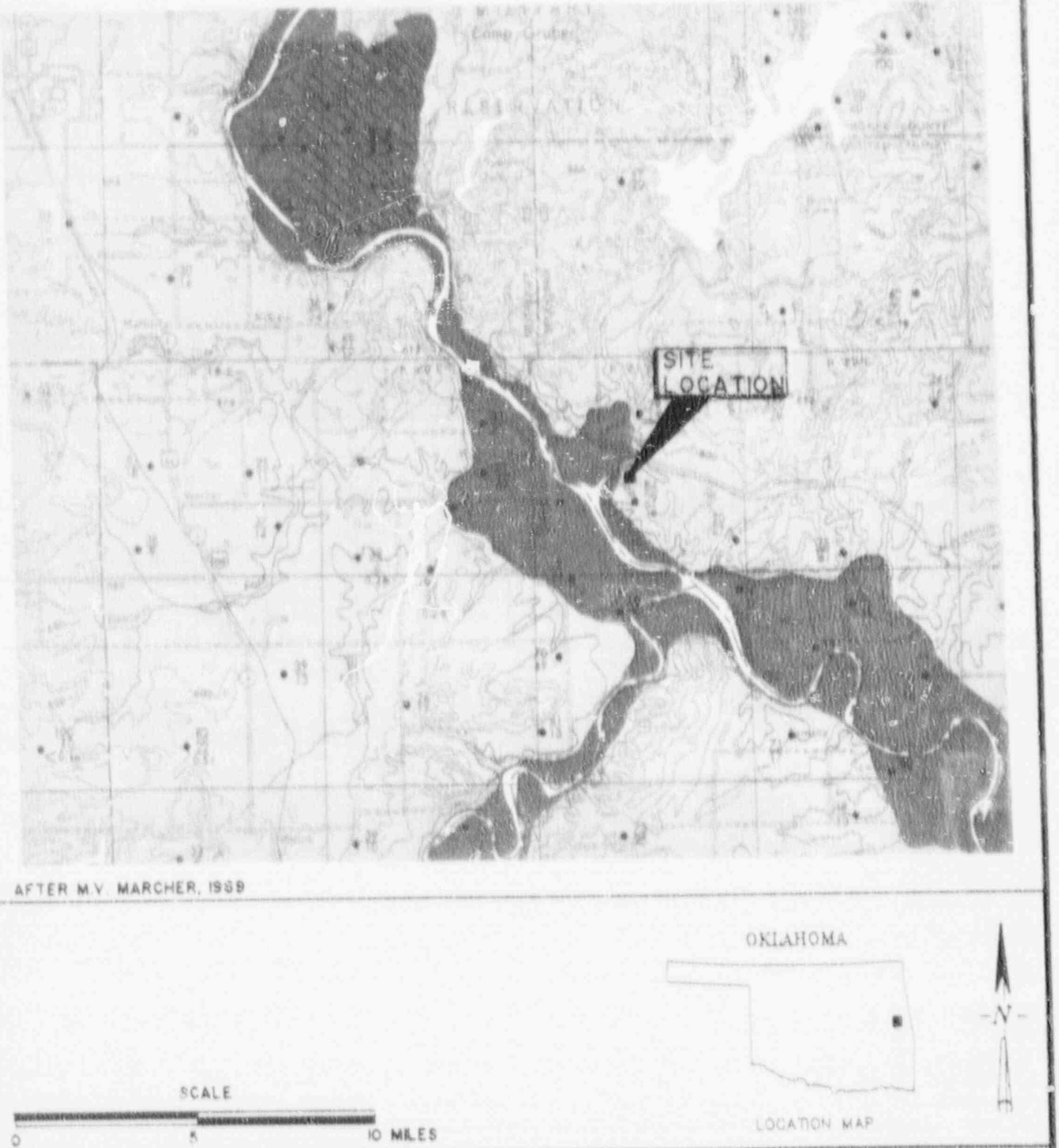
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: AS SHOWN
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 23



AFTER M.V. MARCHER, 1989

Figure Title: MAP SHOWING AVAILABILITY OF GROUNDWATER SEE FIGURE 25 FOR EXPLANATION OF MAP	Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

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& ASSOCIATES, INC.
Environmental Consultants
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(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
	CHECKED BY: B.J.S.
SCALE: AS SHOWN	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 24

EXPLANATION

■

Most favorable for ground-water supplies

This area includes alluvium along the Arkansas and Canadian Rivers and some terrace deposits along the Arkansas River. Wells in alluvium along the Arkansas River are reported to yield up to 900 gpm (gallons per minute); larger yields might be obtained locally. Alluvium along the Canadian River is untested, but yields comparable to those from alluvium of the Arkansas River probably could be obtained. Area A, shown by diagonal lines in Tulsa and Wagoner Counties, is underlain by terrace deposits, up to 60 feet thick, that are reported to yield as much as 125 gpm locally. Area B, shown by diagonal lines near Braggs, is also underlain by terrace deposits, up to 90 feet thick, that may yield up to 100 gpm.

▩

Moderately favorable for ground-water supplies

This area is underlain by the Keokuk and Reeds Spring Formations and, in T. 13 N., R. 23 E., by rocks of pre-Mississippian age. Wells in the Keokuk and Reeds Spring Formations are reported to yield as much as 20 gpm and, locally, more. A few springs yield several hundred gallons per minute. Some of the limestones and sandstones, particularly the Burgen Sandstone in T. 13 N., R. 23 E., and in the vicinity of Qualls, are reported to yield up to 20 gpm.

░

Least favorable for ground-water supplies

The area is underlain by shale, siltstone, and sandstone of Pennsylvanian age and by terrace deposits mainly along the shores of Eufaula Reservoir. Most wells in the shale, siltstone, and sandstone yield only a fraction of a gallon per minute to a few gallons per minute. A few wells are reported to yield as much as 20 gpm. In local areas, terrace deposits along Eufaula Reservoir may yield 10 gpm or possibly more.

•

Well

Upper number is depth of the well in feet; middle number is depth to water in feet below land surface in 1966 and 1967; lower number is yield of the well in gallons per minute. * = estimated value, r = reported value, f = flowing well, + = height of water level above ground level, u = unknown.

• 24

Spring

Number beside spring symbol is yield in gallons per minute. * = estimated yield. Yield data obtained in 1966.

AFTER M.V. MARCHER, 1969

Figure Title: EXPLANATION FOR FIGURE 24

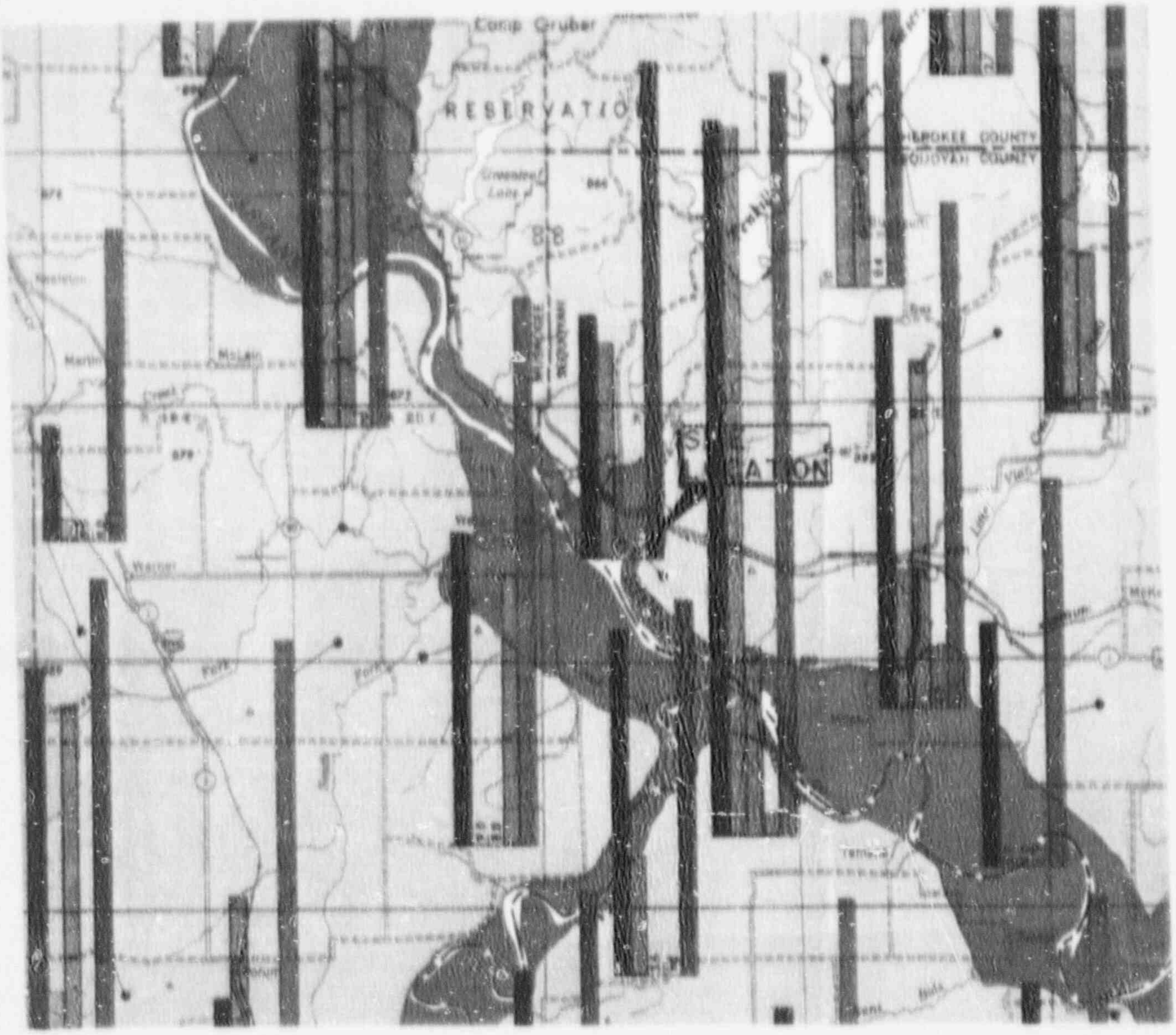
Client: SEQUOYAH FUELS CORPORATION

Document Title: MPB INVESTIGATION
MILESTONE REPORT

Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: N/A
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 25



AFTER M.V. MARCHER, 1969

SCALE

0 5 10 MILES

Figure Title:	MAP SHOWING GENERAL CHEMICAL QUALITY OF GROUNDWATER SEE FIGURE 27 FOR EXPLANATION OF MAP	Client:	SEQUOYAH FUELS CORPORATION
Document Title:	MPB INVESTIGATION MILESTONE REPORT	Location:	GORE, OKLAHOMA

ROBERTS/SCHORNICK
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Environmental Consultants
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(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
	CHECKED BY: B.J.S.
SCALE: AS SHOWN	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 26

▨

Chemical quality of water generally poor to fair

This area is underlain by shale, siltstone, and sandstone and some terrace deposits. Of the water samples tested, 57 percent contained more than 250 ppm sulfate, 10 percent contained more than 250 ppm chloride, and 53 percent contained more than 500 ppm total dissolved solids. Four samples contained more than 45 ppm nitrate; two of these were taken from wells that are apparently polluted. Water from sandstone is least highly mineralized, whereas that from shale, particularly shale that contains coal beds, is most highly mineralized.

Summary of Available Chemical Data

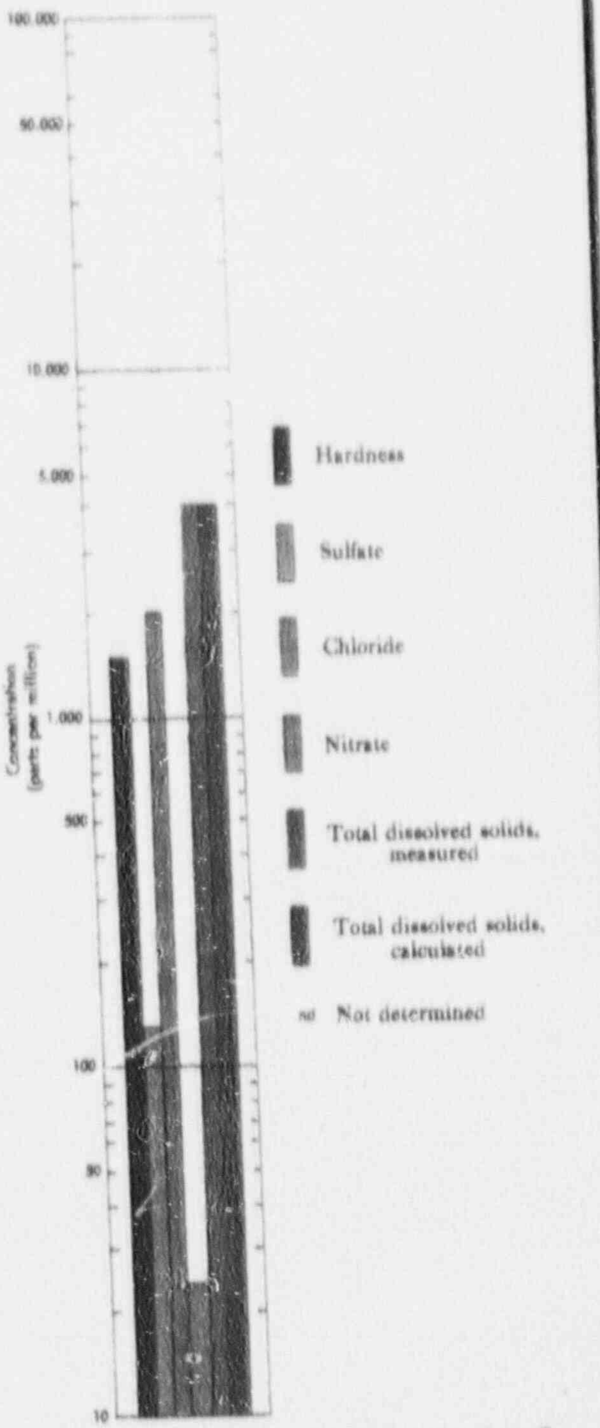
	CONCENTRATION (PPM)			NUMBER OF ANALYSES
	MAXIMUM	MEDIAN	MINIMUM	
Hardness	3,020	144	4.0	88
Sulfate	3,150	36	4.2	84
Chloride	715	44	2.0	84
Nitrate	82	1.6	0.0	82
Total dissolved solids	5,160	581	63	84

●

Well from which water sample was taken

●

Spring from which water sample was taken



Concentration of selected dissolved solids in water from wells and springs. Concentrations of 10 ppm or less are shown by numbers in the appropriate column of the graph.

AFTER M.V. MARCHER, 1969

Figure Title:
EXPLANATION FOR FIGURE 26

Client:
SEQUOYAH FUELS CORPORATION

Document Title:
MPB INVESTIGATION
MILESTONE REPORT

Location:
GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90
SCALE: N/A
PROJECT NO: 90067
PREPARED BY: W.E.P.
CHECKED BY: B.J.S.
DRAFTED BY: S.A.R.
FIGURE NO.: 27

EXPLANATION

▨

Chemical quality of water generally good to excellent

This area includes alluvium along the Arkansas and Canadian Rivers and some terrace deposits in Tulsa, Wagoner, and Muskogee Counties. Hardness is the most troublesome chemical characteristic; 90 percent of the water samples tested were hard or very hard. The total dissolved solids was low to moderate; less than 5 percent of the samples exceeded 500 ppm. Except at a few places, sulfate, chloride, and nitrate concentrations were low. Because of the low to moderate sodium and dissolved-solids contents, most of the water from these deposits is suitable for irrigation.

Summary of Available Chemical Data

	CONCENTRATION (PPM)			NUMBER OF ANALYSES
	MAXIMUM	MEDIAN	MINIMUM	
Hardness	640	255	26	44
Sulfate	196	32	0.0	44
Chloride	62	15	0.8	44
Nitrate	65	0.7	0.0	38
Total dissolved solids	702	335	36	44

▨

Chemical quality of water generally fair to good

This area is underlain by the Keokuk and Reeds Spring Formations and older rocks. Hardness is the most troublesome chemical characteristic; 70 percent of the water samples tested were hard or very hard. Thirty-eight percent of the samples had a total dissolved solids content greater than 500 ppm. The sulfate, chloride, and nitrate contents are generally low, except locally.

Summary of Available Chemical Data

	CONCENTRATION (PPM)			NUMBER OF ANALYSES
	MAXIMUM	MEDIAN	MINIMUM	
Hardness	1,172	162	20	47
Sulfate	840	14	0.0	47
Chloride	840	16	0.2	47
Nitrate	62	2.2	0.0	47
Total dissolved solids	2,800	320	50	47

AFTER M.V. MARCHER, 1969

Figure Title: EXPLANATION FOR FIGURE 26 (CONT.)	Client: SEQUOYAH FUELS CORPORATION
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

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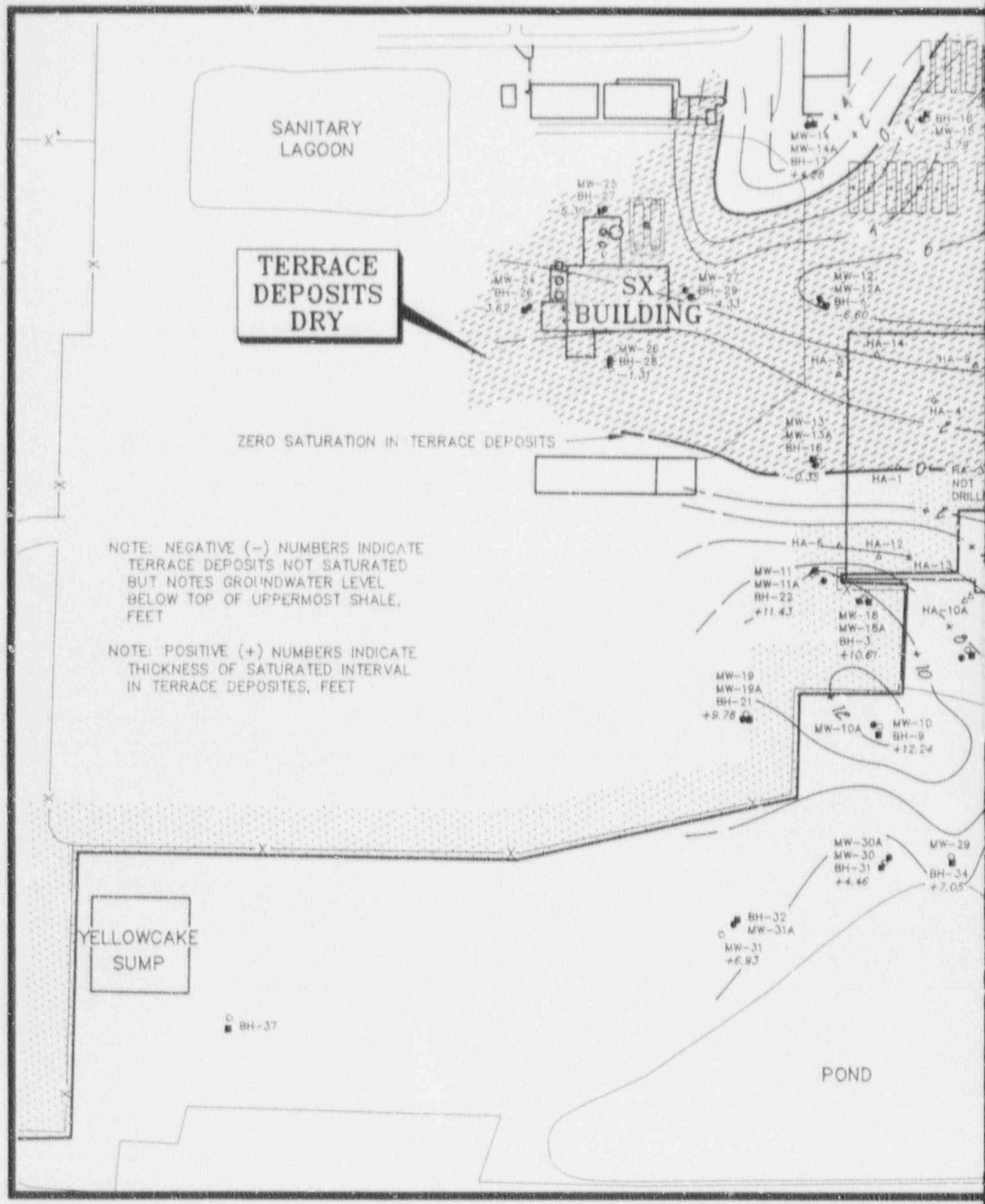
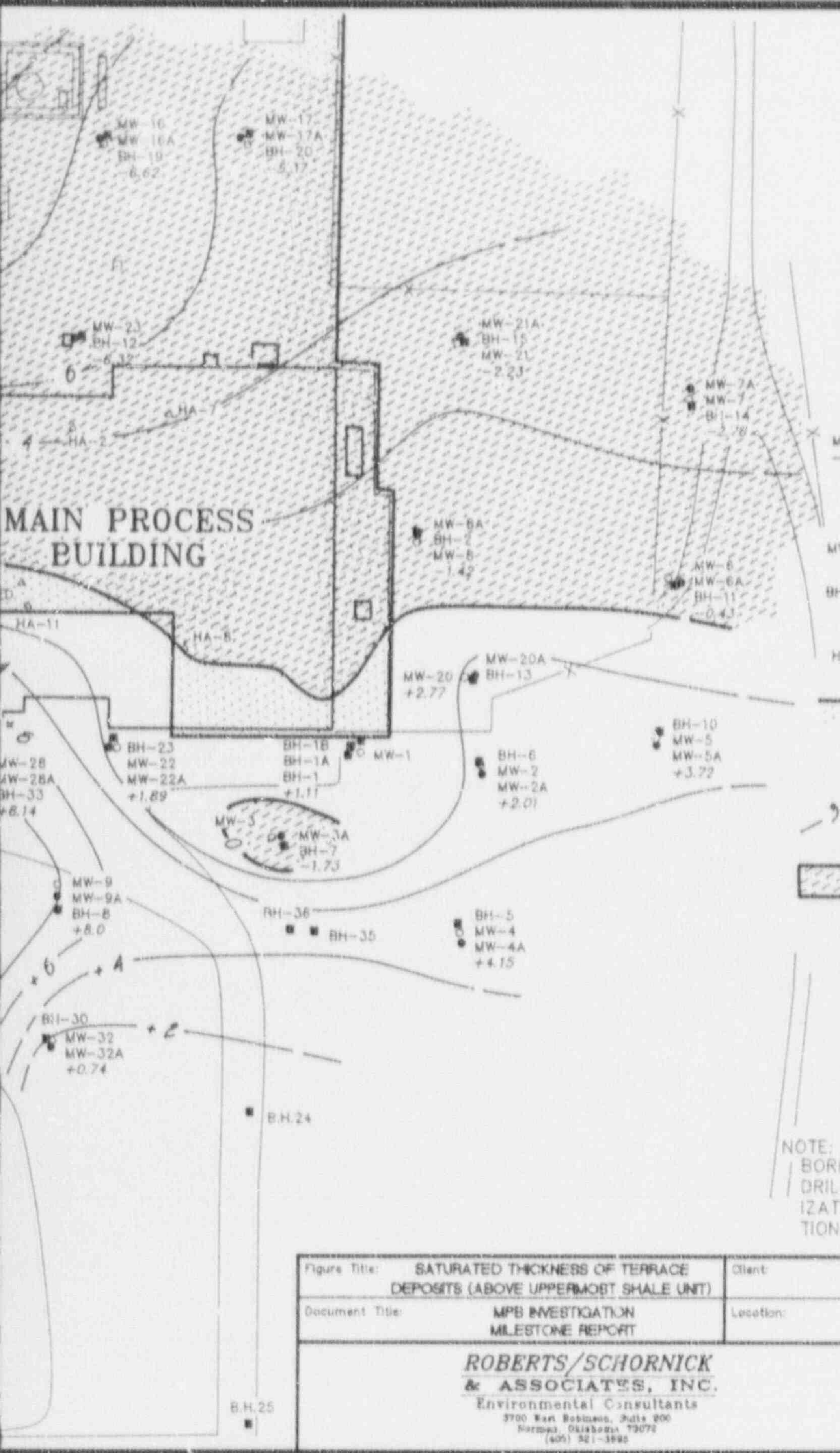
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 10/5/90	PREPARED BY: W.E.P.
SCALE: N/A	CHECKED BY: B.J.S.
	DRAFTED BY: S.A.R.
PROJECT NO: 90067	FIGURE NO.: 27 (Cont.)



NOTE: NEGATIVE (-) NUMBERS INDICATE TERRACE DEPOSITS NOT SATURATED BUT NOTES GROUNDWATER LEVEL BELOW TOP OF UPPERMOST SHALE, FEET

NOTE: POSITIVE (+) NUMBERS INDICATE THICKNESS OF SATURATED INTERVAL IN TERRACE DEPOSITES, FEET



LEGEND

● MW-7 -2.78 SHALLOW SHALE WELL AND SATURATED THICKNESS OF TERRACE DEPOSITS, FEET, 11/12/90

○ MW-7A DEEP SANDSTONE WELL

■ BH-14 LITHOLOGICAL SOIL CHARACTERIZATION BORING

△ HA-5 HAND AUGER BORING, MAIN PROCESS BUILDING

— APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

— 5 — ISOPACH OF SATURATED THICKNESS OF TERRACE DEPOSITS, FEET, 11/12/90

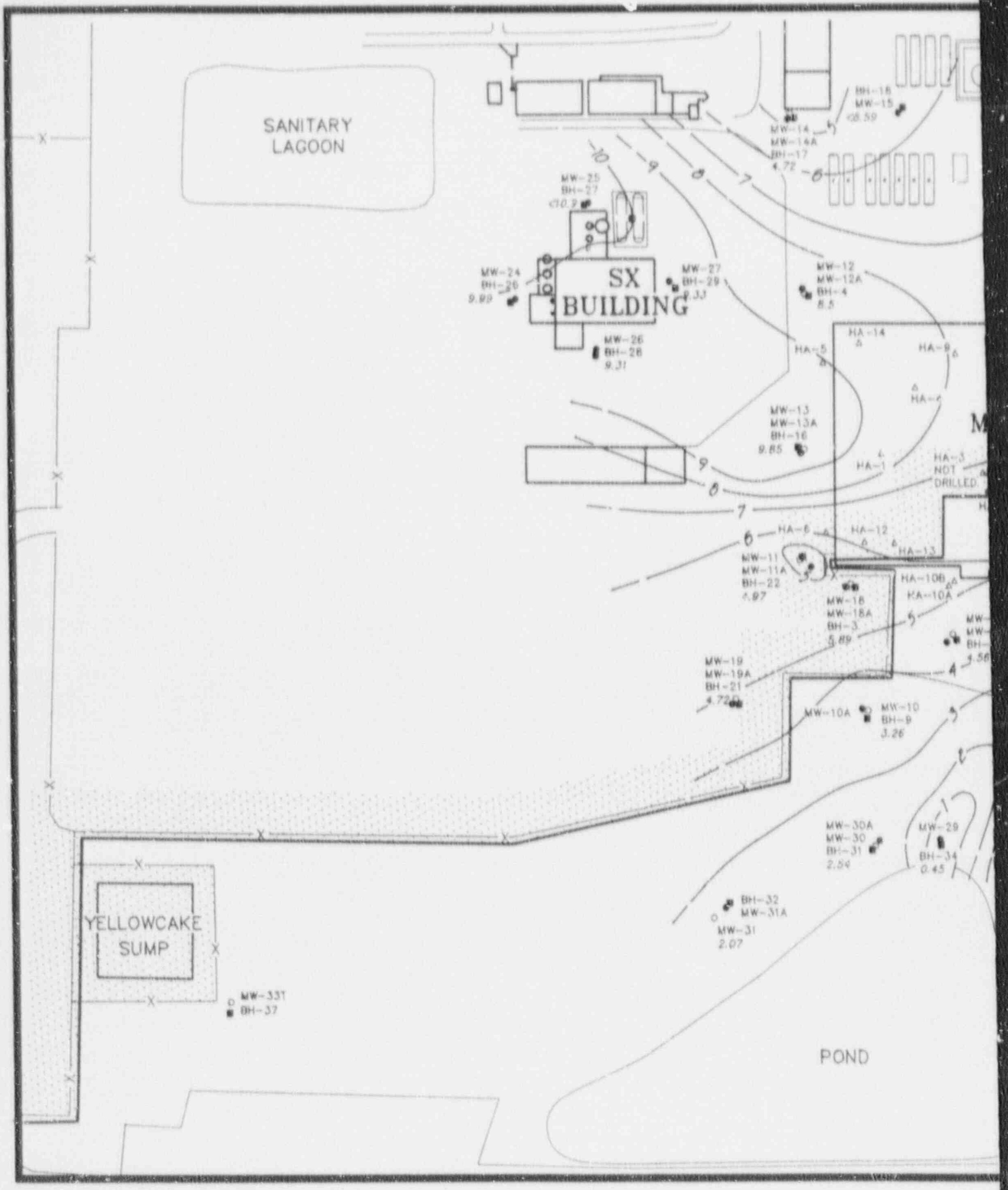
▨ TERRACE DEPOSITS NOT SATURATED AT TIME OF MEASUREMENT, 11/12/90

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: SATURATED THICKNESS OF TERRACE DEPOSITS (ABOVE UPPERMOST SHALE UNIT)	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 11/9/90	PREPARED BY: B.J.S.
		CHECKED BY: B.J.S.
	SCALE: 1" = 100'	DRAFTED BY: RML
	PROJECT NO: 90067 M48	FIGURE NO. 28

9012260268-15


SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
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MW-14
MW-14A
BH-17
4.72
MW-25
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DRILLED
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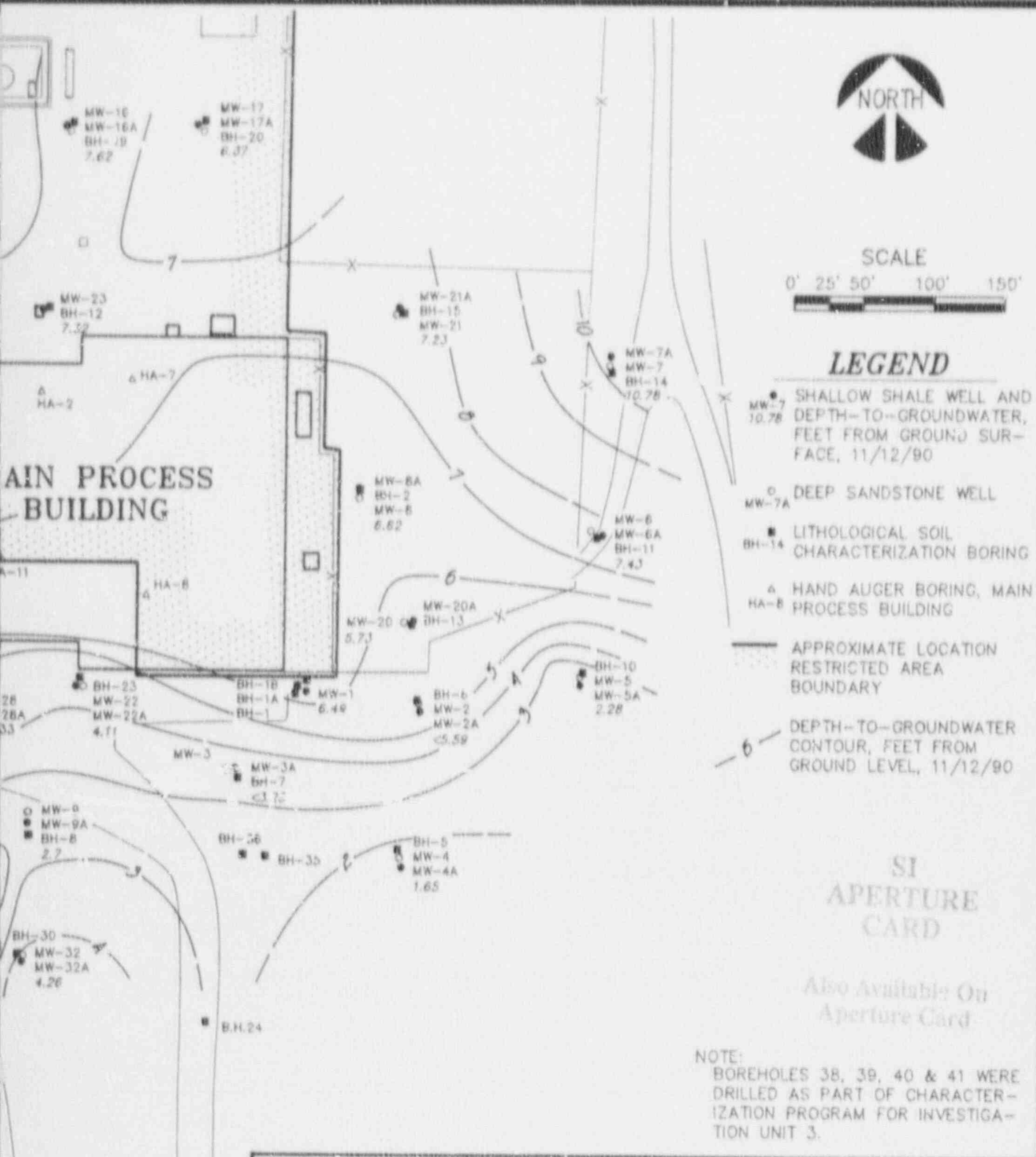

LEGEND

MW-7 10.78 ● SHALLOW SHALE WELL AND DEPTH-TO-GROUNDWATER, FEET FROM GROUND SURFACE, 11/12/90

MW-7A ○ DEEP SANDSTONE WELL

BH-14 ■ LITHOLOGICAL SOIL CHARACTERIZATION BORING

HA-8 △ HAND AUGER BORING, MAIN PROCESS BUILDING

APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

—6— DEPTH-TO-GROUNDWATER CONTOUR, FEET FROM GROUND LEVEL, 11/12/90

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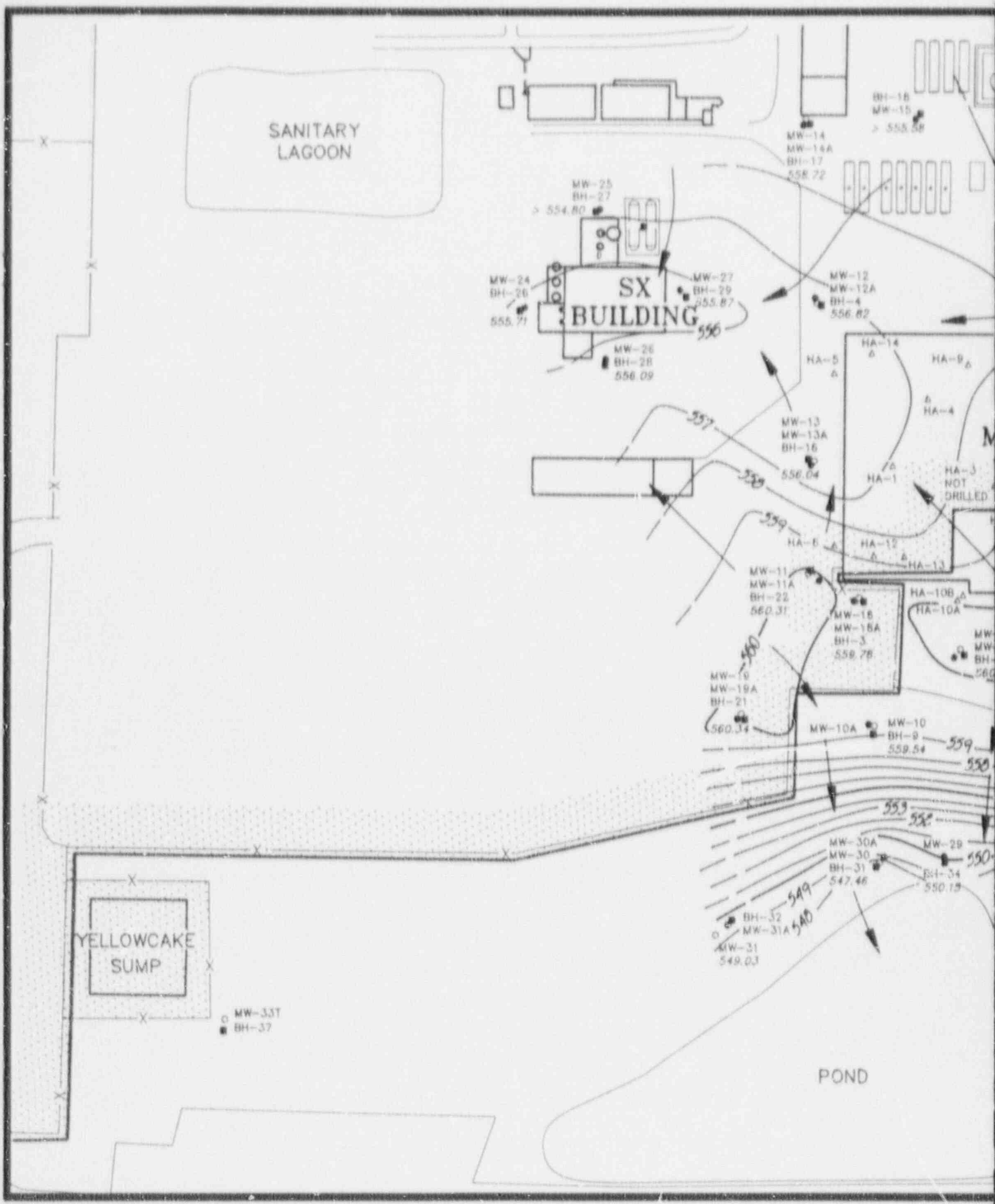
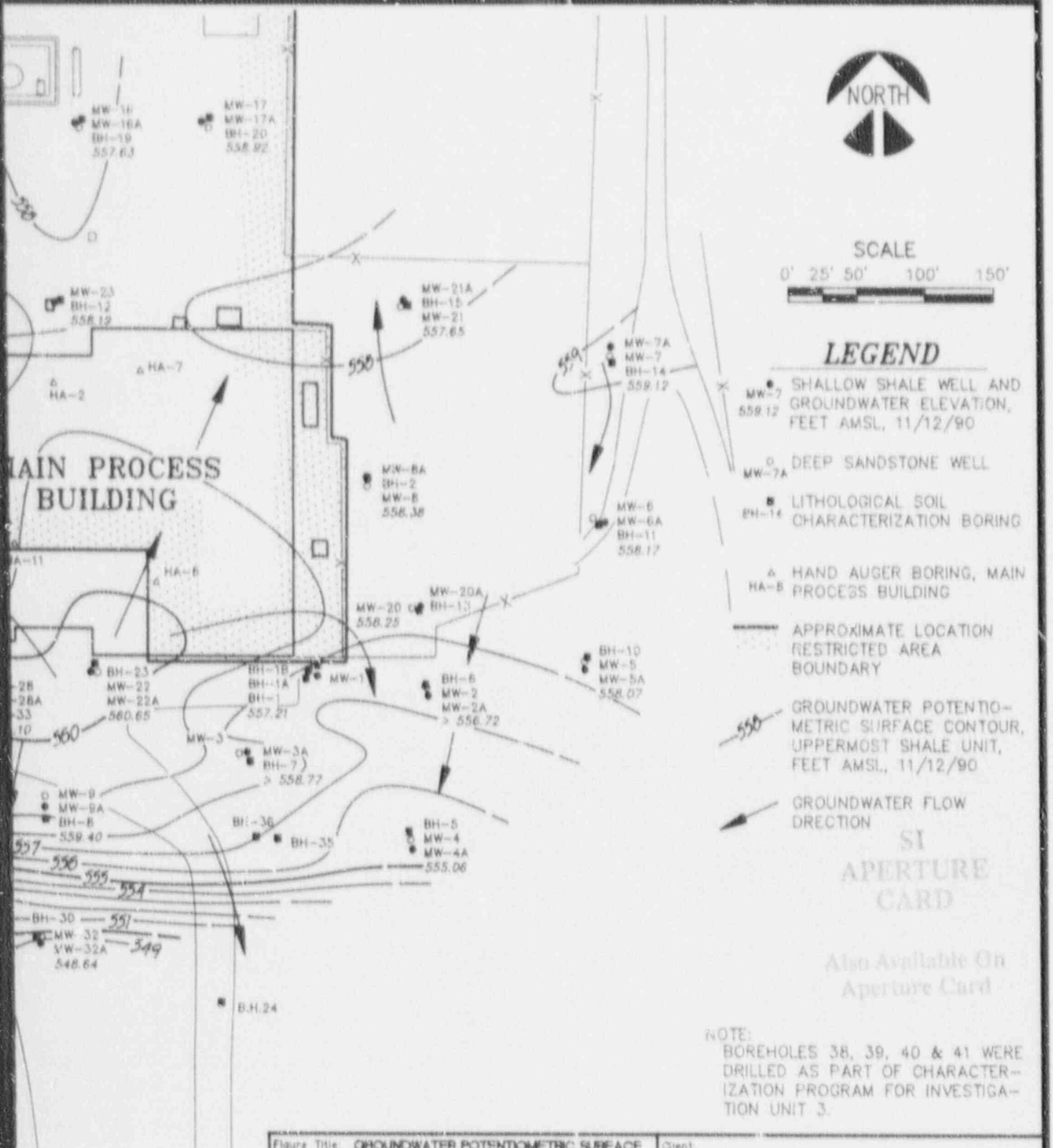
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: DEPTH-TO-GROUNDWATER, SHALE UNIT 11/12/90		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3000		DATE: 11/9/90	PREPARED BY: B.J.S.
		SCALE: 1" = 100'	CHECKED BY: B.J.S.
			DRAFTED BY: RML
		PROJECT NO: 90067 M37	FIGURE NO. 29

9012260268-16


SANITARY LAGOON
BH-18
MW-15
> 555.58
MW-14
MW-14A
BH-17
558.72
MW-25
BH-27
> 554.80
MW-24
BH-26
555.71
SX BUILDING
MW-27
BH-29
555.87
556
MW-12
MW-12A
BH-4
556.82
MW-26
BH-28
556.09
HA-14
HA-5
HA-9
HA-4
557
MW-13
MW-13A
BH-16
556.04
558
HA-1
HA-3
NOT
DRILLED
559
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
560.31
MW-18
MW-18A
BH-3
559.78
HA-10B
HA-10A
560
MW-19
MW-19A
BH-21
560.34
MW-10A
MW-10
BH-9
559.54
559
558
553
552
MW-30A
MW-30
BH-31
547.46
MW-29
550
BH-34
550.15
549
540
BH-32
MW-31A
MW-31
549.03
YELLOWCAKE SUMP
MW-33T
BH-37
POND



LEGEND

MW-7 559.12 SHALLOW SHALE WELL AND GROUNDWATER ELEVATION, FEET AMSL, 11/12/90

MW-7A DEEP SANDSTONE WELL

BH-14 LITHOLOGICAL SOIL CHARACTERIZATION BORING

HA-6 HAND AUGER BORING, MAIN PROCESS BUILDING

APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

550 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR, UPPERMOST SHALE UNIT, FEET AMSL, 11/12/90

GROUNDWATER FLOW DIRECTION

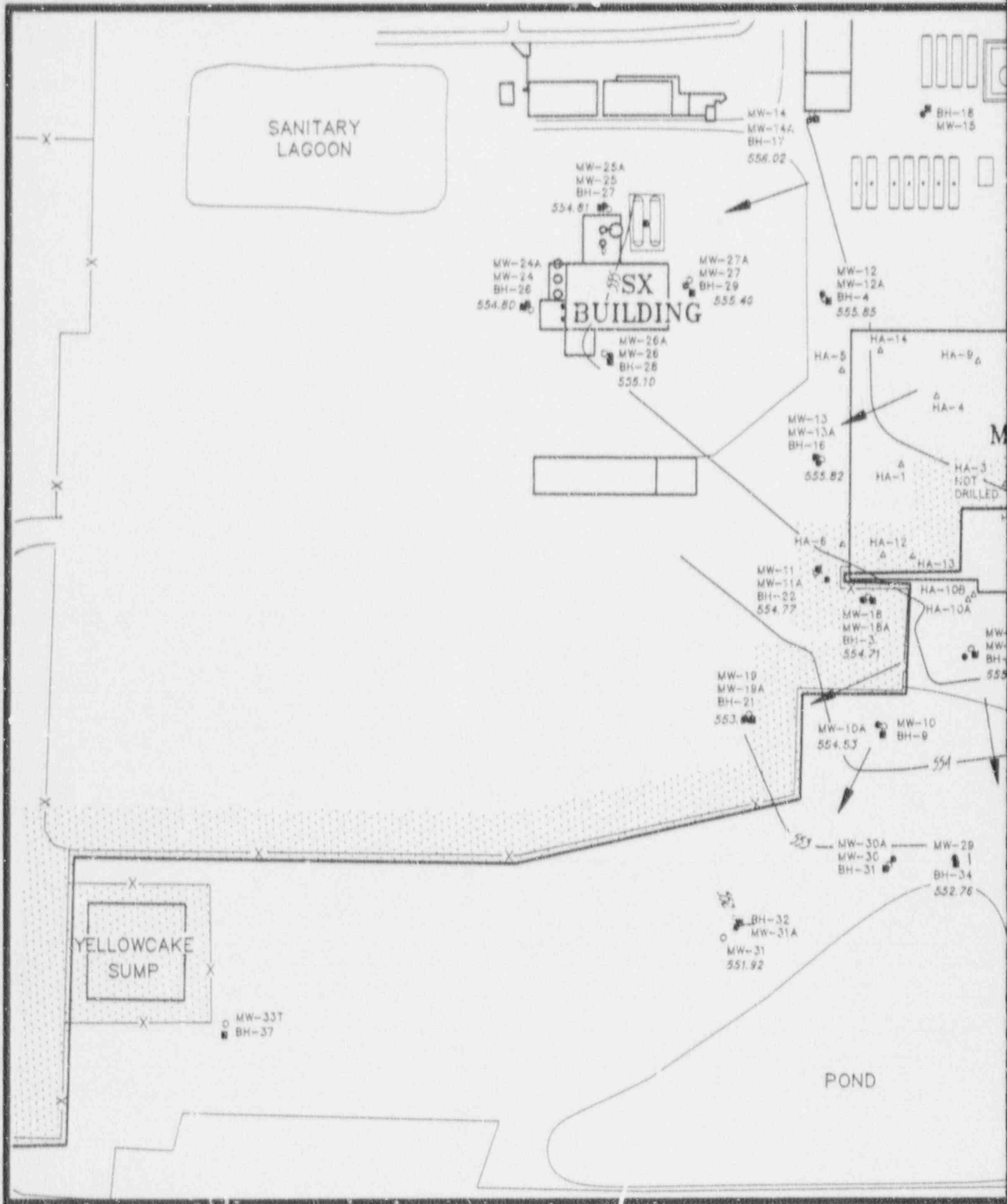
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

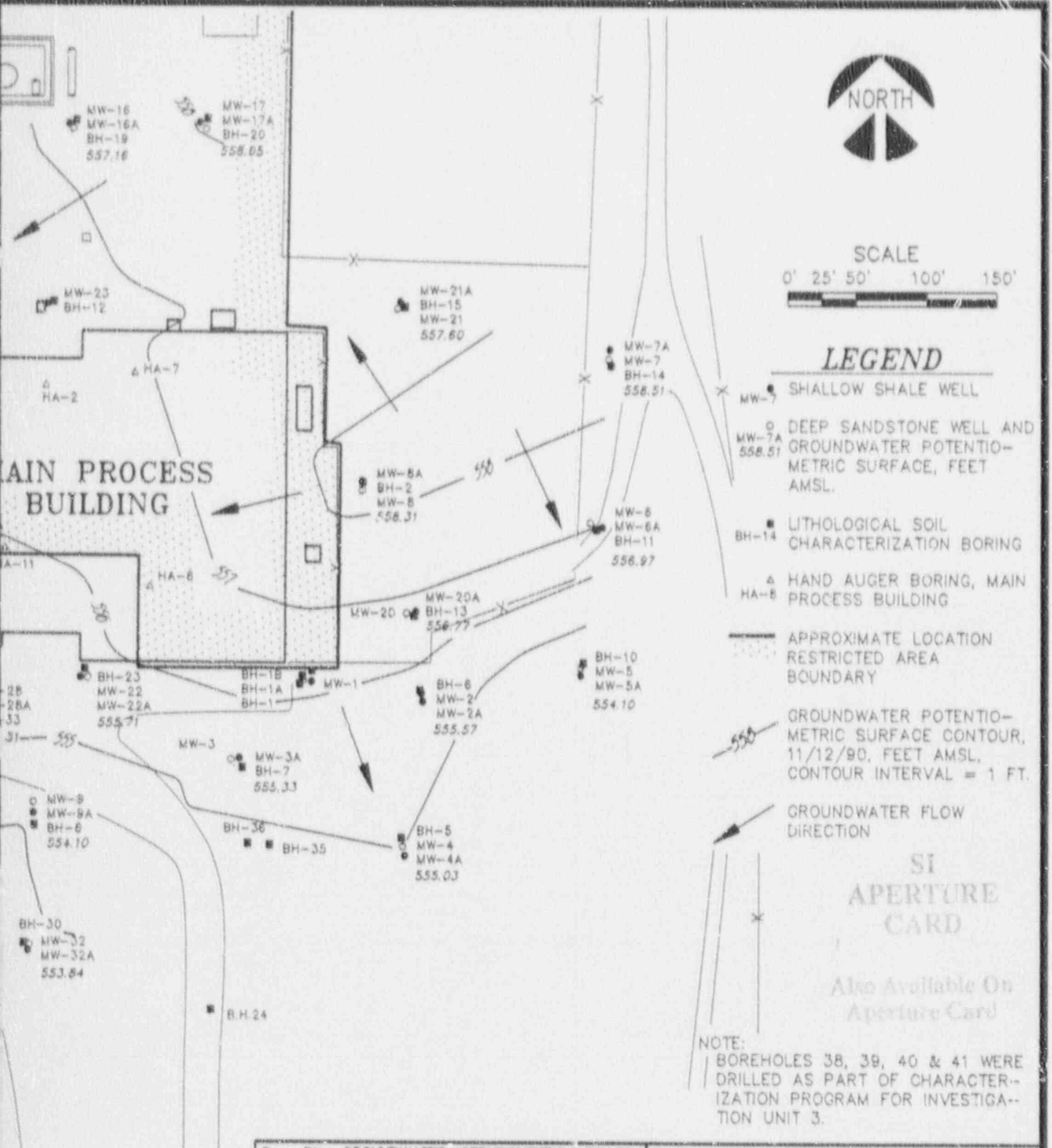
Figure Title: GROUNDWATER POTENTIOMETRIC SURFACE UPPERMOST SHALE GROUNDWATER, 11/12/90	Client: SEQUOYAH FUELS, CORP.
Document Title: MPS INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
SCALE: 1"=100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M35	FIGURE NO. 30

9012260268-17


SANITARY LAGOON
MW-14
MW-14A
BH-17
556.02
BH-18
MW-15
MW-25A
MW-25
BH-27
554.81
MW-24A
MW-24
BH-26
554.80
SX BUILDING
MW-27A
MW-27
BH-29
555.40
MW-12
MW-12A
BH-4
555.85
MW-26A
MW-26
BH-28
555.10
HA-5
HA-14
HA-9
HA-4
MW-13
MW-13A
BH-16
555.82
HA-1
HA-3 NOT DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
554.77
MW-18
MW-18A
BH-3
554.71
HA-10B
HA-10A
MW-19
MW-19A
BH-21
553.
MW-10A
554.53
MW-10
BH-9
554
553
MW-30A
MW-30
BH-31
MW-29
BH-34
552.76
BH-32
MW-31A
MW-31
551.92
YELLOWCAKE SUMP
MW-33T
BH-37
POND



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

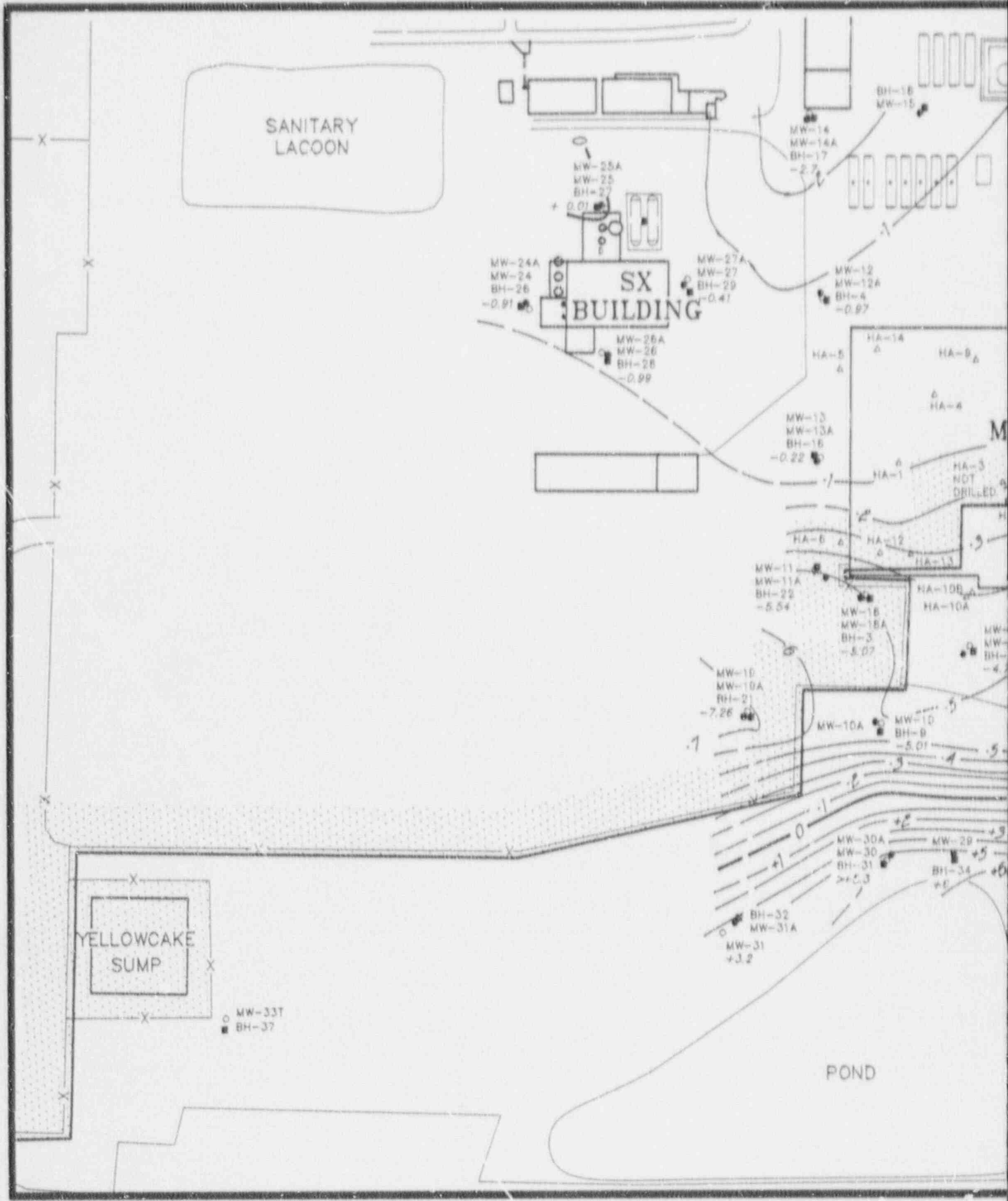
B.H.25

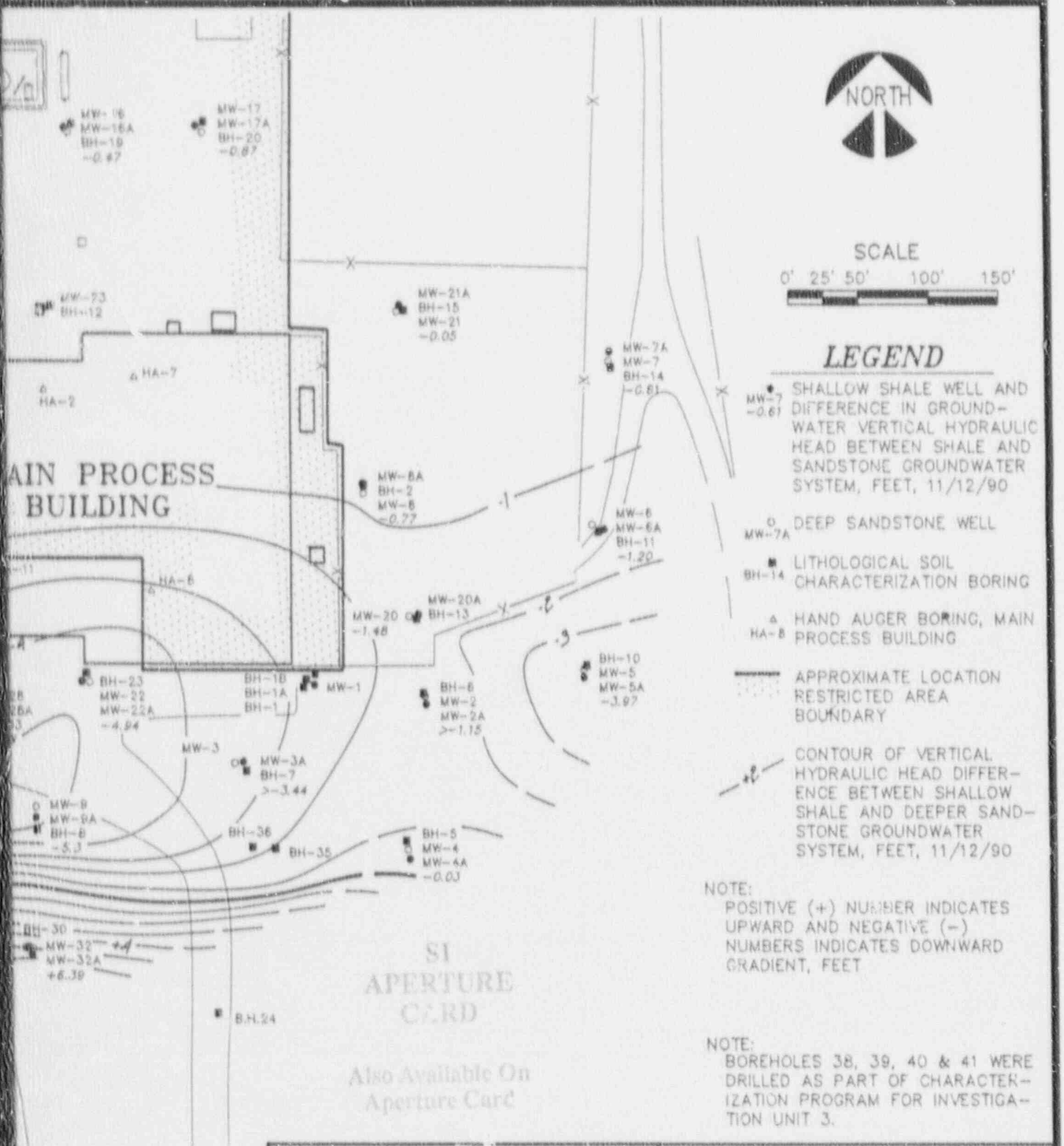
Figure Title: GROUNDWATER POTENTIOMETRIC SURFACE 11/12/90, DEEP SANDSTONE	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 12/13/90	PREPARED BY: R.M.L.
SCALE: 1" = 100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M66	FIGURE NO. 31

9012260268-18

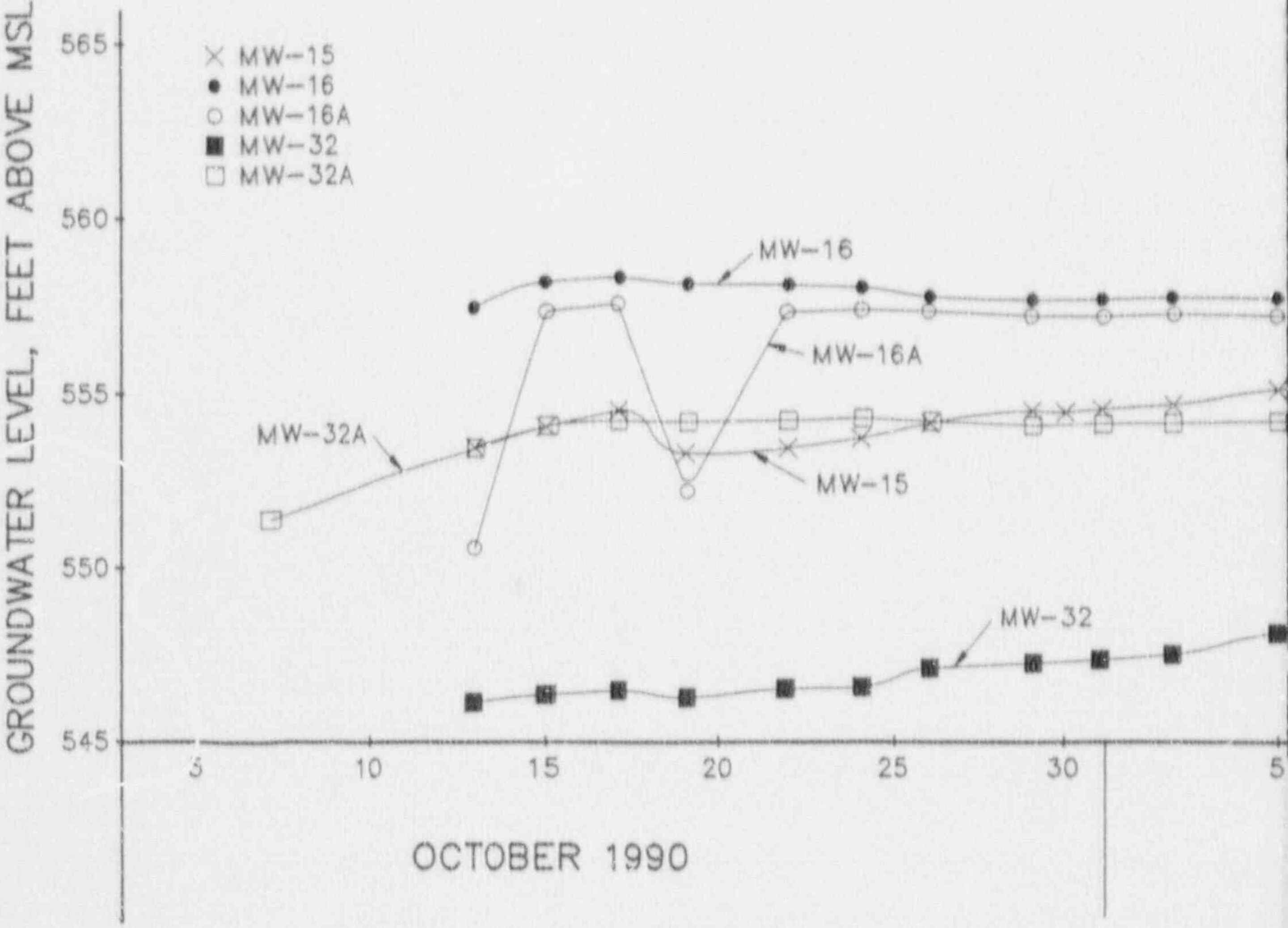

SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-25A
MW-25
BH-27
+ 0.01
MW-24A
MW-24
BH-26
-0.91
MW-27A
MW-27
BH-29
-0.41
MW-26A
MW-26
BH-28
-0.99
BH-18
MW-15
MW-14
MW-14A
BH-17
-2.7
MW-12
MW-12A
BH-4
-0.87
HA-14
HA-9
HA-5
HA-4
MW-13
MW-13A
BH-16
-0.22
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
-5.54
MW-18
MW-18A
BH-3
-5.07
HA-10B
HA-10A
MW-10
MW-10A
BH-21
-7.26
MW-10A
MW-1D
BH-9
-5.01
MW-30A
MW-30
BH-31
>+5.3
MW-29
BH-34
BH-32
MW-31A
MW-31
+3.2
MW-33T
BH-37
-1
-2
-3
-4
-5
-7
0
+1
+2
+3
+5

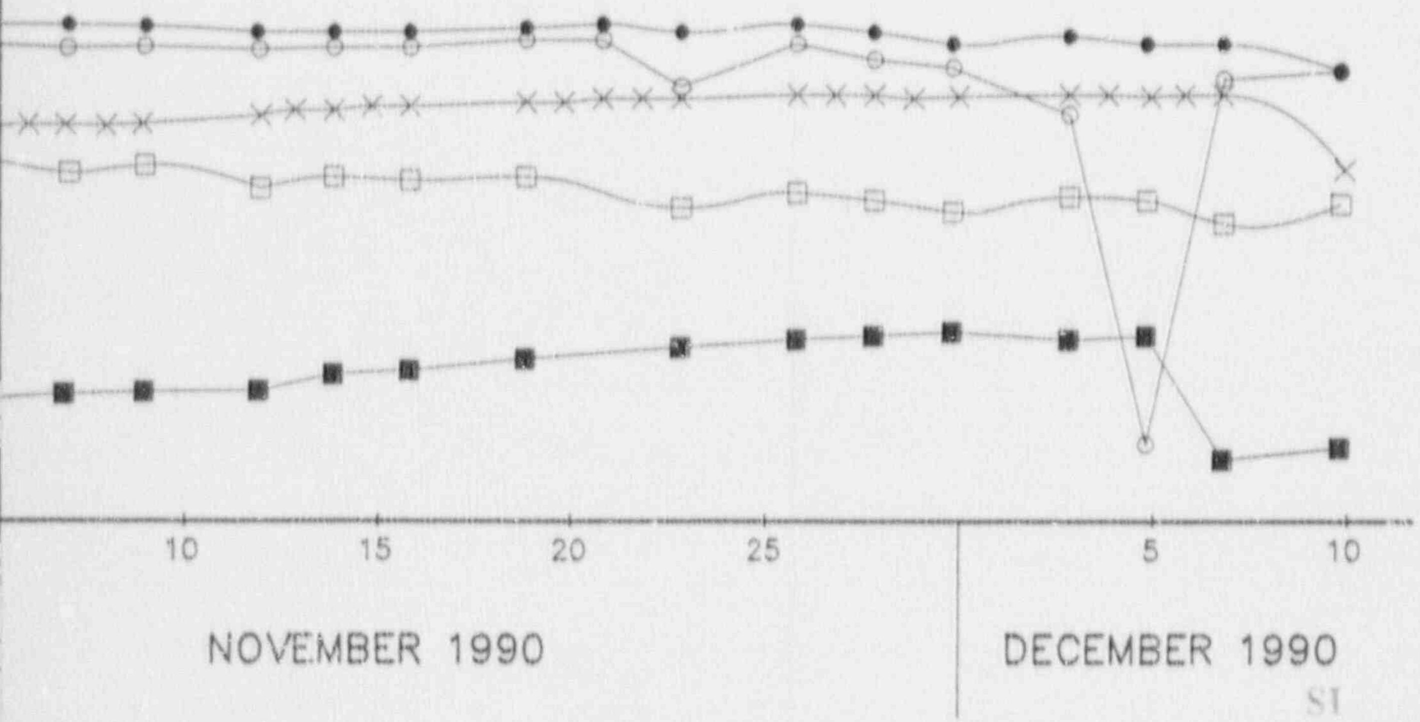


NOTE:
POSITIVE (+) NUMBER INDICATES UPWARD AND NEGATIVE (-) NUMBERS INDICATES DOWNWARD GRADIENT, FEET

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: DIFFERENCE IN VERTICAL HYDRAULIC HEAD BETWEEN SHALE AND SANDSTONE UNITS, 11/12/90		Client: SEQUOYAH FUELS, CORP.	
Document Title: MFB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 2700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 12/13/90	PREPARED BY: B.J.S.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M65	FIGURE NO. 32	


GROUNDWATER LEVEL, FEET ABOVE MSL
565
560
555
550
545
× MW-15
● MW-16
○ MW-16A
■ MW-32
□ MW-32A
MW-16
MW-16A
MW-32A
MW-15
MW-32
5
10
15
20
25
30
5
OCTOBER 1990



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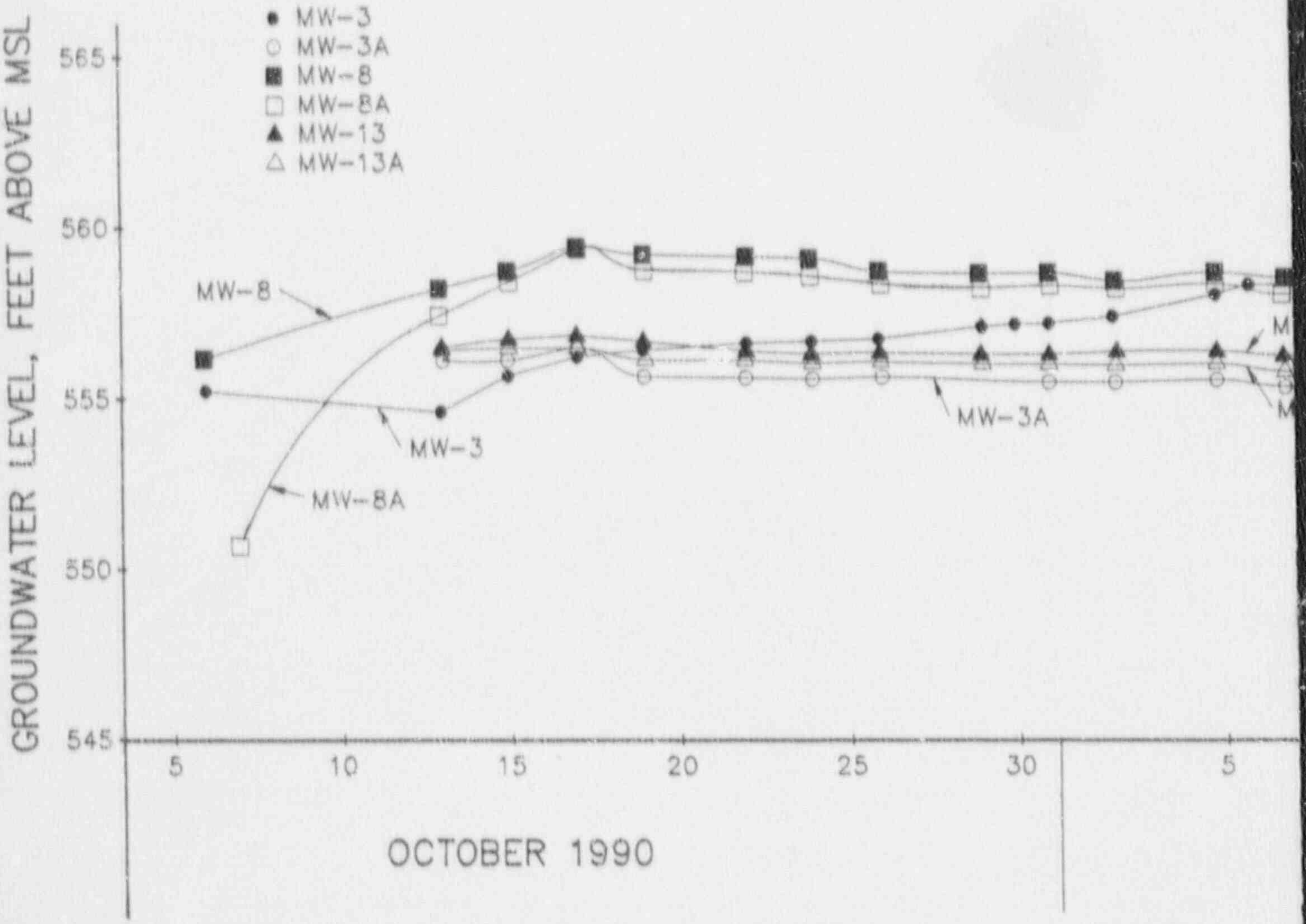
Also Available On
Aperture Card

Figure Title: REPRESENTATIVE WELL HYDROGRAPHS		Client: SEQUOYAH FUELS CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 2700 West Robinson, Suite 300 Norman, Oklahoma 73072 (405) 321-3895		DATE: 12/11/90	PREPARED BY: BJS
		SCALE:	CHECKED BY: BJS
			DRAFTED BY: SKL
		PROJECT NO: 90067 M46	FIGURE NO.: 33

9012260268-20


● MW-3
○ MW-3A
■ MW-8
□ MW-8A
▲ MW-13
△ MW-13A
GROUNDWATER LEVEL, FEET ABOVE MSL
565
560
555
550
545
MW-8
MW-3
MW-8A
MW-3A
5
10
15
20
25
30
5
OCTOBER 1990

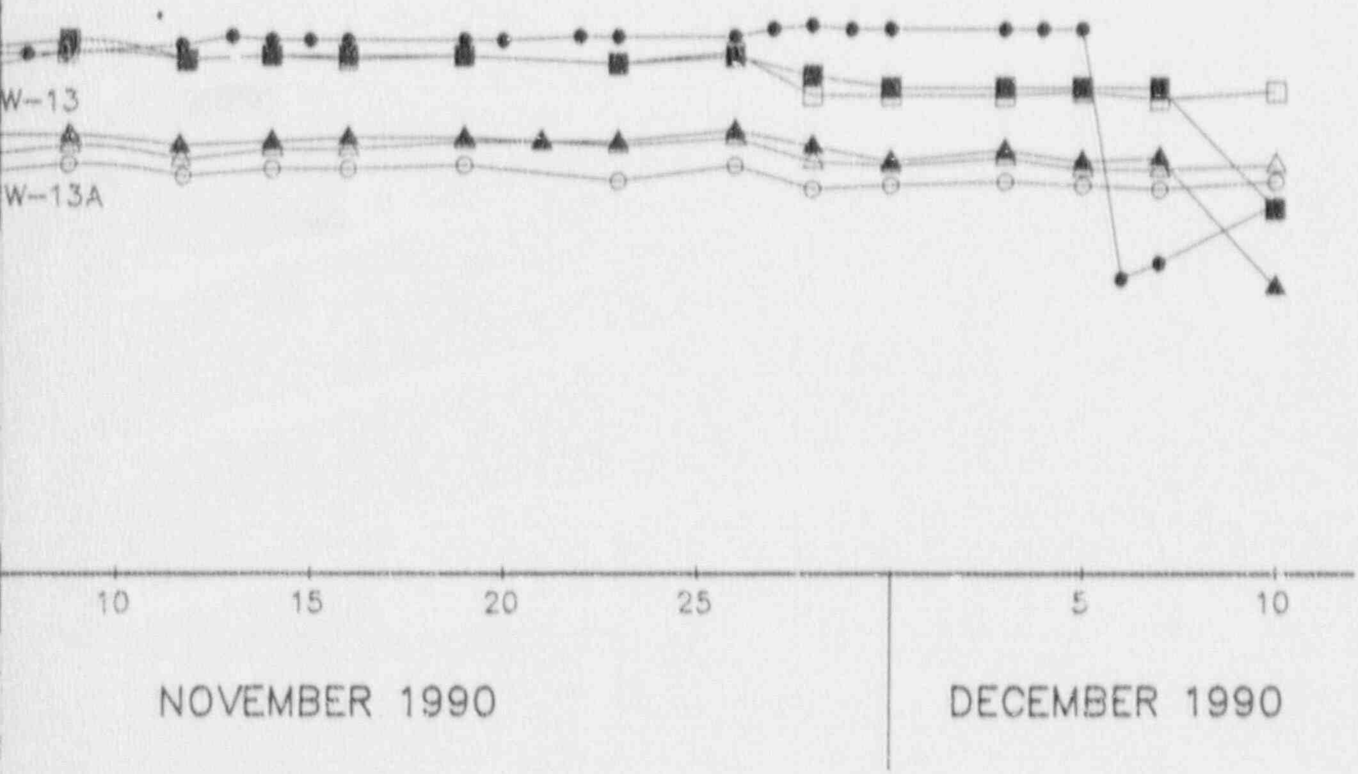
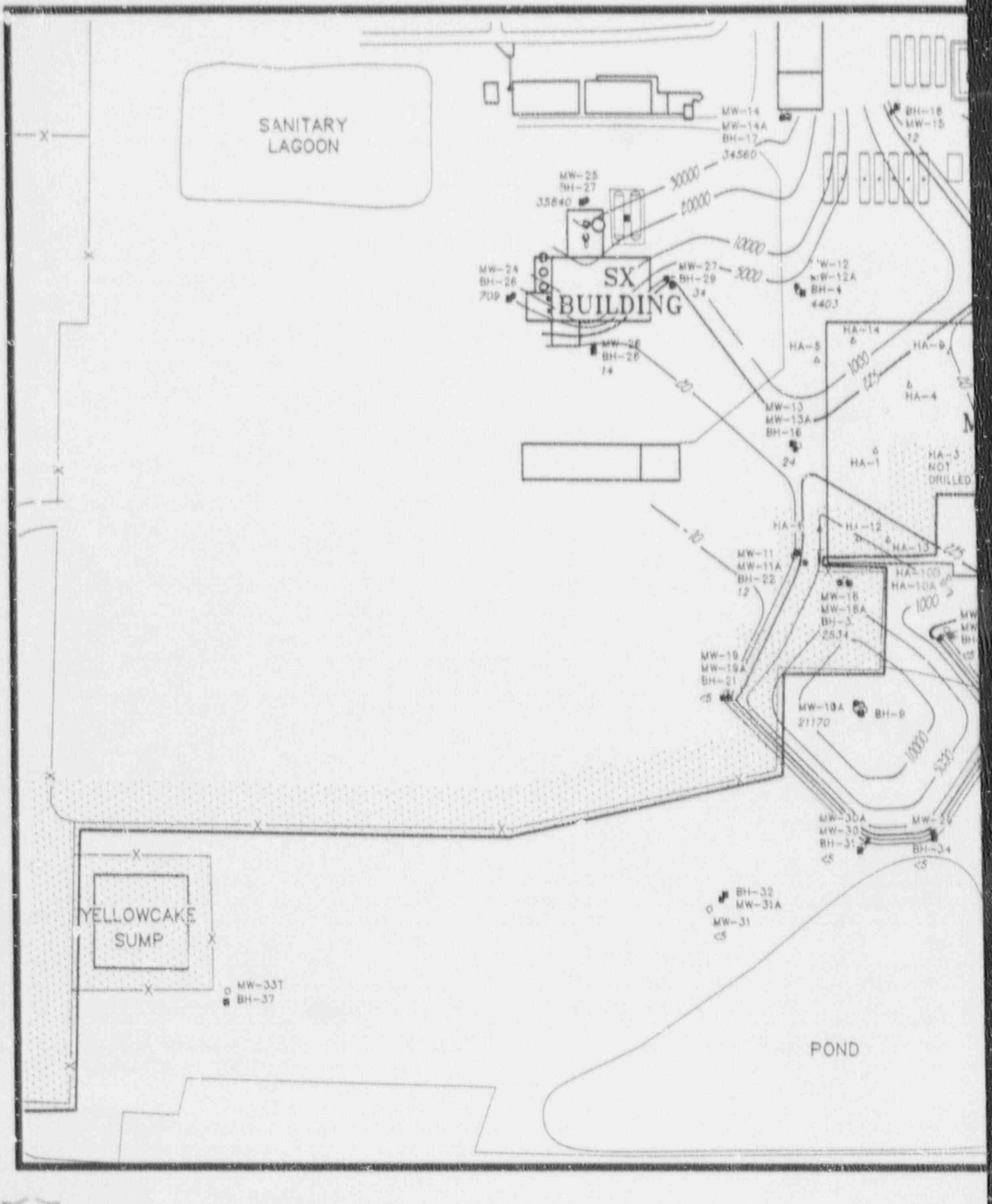
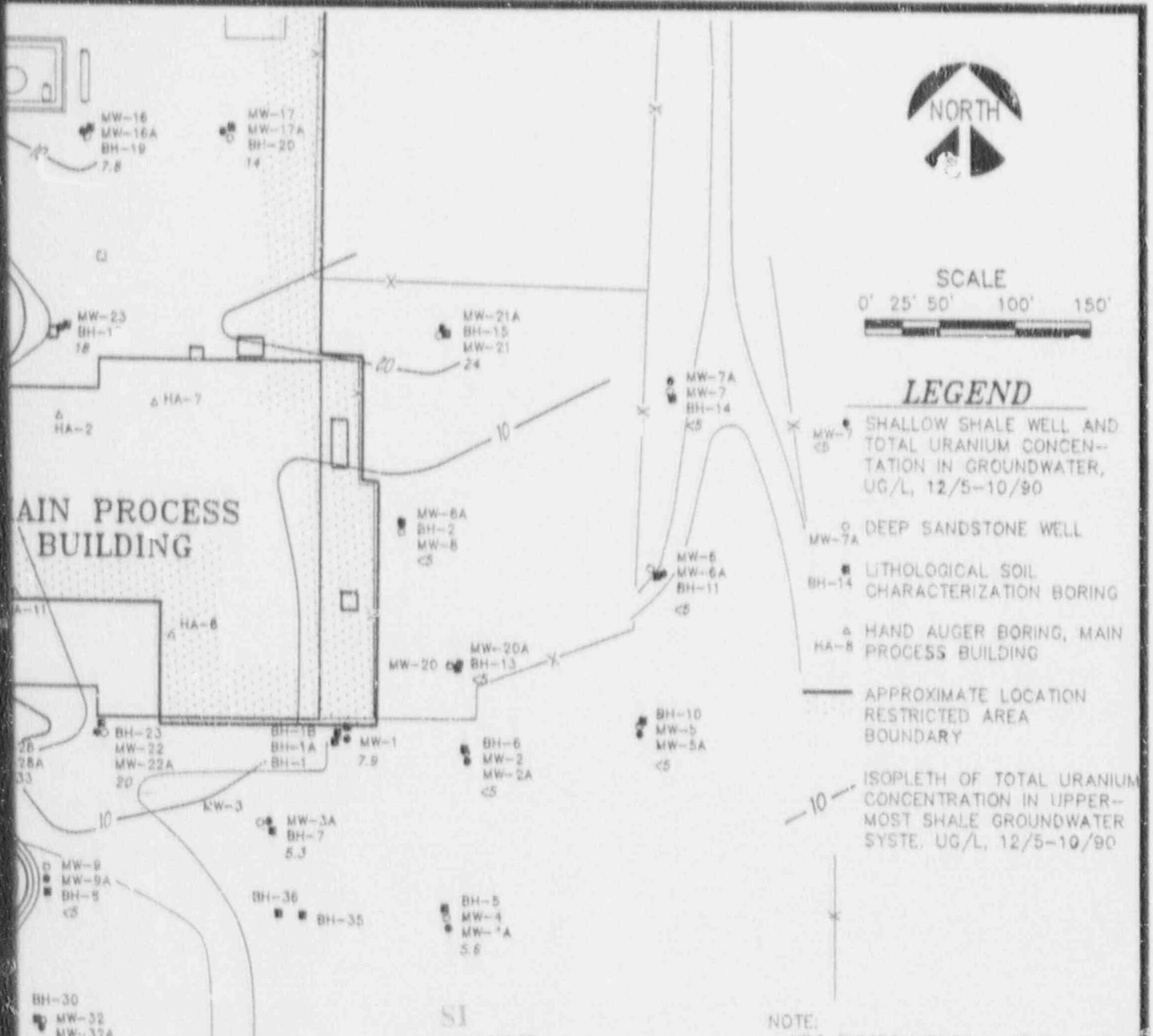


Figure Title: REPRESENTATIVE WELL HYDROGRAPH	Client: SEQUOYAH CORP.		
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA		
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3865	DATE: 12/10/90	PREPARED BY: BJS	
	SCALE:	CHECKED BY: BJS	
		DRAFTED BY: SKL	
	PROJECT NO: 90067 M47	FIGURE NO.: 34	

9012260268-21


SANITARY LAGOON
MW-14
MW-14A
BH-17
34560
30000
20000
10000
5000
MW-25
BH-27
35840
SX BUILDING
MW-24
BH-26
709
MW-27
BH-29
34
?'W-12
MW-12A
BH-4
4403
BH-18
MW-15
12
MW-26
BH-28
14
20
HA-5
HA-14
HA-9
1000
225
HA-4
MW-13
MW-13A
BH-16
24
HA-1
HA-3 NOT DRILLED
10
HA-6
HA-12
HA-13
225
MW-11
MW-11A
BH-22
12
HA-10B
HA-10A
1000
MW-16
MW-16A
BH-3
2534
MW-19
MW-19A
BH-21
<5
MW-18A
BH-9
21170
10000
5000
MW-30A
MW-30
BH-31
<5
BH-34
<5
BH-32
MW-31A
MW-31
<5
YELLOWCAKE SUMP
MW-33T
BH-37
POND

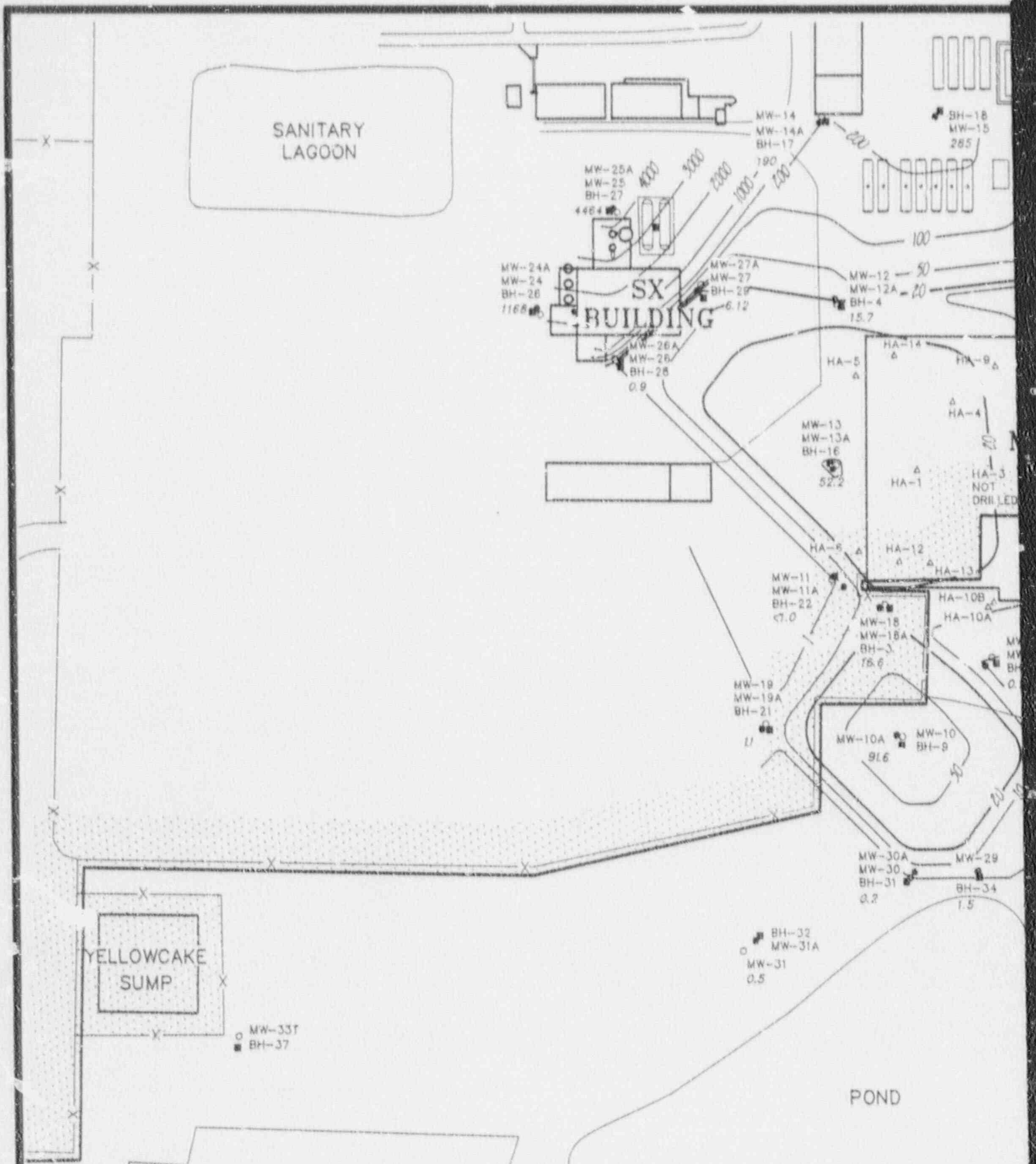


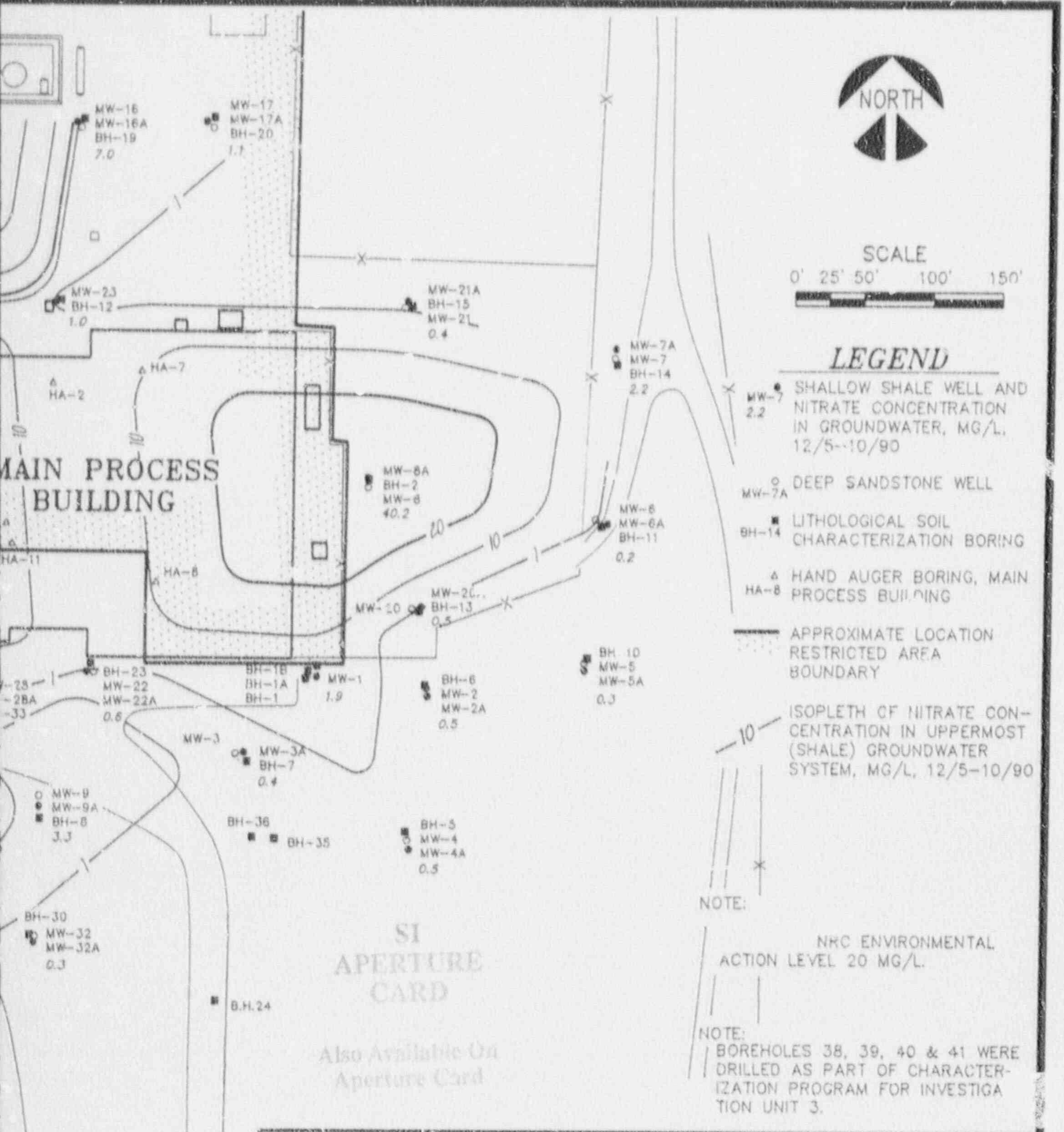
NOTE:
NRC ENVIRONMENTAL ACTION LEVEL IS 225 UG/L FOR URANIUM.

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM CONCENTRATION IN UPPERMOST SHALE GROUNDWATER 12/5-10/90	Client: SEQUOYAH FUELS, CORP.		
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA		
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 2700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3893	DATE: 12/13/90	PREPARED BY: S.K.L.	
	SCALE: 1"=100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M58	FIGURE NO. 35	

9012260268-22


SANITARY LAGOON
MW-14
MW-14A
BH-17
190
BH-18
MW-15
265
200
MW-25A
MW-25
BH-27
4464
4000
3000
2000
1000
200
100
MW-24A
MW-24
BH-26
1168
SX BUILDING
MW-27A
MW-27
BH-29
6.12
MW-12
MW-12A
BH-4
15.7
50
20
MW-26A
MW-26
BH-28
0.9
HA-14
HA-9
HA-5
HA-4
MW-13
MW-13A
BH-16
52.2
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
<1.0
1
HA-10B
HA-10A
MW-18
MW-18A
BH-3
16.6
MW-19
MW-19A
BH-21
U
MW-10A
91.6
MW-10
BH-9
50
20
10
MW-30A
MW-30
BH-31
0.2
MW-29
BH-34
1.5
BH-32
MW-31A
MW-31
0.5
YELLOWCAKE SUMP
MW-33?
BH-37
POND



NOTE:

NRC ENVIRONMENTAL ACTION LEVEL 20 MG/L.

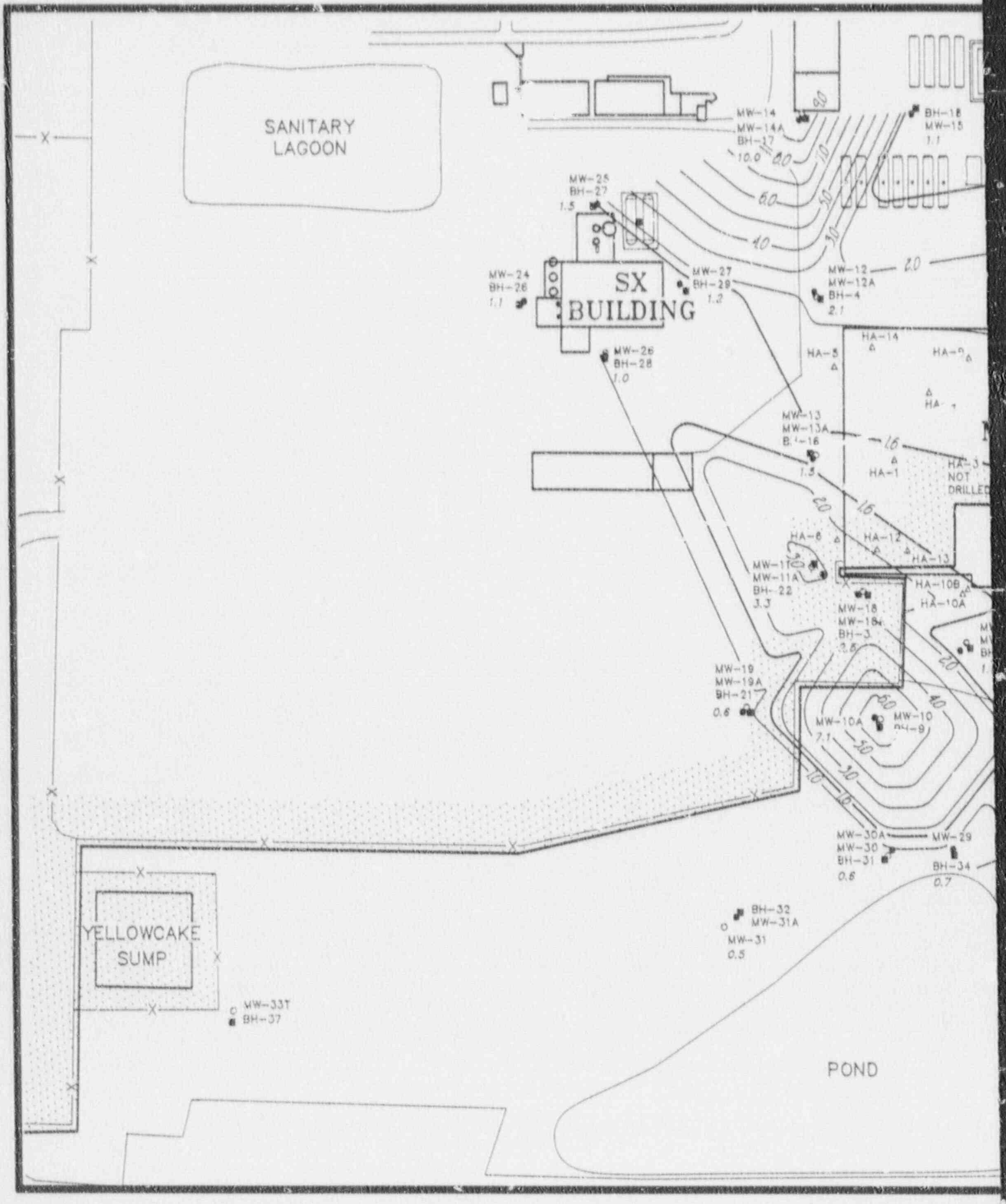
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

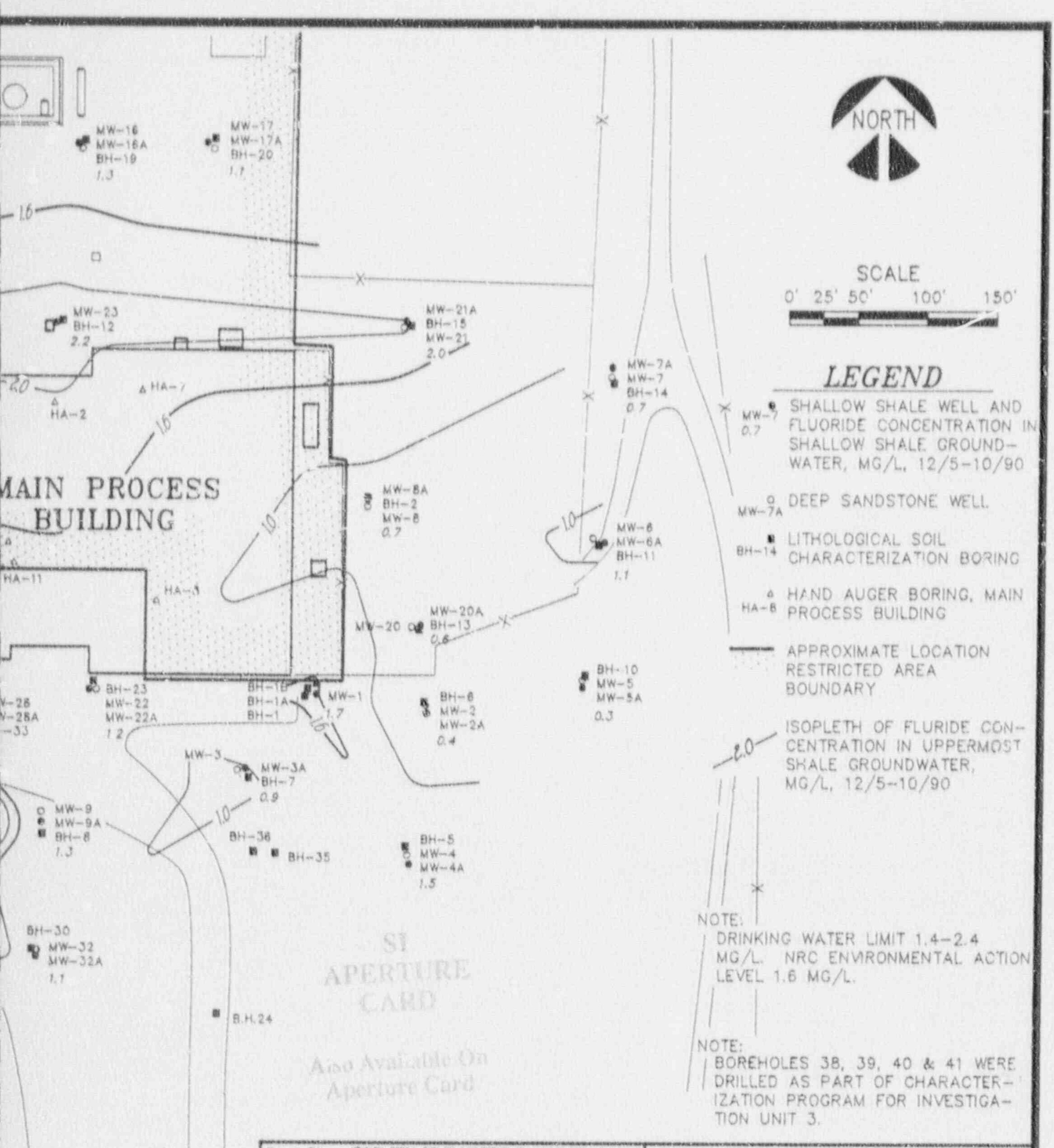
Figure Title: ISOPLETH OF NITRATE CONCENTRATION IN UPPERMOST SHALE GROUNDWATER, 12/5-10/90	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 12/13/90	PREPARED BY: S.K.L.
	CHECKED BY: B.J.S.
SCALE: 1" = 100'	DRAFTED BY: RML
PROJECT NO: 90067 M62	FIGURE NO. 36

9012260268-23


SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-14
MW-14A
BH-17
10.0
BH-18
MW-15
1.1
MW-25
BH-27
1.5
MW-24
BH-26
1.1
MW-27
BH-29
1.2
MW-26
BH-28
1.0
MW-12
MW-12A
BH-4
2.1
MW-13
MW-13A
B.-16
1.5
HA-14
HA-5
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
HA-10B
HA-10A
MW-11
MW-11A
BH-22
3.3
MW-18
MW-18A
BH-3
3.5
MW-19
MW-19A
BH-21
0.6
MW-10A
7.1
MW-10
BH-9
MW-30A
MW-30
BH-31
0.6
MW-29
BH-34
0.7
BH-32
MW-31A
MW-31
0.5
MW-33T
BH-37
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.6
6.0
5.0
4.0
3.0
2.0
1.0
1.0



LEGEND

MW-7 0.7	SHALLOW SHALE WELL AND FLUORIDE CONCENTRATION IN SHALLOW SHALE GROUNDWATER, MG/L, 12/5-10/90
MW-7A	DEEP SANDSTONE WELL
BH-14	LITHOLOGICAL SOIL CHARACTERIZATION BORING
HA-8	HAND AUGER BORING, MAIN PROCESS BUILDING
	APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY
2.0	ISOPLETH OF FLURIDE CONCENTRATION IN UPPERMOST SHALE GROUNDWATER, MG/L, 12/5-10/90

NOTE:
DRINKING WATER LIMIT 1.4-2.4 MG/L. NRC ENVIRONMENTAL ACTION LEVEL 1.6 MG/L.

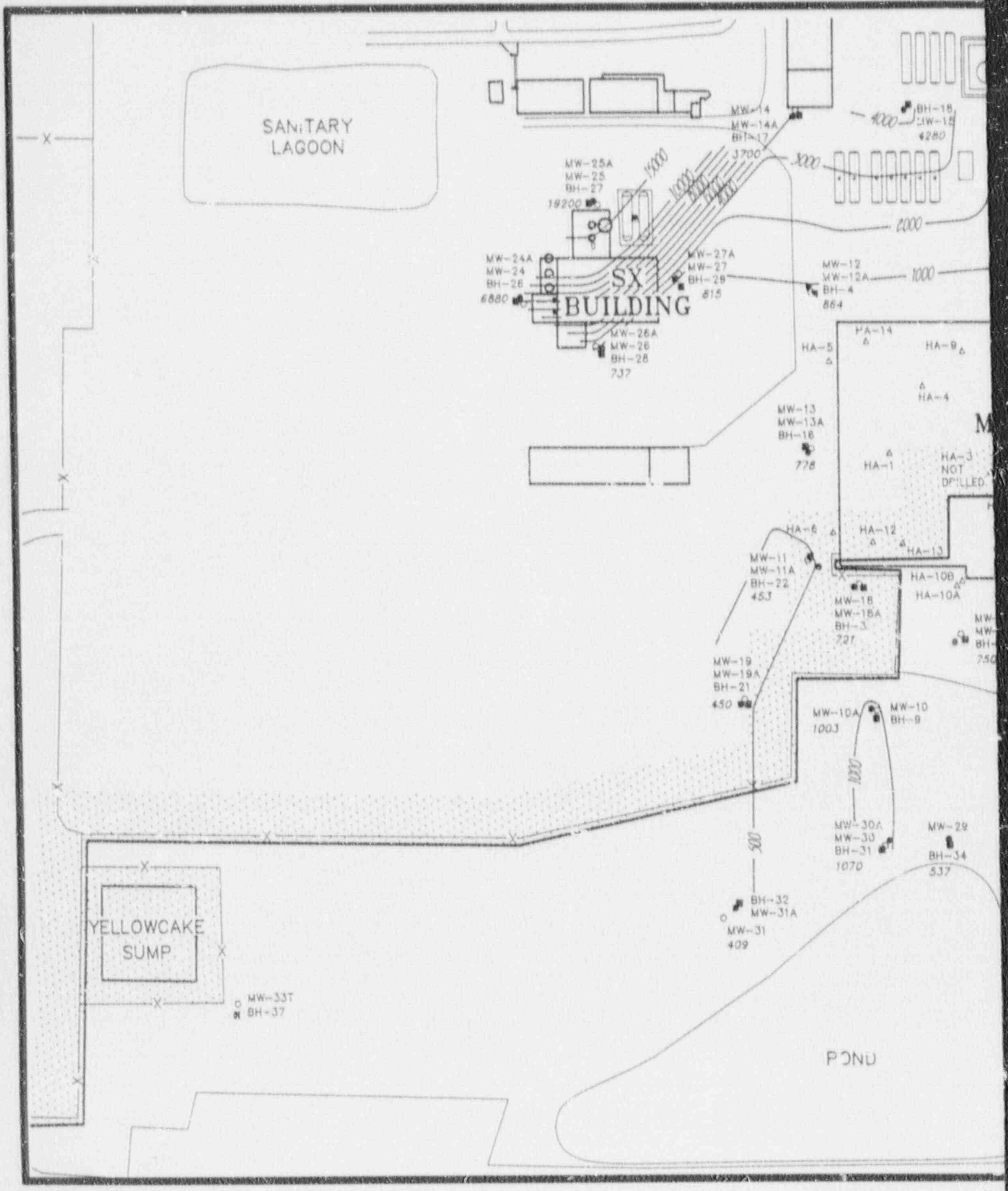
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

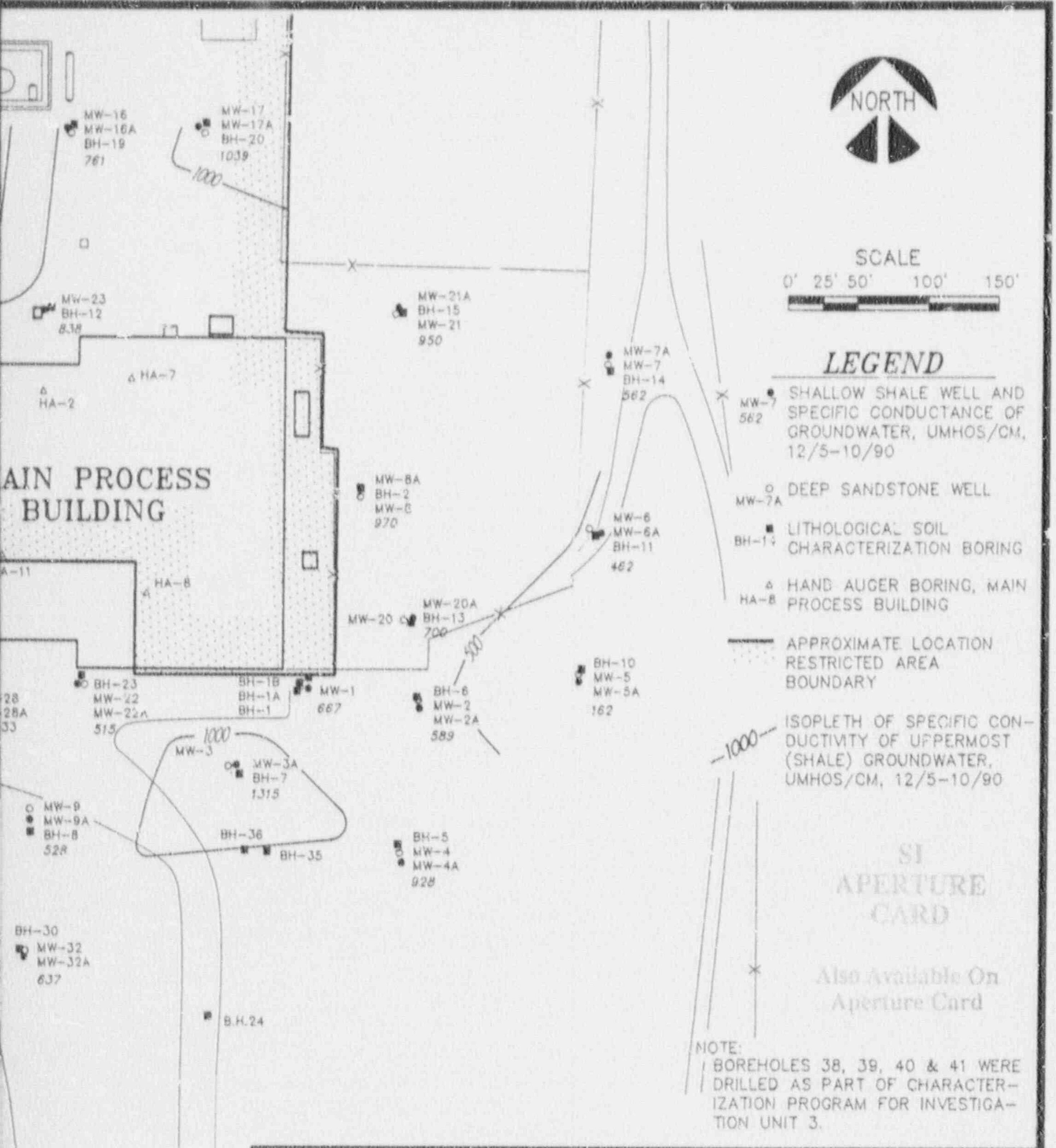
Figure Title: ISOPLETH OF FLUORIDE CONCENTRATION IN UPPERMOST SHALE GROUNDWATER, 12/5-10/90
Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT
Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3900

DATE: 12/13/90
SCALE: 1" = 100'
PROJECT NO: 80037 M57
PREPARED BY: S.L.
CHECKED BY: B.J.S.
DRAFTED BY: RML
FIGURE NO. 37

9012260268-24


SANITARY
LAGOON
MW-14
MW-14A
BH-17
3700
4000
BH-18
MW-15
4280
3000
2000
15000
10000
8000
6000
4000
MW-25A
MW-25
BH-27
19200
MW-24A
MW-24
BH-26
6880
SX
BUILDING
MW-27A
MW-27
BH-29
815
MW-12
MW-12A
BH-4
864
1000
MW-26A
MW-26
BH-28
737
HA-14
HA-5
HA-9
HA-4
M
MW-13
MW-13A
BH-16
778
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
453
MW-18
MW-18A
BH-3
721
HA-10B
HA-10A
750
MW-19
MW-19A
BH-21
450
MW-10A
1003
MW-10
BH-9
1000
500
MW-30A
MW-30
BH-31
1070
MW-29
BH-34
537
BH-32
MW-31A
MW-31
409
YELLOWCAKE
SUMP
MW-33T
BH-37
POND



LEGEND

MW-7 562 — SHALLOW SHALE WELL AND SPECIFIC CONDUCTANCE OF GROUNDWATER, UMHOS/CM, 12/5-10/90

MW-7A — DEEP SANDSTONE WELL

BH-14 — LITHOLOGICAL SOIL CHARACTERIZATION BORING

HA-8 — HAND AUGER BORING, MAIN PROCESS BUILDING

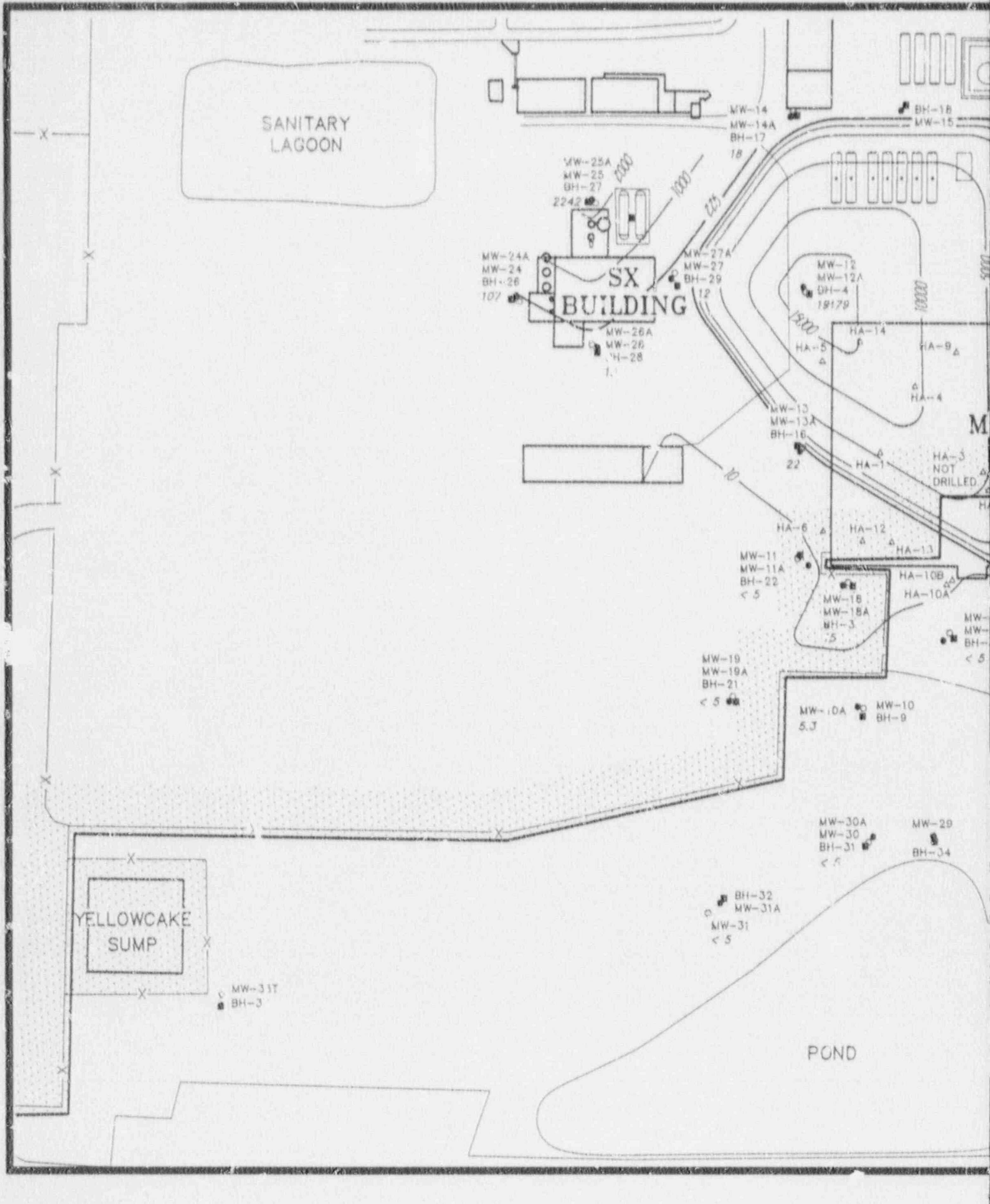
APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

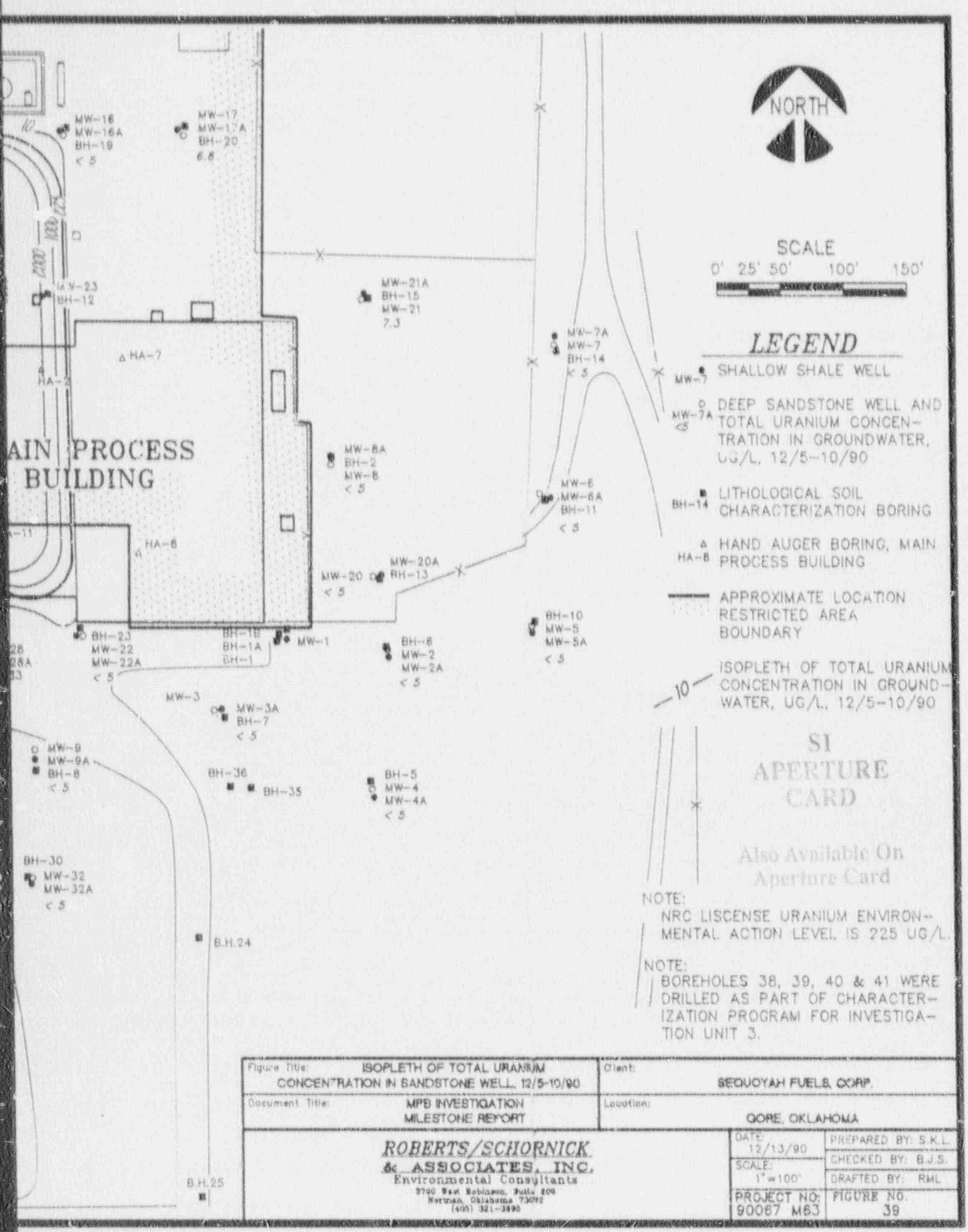
—1000— ISOPLETH OF SPECIFIC CONDUCTIVITY OF UPPERMOST (SHALE) GROUNDWATER, UMHOS/CM, 12/5-10/90

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF SPECIFIC CONDUCTANCE CONCENTRATION IN UPPERMOST SHALE		Client: SEQUOYAH FUELS CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895		DATE: 12/13/90	PREPARED BY: B.J.S.
			CHECKED BY: B.J.S.
		SCALE: 1"=100'	DRAFTED BY: RML
		PROJECT NO: 90067 M64	FIGURE NO. 38

9012260268-25


SANITARY LAGOON
MW-14
MW-14A
BH-17
18
BH-18
MW-15
MW-25A
MW-25
BH-27
2242
2000
1000
225
MW-24A
MW-24
BH-26
107
SX BUILDING
MW-27A
MW-27
BH-29
12
MW-12
MW-12A
DH-4
19179
15000
10000
5000
MW-26A
MW-26
H-28
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
22
M
HA-1
HA-3
NOT
DRILLED
10
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
< 5
HA-10B
HA-10A
MW-18
MW-18A
BH-3
5
MW-19
MW-19A
BH-21
< 5
MW-10A
5.3
MW-10
BH-9
MW-30A
MW-30
BH-31
< 5
MW-29
BH-34
YELLOWCAKE SUMP
BH-32
MW-31A
MW-31
< 5
MW-31T
BH-3
POND



LEGEND

MW-7 ● SHALLOW SHALE WELL

MW-7A ○ DEEP SANDSTONE WELL AND TOTAL URANIUM CONCENTRATION IN GROUNDWATER, UG/L, 12/5-10/90
<5

BH-14 ■ LITHOLOGICAL SOIL CHARACTERIZATION BORING

HA-8 △ HAND AUGER BORING, MAIN PROCESS BUILDING

APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY

—10— ISOPLETH OF TOTAL URANIUM CONCENTRATION IN GROUNDWATER, UG/L, 12/5-10/90

SI APERTURE CARD

Also Available On Aperture Card

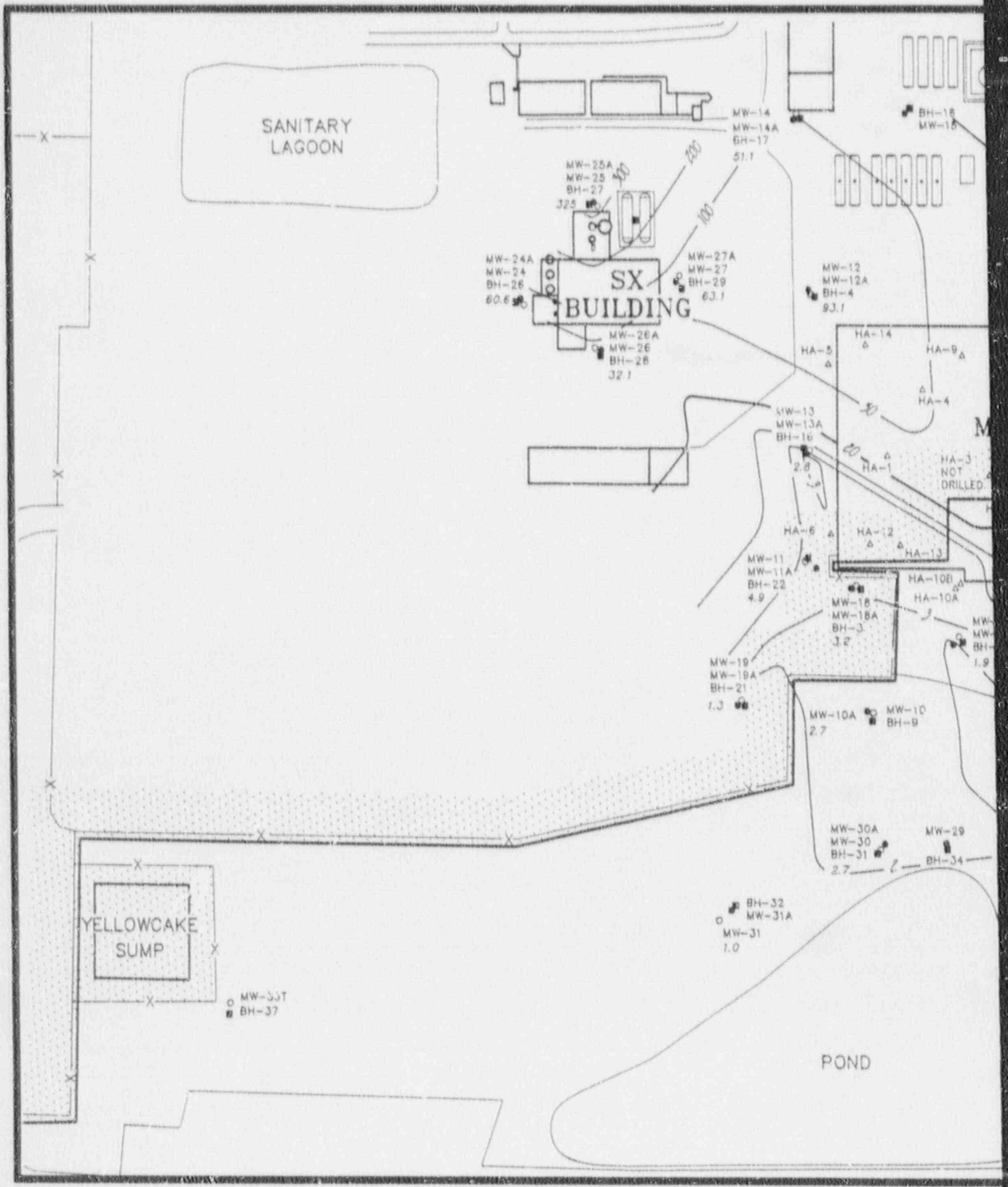
NOTE:
NRC LISCENSE URANIUM ENVIRONMENTAL ACTION LEVEL IS 225 UG/L.

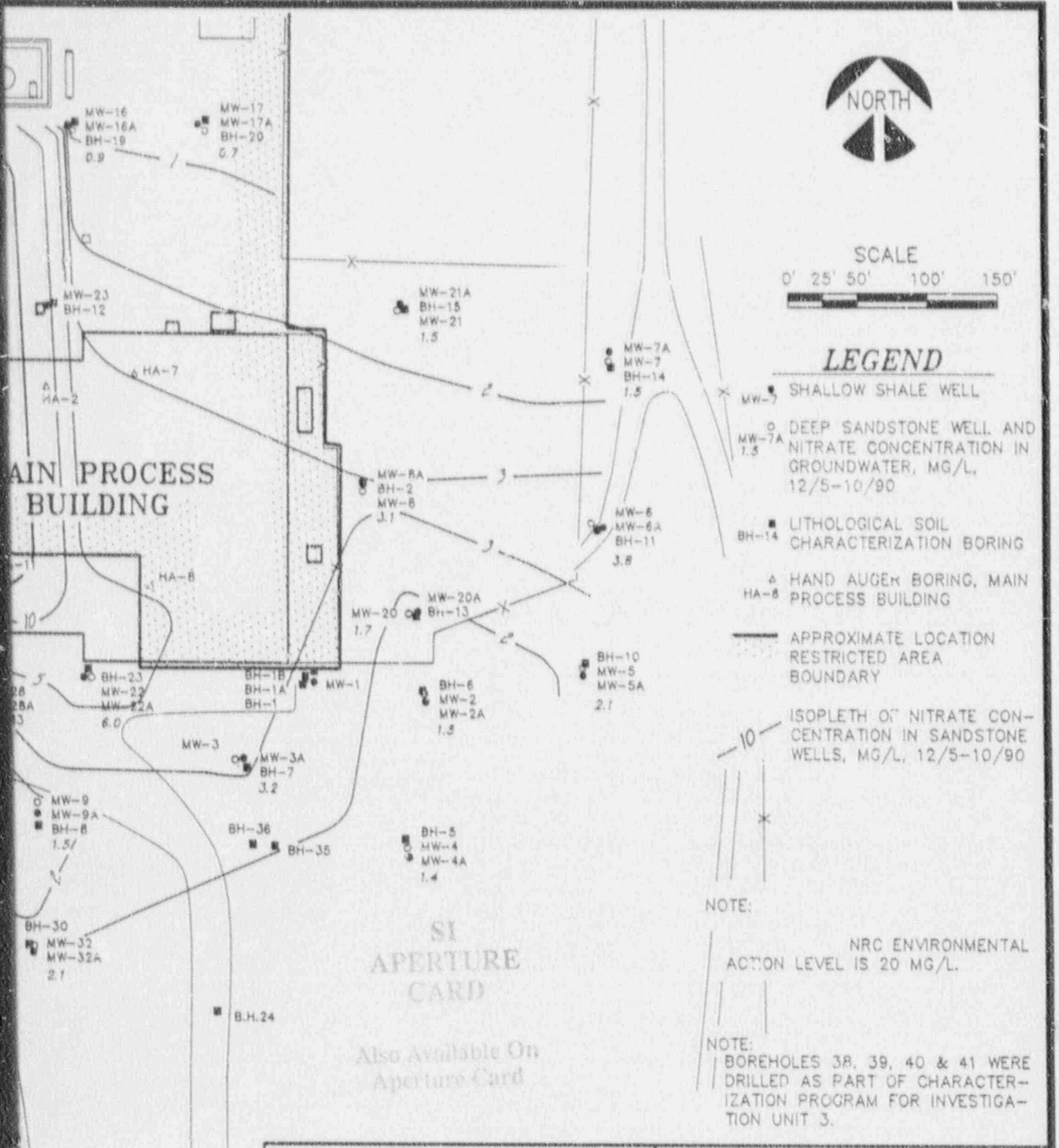
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM CONCENTRATION IN SANDSTONE WELL, 12/5-10/90	Client: SEQUOYAH FUELS CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 12/13/90	PREPARED BY: S.K.L.
	SCALE: 1" = 100'	CHECKED BY: B.J.S.
		DRAFTED BY: RML
	PROJECT NO: 90067 M63	FIGURE NO. 39

9012260268-26


SANITARY
LAGOON
MW-14
MW-14A
BH-17
51.1
BH-18
MW-15
MW-25A
MW-25
BH-27
325
200
100
MW-24A
MW-24
BH-26
60.6
SX
BUILDING
MW-27A
MW-27
BH-29
63.1
MW-12
MW-12A
BH-4
93.1
MW-26A
MW-26
BH-28
32.1
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
2.8
50
20
HA-1
HA-3
NOT
DRILLED
M
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
4.9
HA-10B
HA-10A
MW-18
MW-18A
BH-3
3.2
3
1.9
MW-19
MW-19A
BH-21
1.3
MW-10A
2.7
MW-10
BH-9
MW-30A
MW-30
BH-31
2.7
2
MW-29
BH-34
BH-32
MW-31A
MW-31
1.0
YELLOWCAKE
SUMP
MW-33T
BH-37
POND



NOTE:

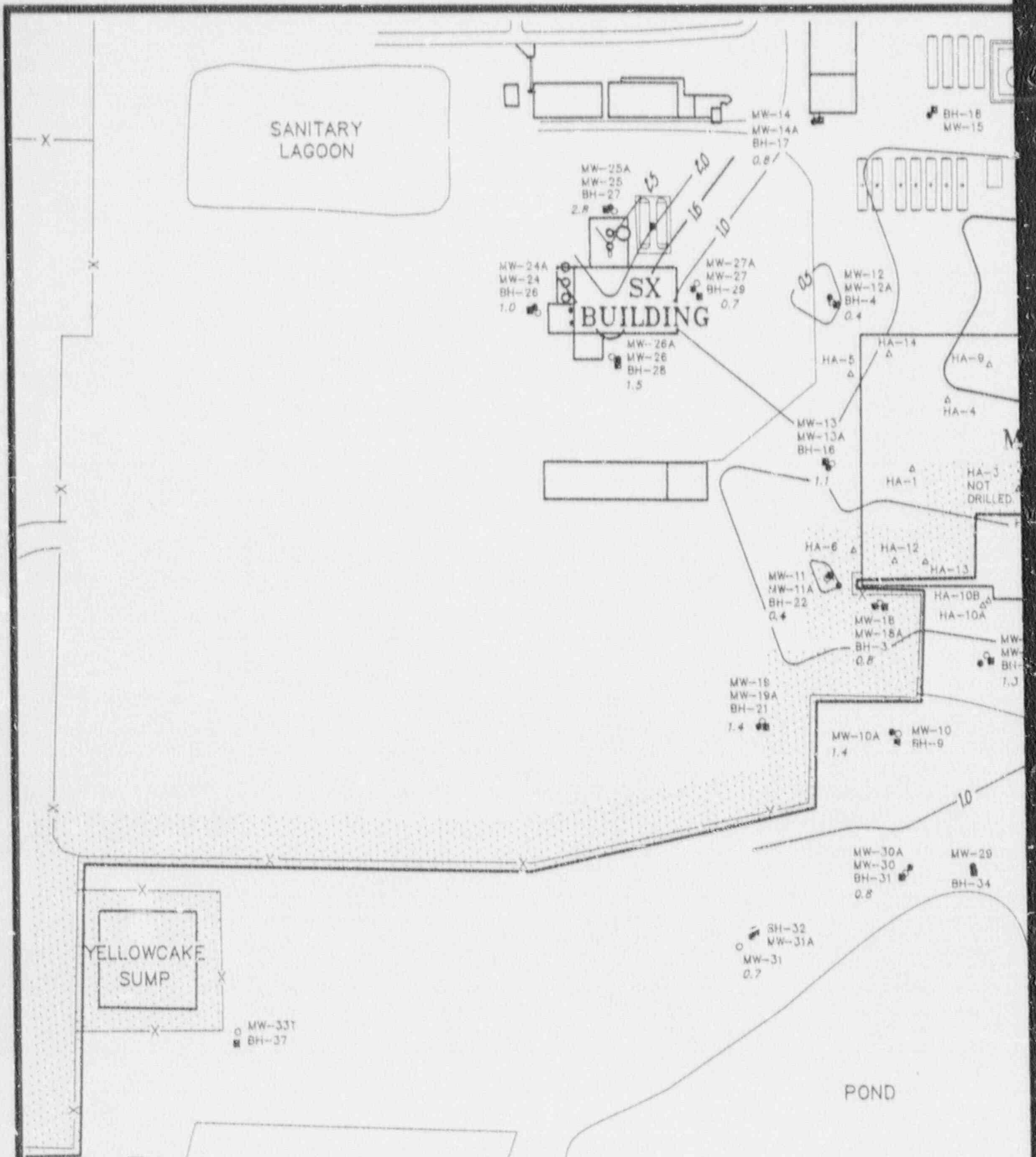
NRC ENVIRONMENTAL ACTION LEVEL IS 20 MG/L.

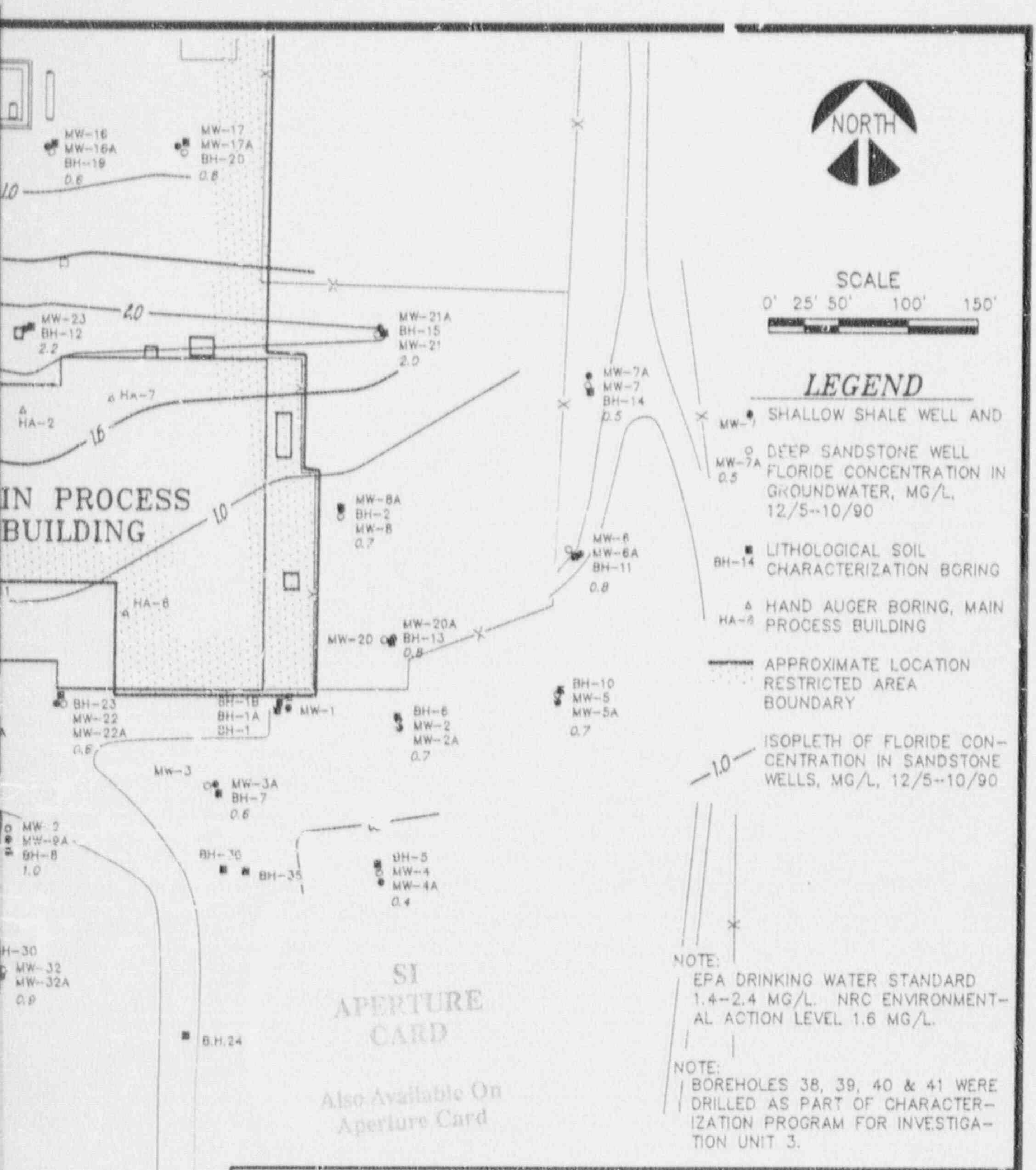
NOTE:

BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF NITRATE CONCENTRATION IN SANDSTONE WELLS, 12/5-10/90		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 361-3896		DATE: 12/13/90	PREPARED BY: R.M.L.
		SCALE: 1" = 100'	CHECKED BY: B.J.S.
			DRAFTED BY: RML
		PROJECT NO: 9_-067 M61	FIGURE NO. 40

9012260268-27


SANITARY
LAGOON
MW-14
MW-14A
BH-17
0.8
BH-18
MW-15
MW-25A
MW-25
BH-27
2.8
2.5
2.0
1.5
1.0
MW-24A
MW-24
BH-26
1.0
SX
BUILDING
MW-27A
MW-27
BH-29
0.7
0.5
MW-12
MW-12A
BH-4
0.4
MW-26A
MW-26
BH-28
1.5
HA-5
HA-14
HA-9
HA-4
MW-13
MW-13A
BH-16
1.1
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
0.4
MW-18
MW-18A
BH-3
0.8
HA-10B
HA-10A
1.3
MW-19
MW-19A
BH-21
1.4
MW-10A
1.4
MW-10
BH-9
1.0
MW-30A
MW-30
BH-31
0.8
MW-29
BH-34
BH-32
MW-31A
MW-31
0.7
YELLOWCAKE
SUMP
MW-33T
BH-37
POND



LEGEND

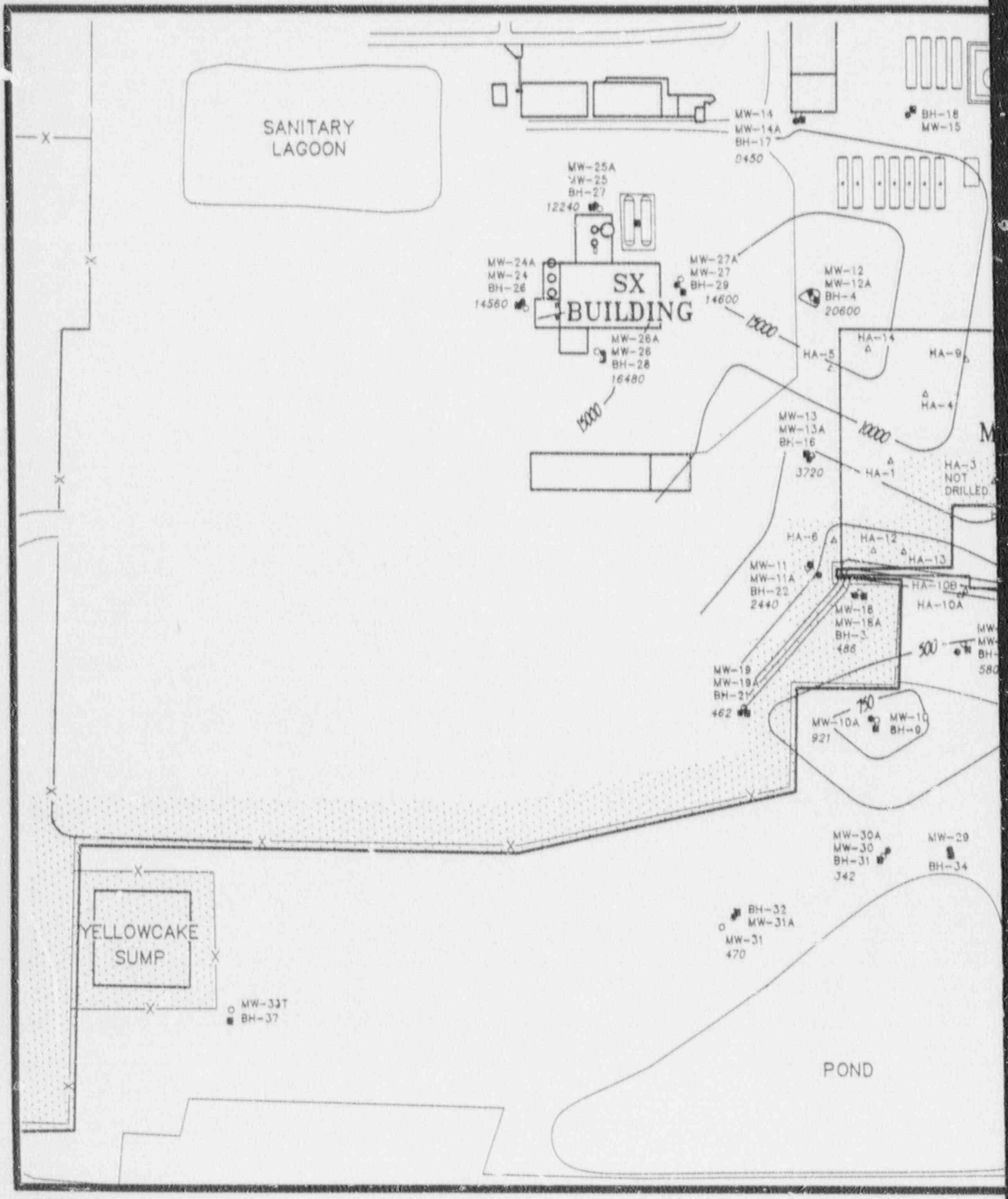
MW-7 ●	SHALLOW SHALE WELL AND
MW-7A ○ 0.5	DEEP SANDSTONE WELL FLORIDE CONCENTRATION IN GROUNDWATER, MG/L, 12/5-10/90
BH-14 ■	LITHOLOGICAL SOIL CHARACTERIZATION BORING
HA-6 △	HAND AUGER BORING, MAIN PROCESS BUILDING
——	APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY
—1.0—	ISOPLETH OF FLORIDE CONCENTRATION IN SANDSTONE WELLS, MG/L, 12/5-10/90

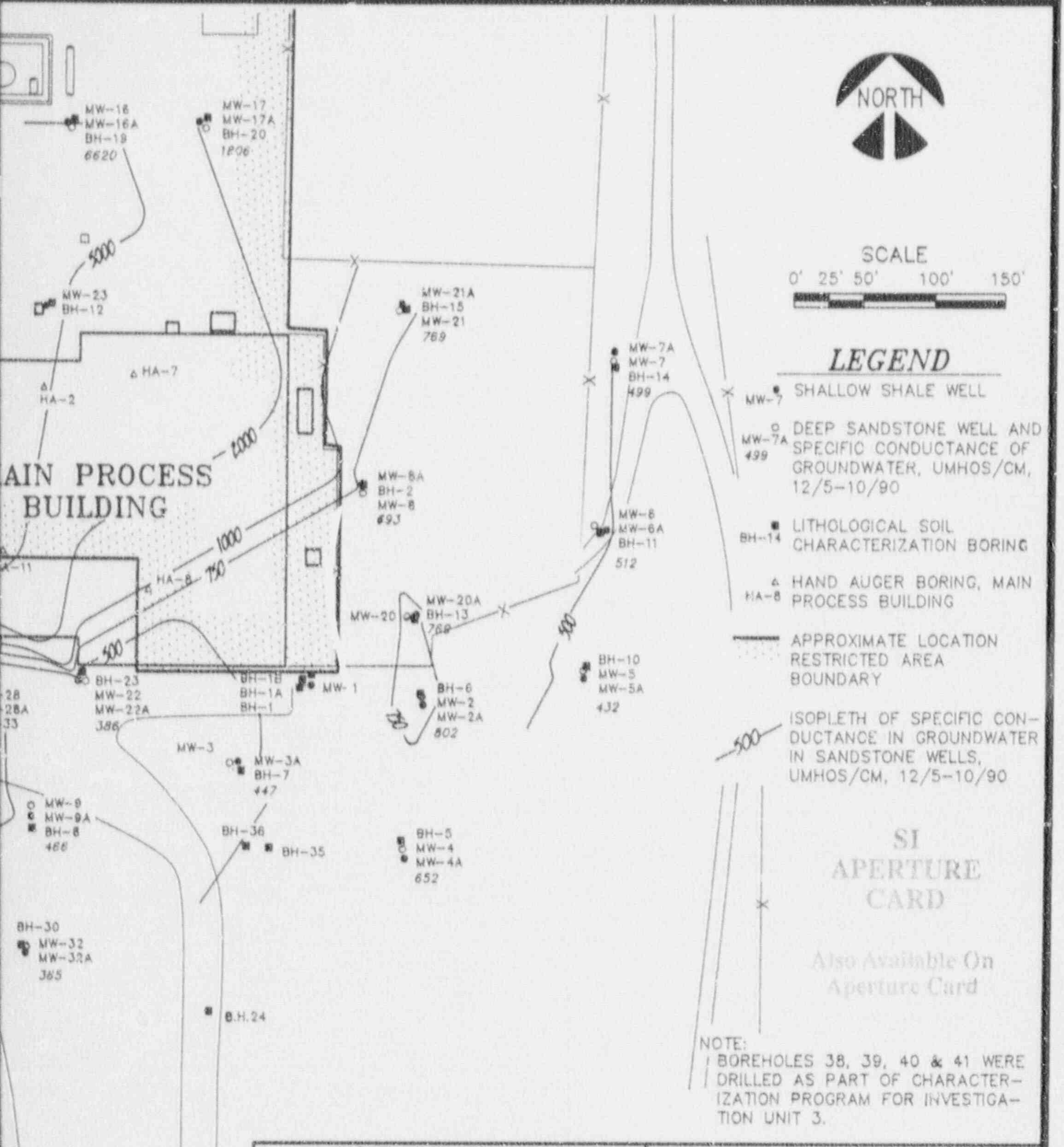
NOTE:
EPA DRINKING WATER STANDARD 1.4-2.4 MG/L. NRC ENVIRONMENTAL ACTION LEVEL 1.6 MG/L.

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF FLORIDE CONCENTRATION IN SANDSTONE WELLS, 12/5-10/90		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 12/13/90	PREPARED BY: S.L.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M60	FIGURE NO. 41	

9012260268-28


SANITARY LAGOON
MW-14
MW-14A
BH-17
0450
BH-18
MW-15
MW-25A
MW-25
BH-27
12240
MW-24A
MW-24
BH-26
14560
SX BUILDING
MW-27A
MW-27
BH-29
14600
MW-12
MW-12A
BH-4
20600
15000
MW-26A
MW-26
BH-28
16480
15000
HA-14
HA-9
HA-5
HA-4
10000
MW-13
MW-13A
BH-16
3720
HA-1
HA-3
NOT DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
2440
HA-10B
HA-10A
MW-18
MW-18A
BH-3
486
500
580
MW-19
MW-19A
BH-21
462
750
MW-10A
921
MW-10
BH-9
MW-30A
MW-30
BH-31
342
MW-29
BH-34
BH-32
MW-31A
MW-31
470
YELLOWCAKE SUMP
MW-33T
BH-37
POND



LEGEND

● MW-7	SHALLOW SHALE WELL
○ MW-7A 499	DEEP SANDSTONE WELL AND SPECIFIC CONDUCTANCE OF GROUNDWATER, UMHOS/CM, 12/5-10/90
■ BH-14	LITHOLOGICAL SOIL CHARACTERIZATION BORING
△ HA-8	HAND AUGER BORING, MAIN PROCESS BUILDING
▬	APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY
500	ISOPLETH OF SPECIFIC CONDUCTANCE IN GROUNDWATER IN SANDSTONE WELLS, UMHOS/CM, 12/5-10/90

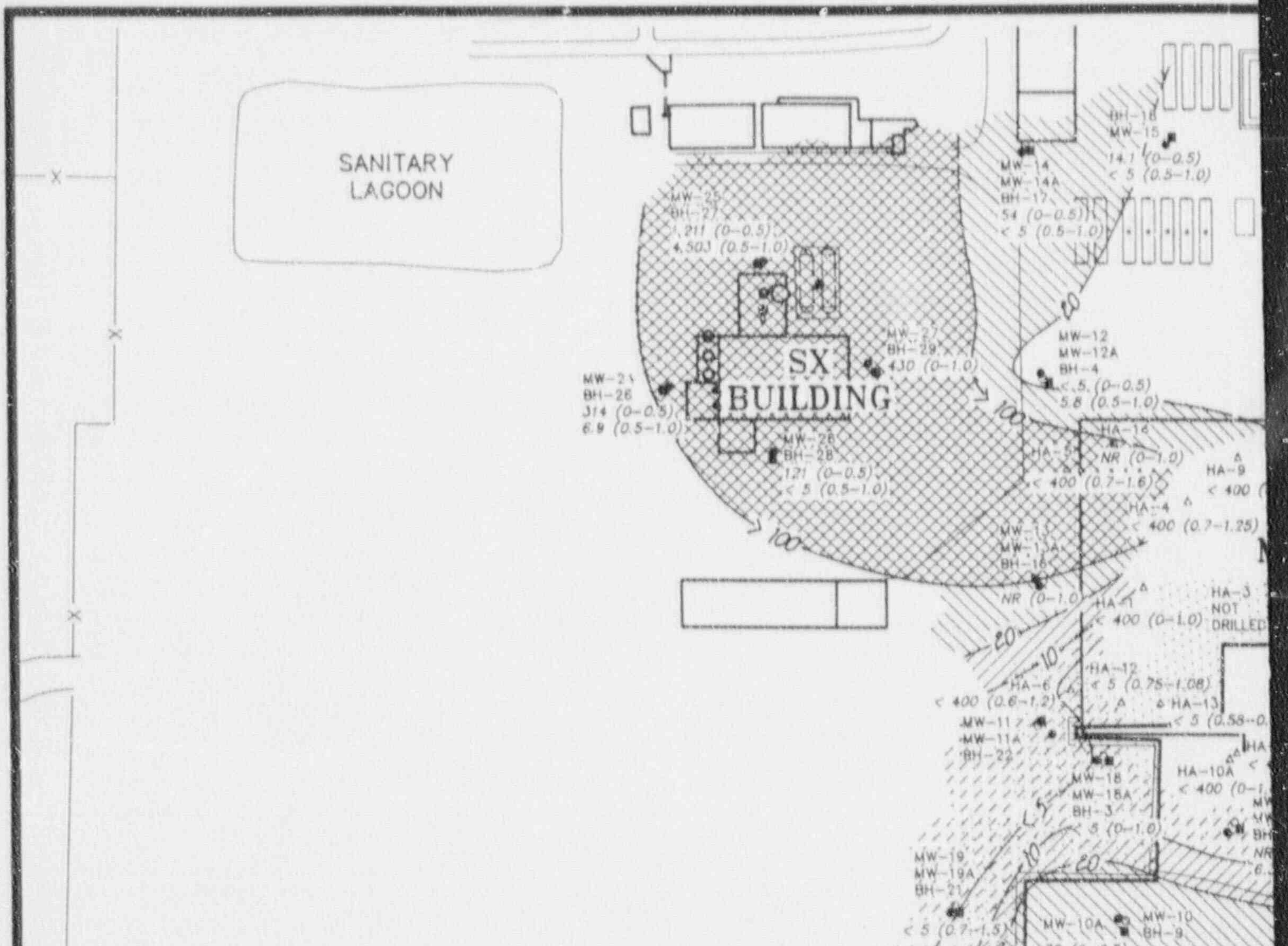
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

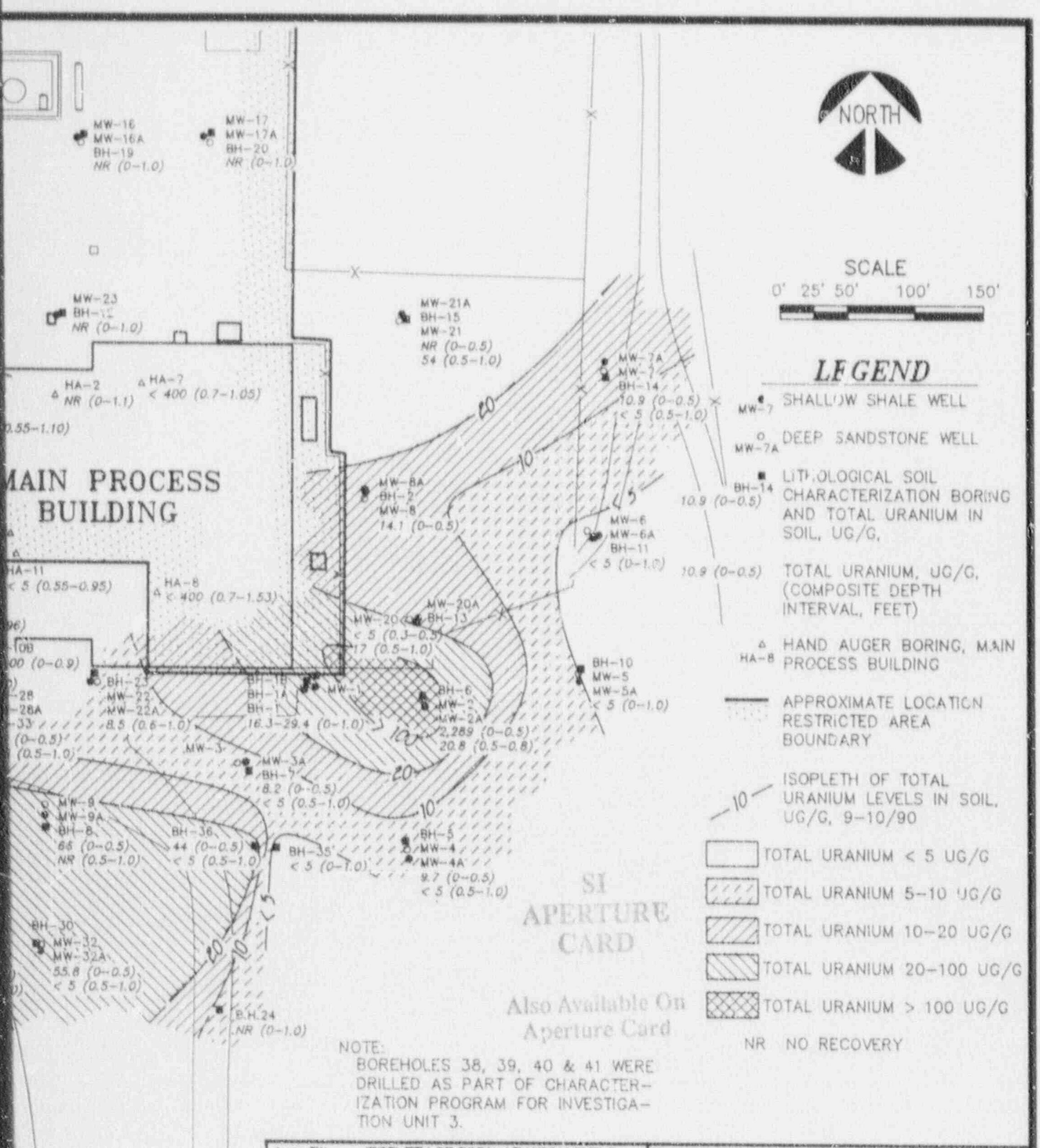
Figure Title: ISOPLETH OF SPECIFIC CONDUCTANCE CONCENTRATION IN GROUNDWATER IN SANDSTONE WELLS	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3696

DATE: 12/13/90	PREPARED BY: S.L.
SCALE: 1" = 100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M59	FIGURE NO. 42

9012260268-29

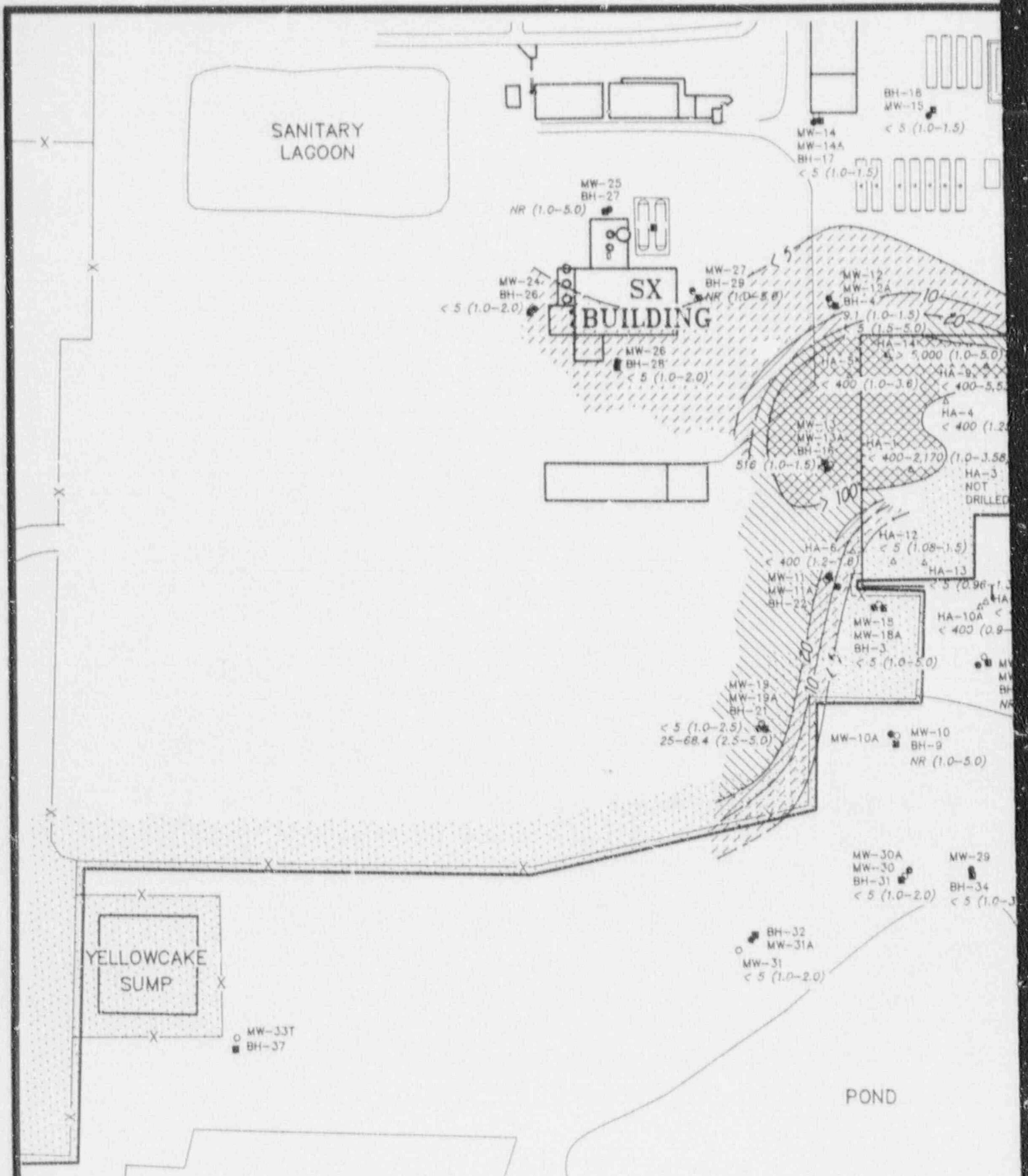

SANITARY LAGOON
SX BUILDING
YELLOWCAKE SUMP
POND
MW-25
BH-27
1,211 (0-0.5)
4,503 (0.5-1.0)
MW-24
BH-26
314 (0-0.5)
6.9 (0.5-1.0)
MW-27
BH-29
430 (0-1.0)
MW-28
BH-28
121 (0-0.5)
< 5 (0.5-1.0)
MW-14
MW-14A
BH-17
54 (0-0.5)
< 5 (0.5-1.0)
BH-18
MW-15
14.1 (0-0.5)
< 5 (0.5-1.0)
MW-12
MW-12A
BH-4
< 5 (0-0.5)
5.8 (0.5-1.0)
HA-14
NR (0-1.0)
HA-5
< 400 (0.7-1.6)
HA-9
< 400
HA-4
< 400 (0.7-1.25)
MW-13
MW-13A
BH-16
NR (0-1.0)
HA-1
< 400 (0-1.0)
HA-3
NOT
DRILLED
HA-12
< 5 (0.75-1.08)
HA-6
< 400 (0.6-1.2)
HA-13
< 5 (0.58-0.
MW-11
MW-11A
BH-22
MW-18
MW-18A
BH-3
< 5 (0-1.0)
HA-10A
< 400 (0-1.
MW-19
MW-19A
BH-21
< 5 (0.7-1.5)
MW-10A
MW-10
BH-9
72 (0-0.5)
NR (0.5-1.0)
MW-30A
MW-30
BH-31
111 (0-0.5)
< 5 (0.5-1.0)
>100
MW-29
BH-34
81.8 (0-0.5
< 5 (0.5-1.
BH-32
MW-31A
MW-31
27 (0-0.5)
< 5 (0.5-1.0)
MW-33T
BH-37
100
100
20
20
10
< 5
10
20
X

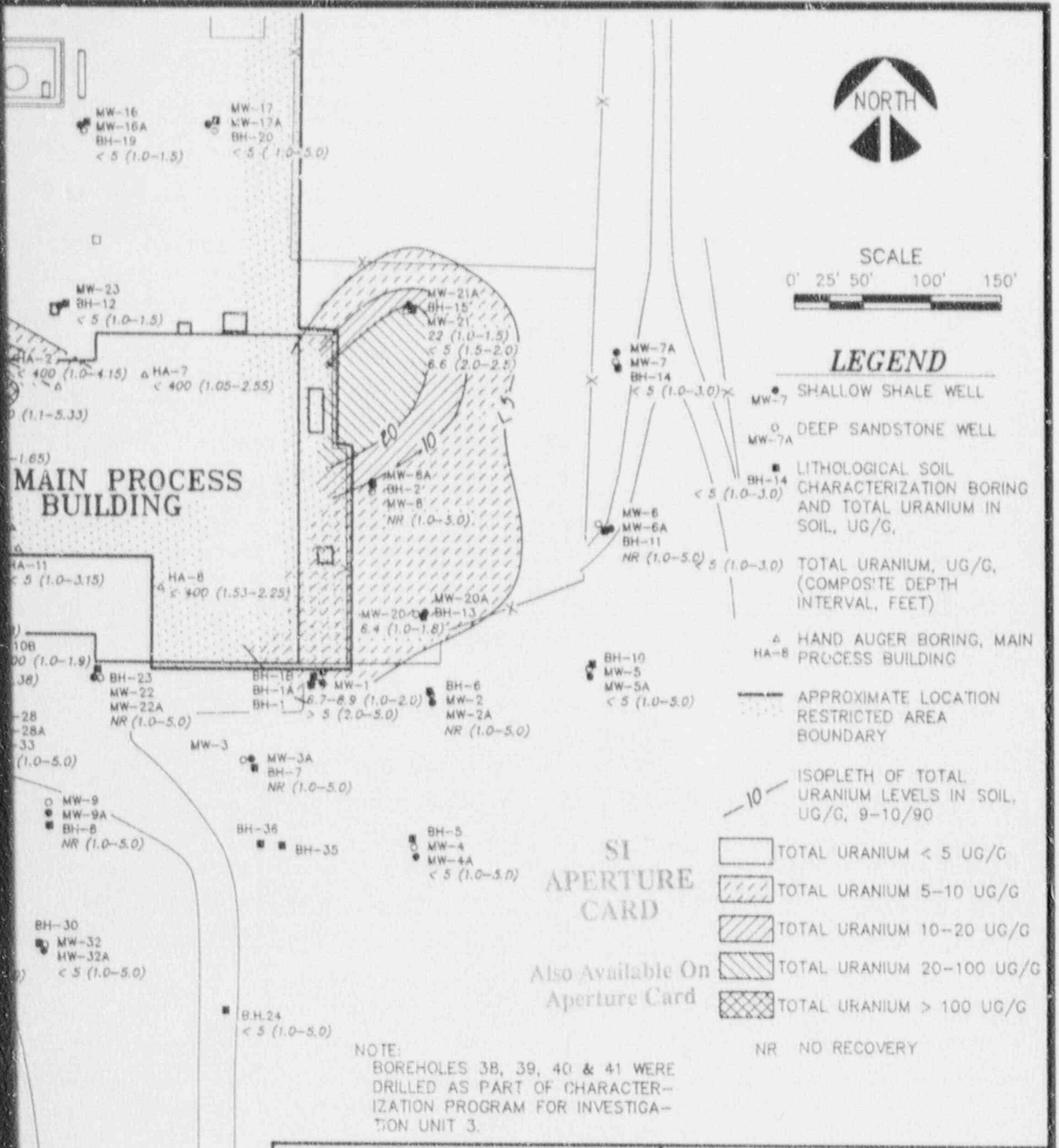


NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 0-1 FOOT DEPTH	Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 11/9/90	PREPARED BY: B.J.S.
	SCALE: 1" = 100'	CHECKED BY: B.J.S.
		DRAFTED BY: RML
	PROJECT NO: 90067 M34	FIGURE NO. 43

9012260268-30


SANITARY LAGOON
MW-25
BH-27
NR (1.0-5.0)
SX BUILDING
MW-24
BH-26
< 5 (1.0-2.0)
MW-27
BH-29
NR (1.0-5.0)
MW-26
BH-28
< 5 (1.0-2.0)
MW-14
MW-14A
BH-17
< 5 (1.0-1.5)
BH-18
MW-15
< 5 (1.0-1.5)
5
10
20
100
MW-12
MW-12A
BH-4
9.1 (1.0-1.5)
< 5 (1.5-5.0)
HA-14
> 5,000 (1.0-5.0)
HA-5
< 400 (1.0-3.6)
HA-9
< 400-5,5
HA-4
< 400 (1.2
MW-13
MW-13A
BH-15
516 (1.0-1.5)
HA-1
< 400-2,170 (1.0-3.58)
HA-3
NOT
DRILLED
HA-12
< 5 (1.08-1.5)
HA-13
< 5 (0.96-1.3
HA-6
< 400 (1.2-1.8)
MW-11
MW-11A
BH-22
MW-18
MW-18A
BH-3
< 5 (1.0-5.0)
HA-10A
< 400 (0.9-
MW-19
MW-19A
BH-21
< 5 (1.0-2.5)
25-68.4 (2.5-5.0)
MW-10A
MW-10
BH-9
NR (1.0-5.0)
MW-30A
MW-30
BH-31
< 5 (1.0-2.0)
MW-29
BH-34
< 5 (1.0-3
BH-32
MW-31A
MW-31
< 5 (1.0-2.0)
YELLOWCAKE SUMP
MW-33T
BH-37
POND



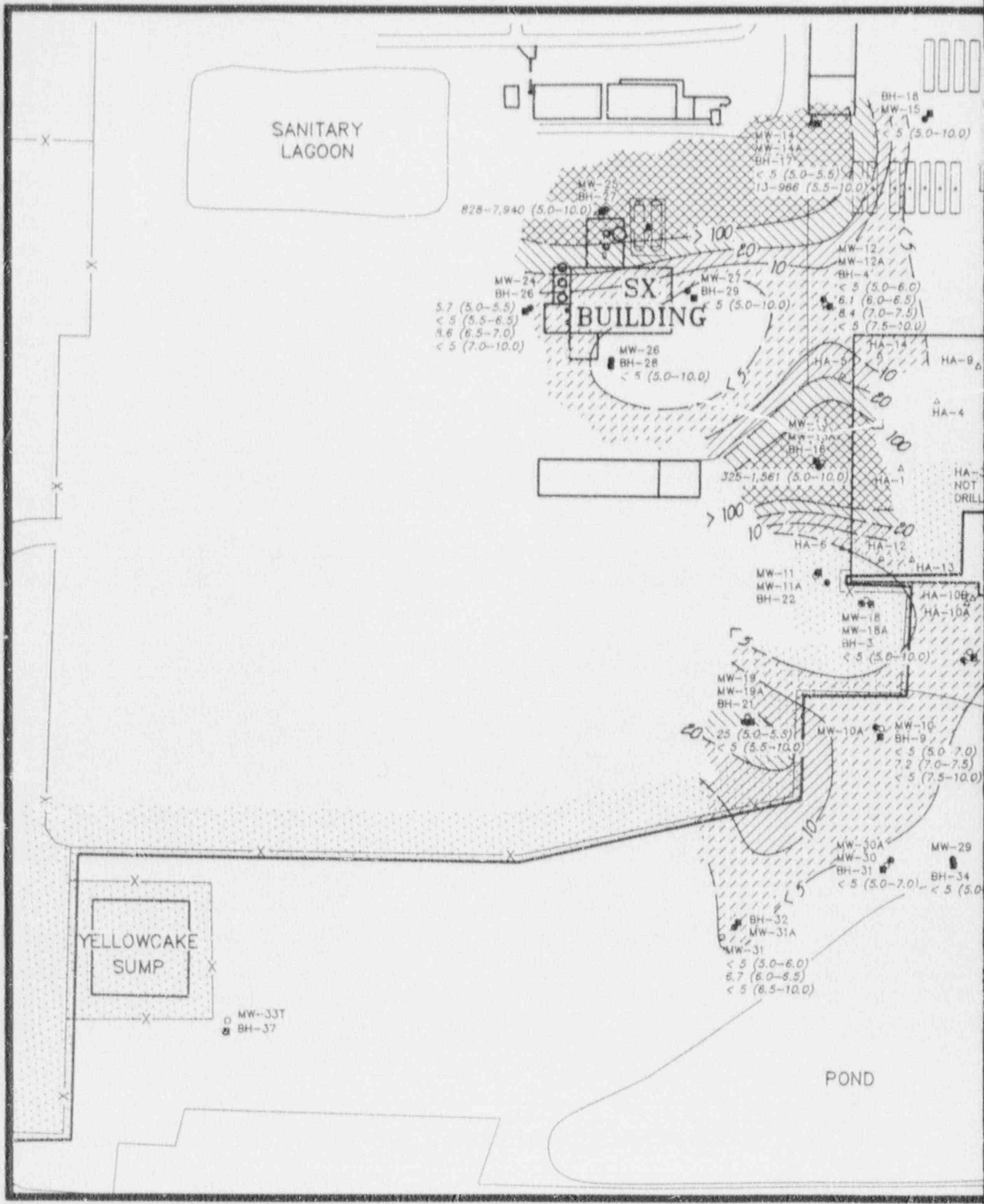
LEGEND

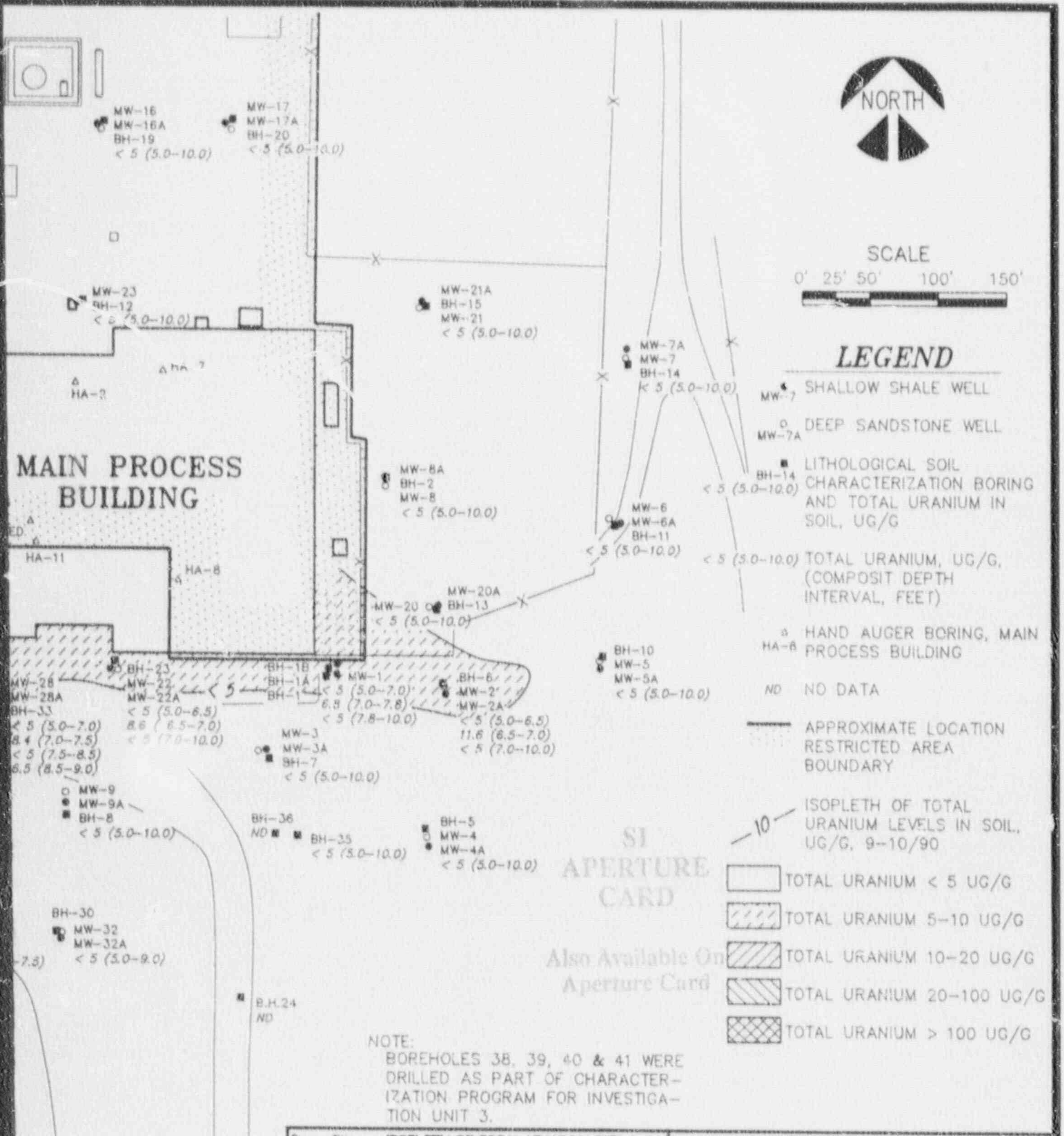
● MW-7	SHALLOW SHALE WELL
○ MW-7A	DEEP SANDSTONE WELL
■ BH-14	LITHOLOGICAL SOIL CHARACTERIZATION BORING AND TOTAL URANIUM IN SOIL, UG/G.
< 5 (1.0-3.0)	TOTAL URANIUM, UG/G, (COMPOSITE DEPTH INTERVAL, FEET)
△ HA-8	HAND AUGER BORING, MAIN PROCESS BUILDING
▨	APPROXIMATE LOCATION RESTRICTED AREA BOUNDARY
—10—	ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, UG/G, 9-10/90
☐	TOTAL URANIUM < 5 UG/G
▨	TOTAL URANIUM 5-10 UG/G
▨	TOTAL URANIUM 10-20 UG/G
▨	TOTAL URANIUM 20-100 UG/G
▩	TOTAL URANIUM > 100 UG/G
NR	NO RECOVERY

NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 1-5 FOOT DEPTH		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 11/9/90	PREPARED BY: B.J.S.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M33	FIGURE NO. 44	

9012260268-31

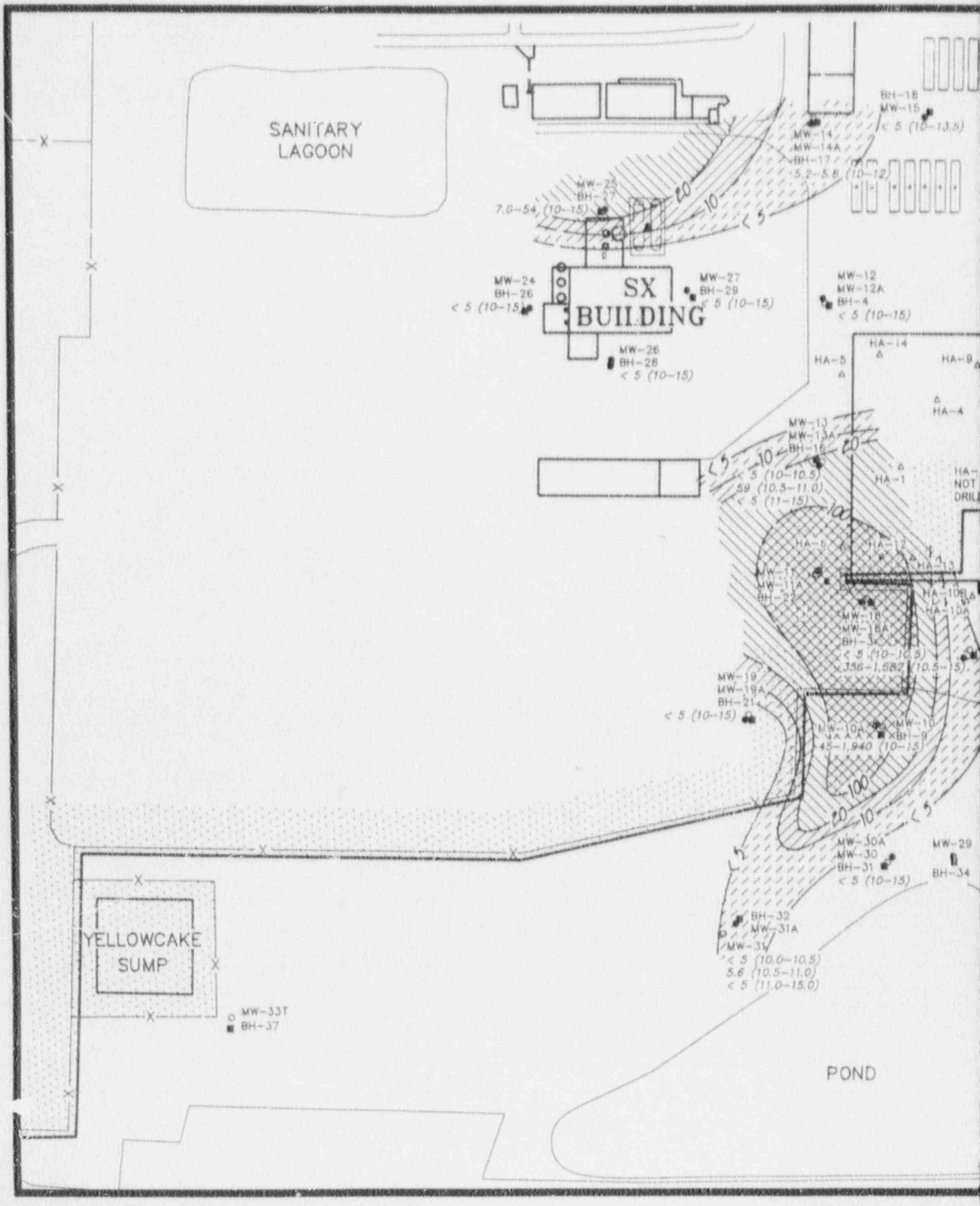

SANITARY
LAGOON
SX
BUILDING
YELLOWCAKE
SUMP
POND
BH-18
MW-15
< 5 (5.0-10.0)
MW-14
MW-14A
BH-17
< 5 (5.0-5.5)
13-966 (5.5-10.0)
MW-25
BH-27
828-7,940 (5.0-10.0)
> 100
20
10
< 5
MW-12
MW-12A
BH-4
< 5 (5.0-6.0)
6.1 (6.0-6.5)
8.4 (7.0-7.5)
< 5 (7.5-10.0)
MW-24
BH-26
5.7 (5.0-5.5)
< 5 (5.5-6.5)
8.6 (6.5-7.0)
< 5 (7.0-10.0)
MW-27
BH-29
< 5 (5.0-10.0)
MW-26
BH-28
< 5 (5.0-10.0)
HA-14
HA-9
HA-5
10
20
HA-4
100
MW-13
MW-13A
BH-16
325-1,561 (5.0-10.0)
HA-1
HA-
NOT
DRILL
> 100
10
20
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
MW-18A
BH-3
< 5 (5.0-10.0)
< 5
MW-19
MW-19A
BH-21
25 (5.0-5.5)
< 5 (5.5-10.0)
20
MW-10A
MW-10
BH-9
< 5 (5.0 7.0)
7.2 (7.0-7.5)
< 5 (7.5-10.0)
10
MW-30A
MW-30
BH-31
< 5 (5.0-7.0)
MW-29
BH-34
< 5 (5.0
< 5
BH-32
MW-31A
MW-31
< 5 (5.0-6.0)
6.7 (6.0-6.5)
< 5 (6.5-10.0)
MW-33T
BH-37

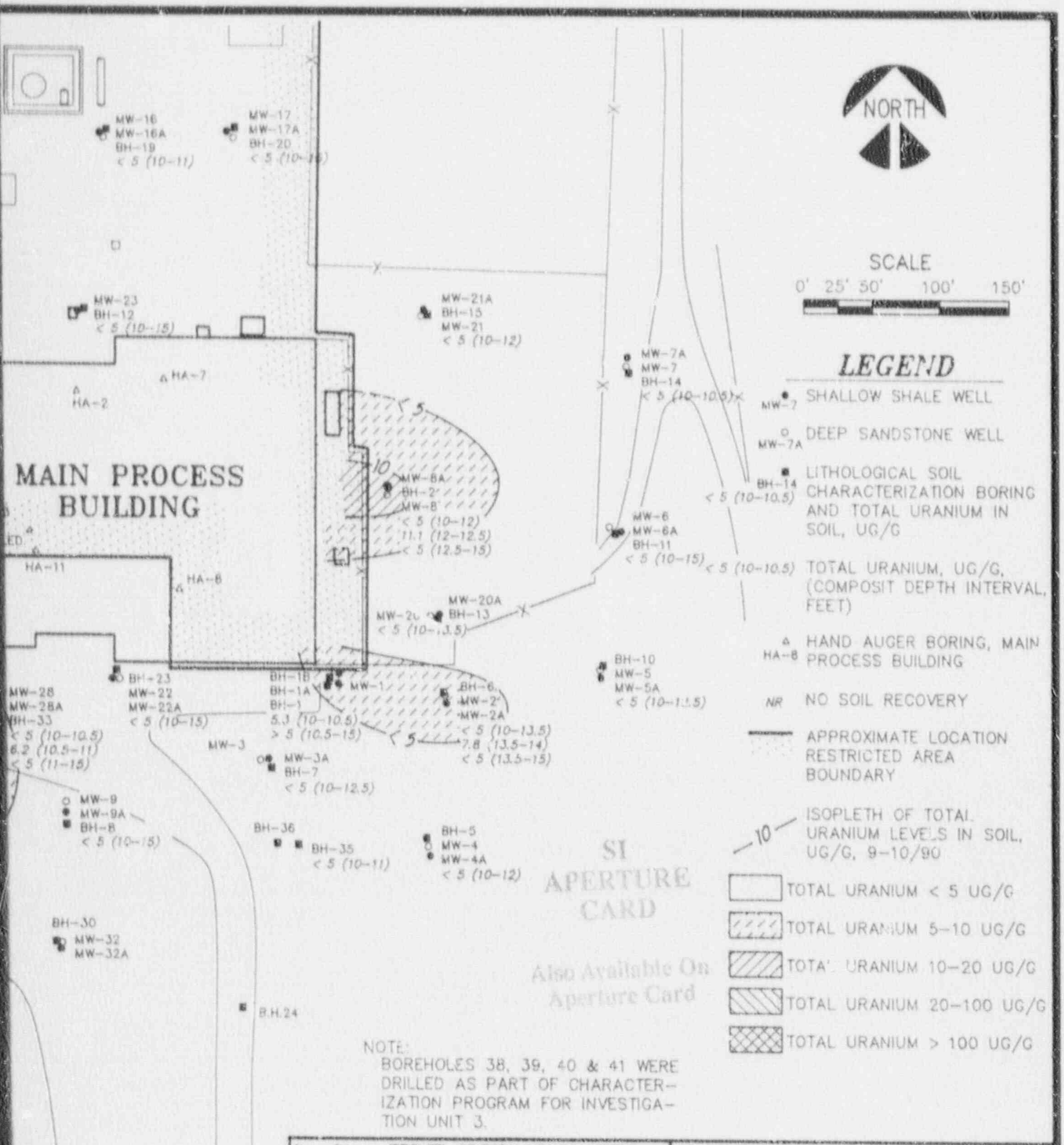


NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 5-10 FOOT DEPTH		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895	DATE: 11/9/90	PREPARED BY: B.J.S.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M28	FIGURE NO. 45	

9012260268-32

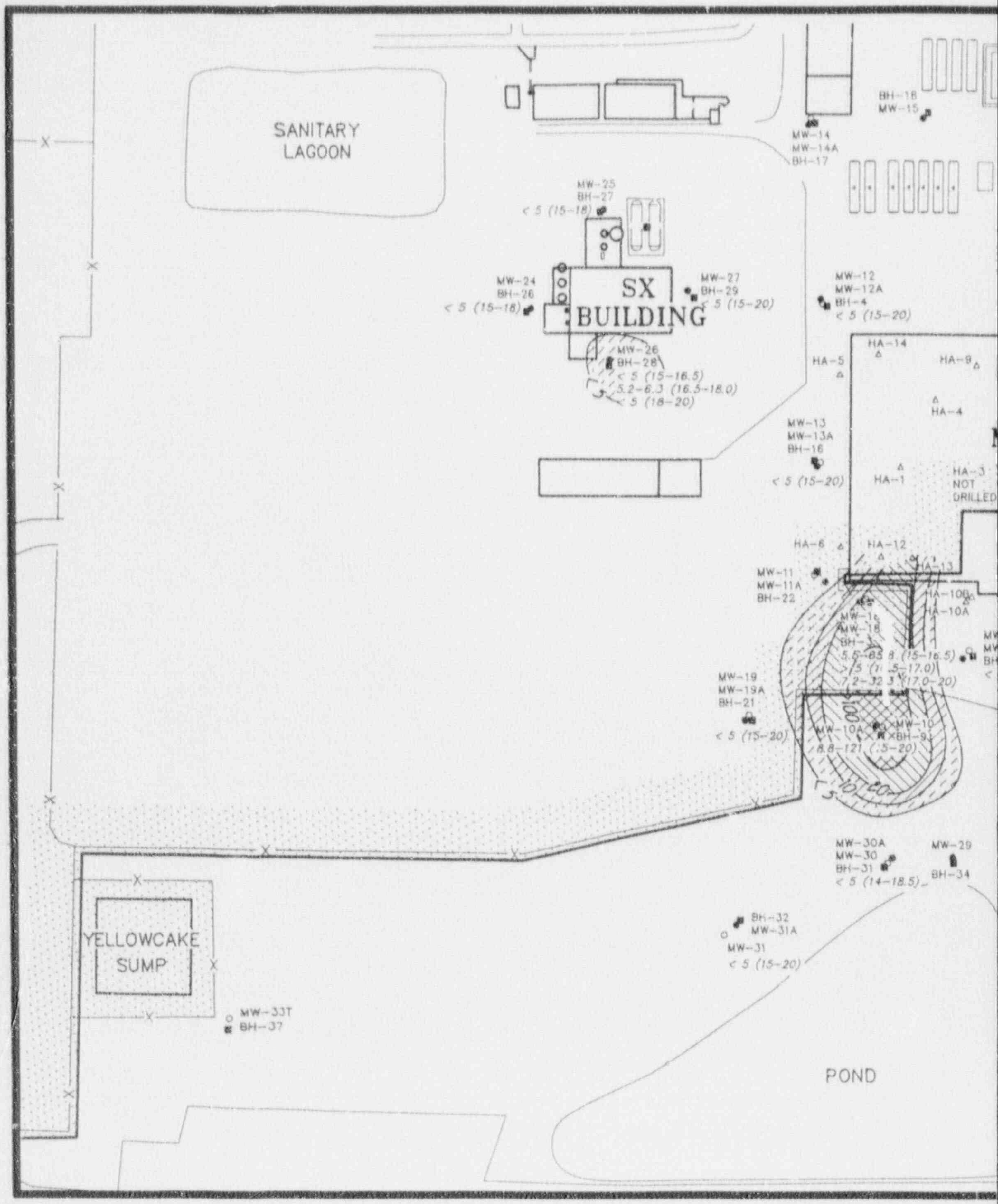

SANITARY
LAGOON
BH-18
MW-15
< 5 (10-13.5)
MW-14
MW-14A
BH-17
5.2-5.8 (10-12)
20
10
< 5
MW-25
BH-27
7.0-54 (10-15)
MW-24
BH-26
< 5 (10-15)
SX
BUILDING
MW-27
BH-29
< 5 (10-15)
MW-12
MW-12A
BH-4
< 5 (10-15)
MW-26
BH-28
< 5 (10-15)
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
< 5
10
20
< 5 (10-10.5)
59 (10.5-11.0)
< 5 (11-15)
HA-1
HA-
NOT
DRIL
100
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
MW-18A
BH-3
< 5 (10-10.5)
356-1,582 (10.5-15)
MW-19
MW-19A
BH-21
< 5 (10-15)
MW-10A
MW-10
BH-9
45-1,940 (10-15)
100
20
10
< 5
MW-30A
MW-30
BH-31
< 5 (10-15)
MW-29
BH-34
< 5
BH-32
MW-31A
MW-31
< 5 (10.0-10.5)
5.6 (10.5-11.0)
< 5 (11.0-15.0)
YELLOWCAKE
SUMP
MW-33T
BH-37
POND

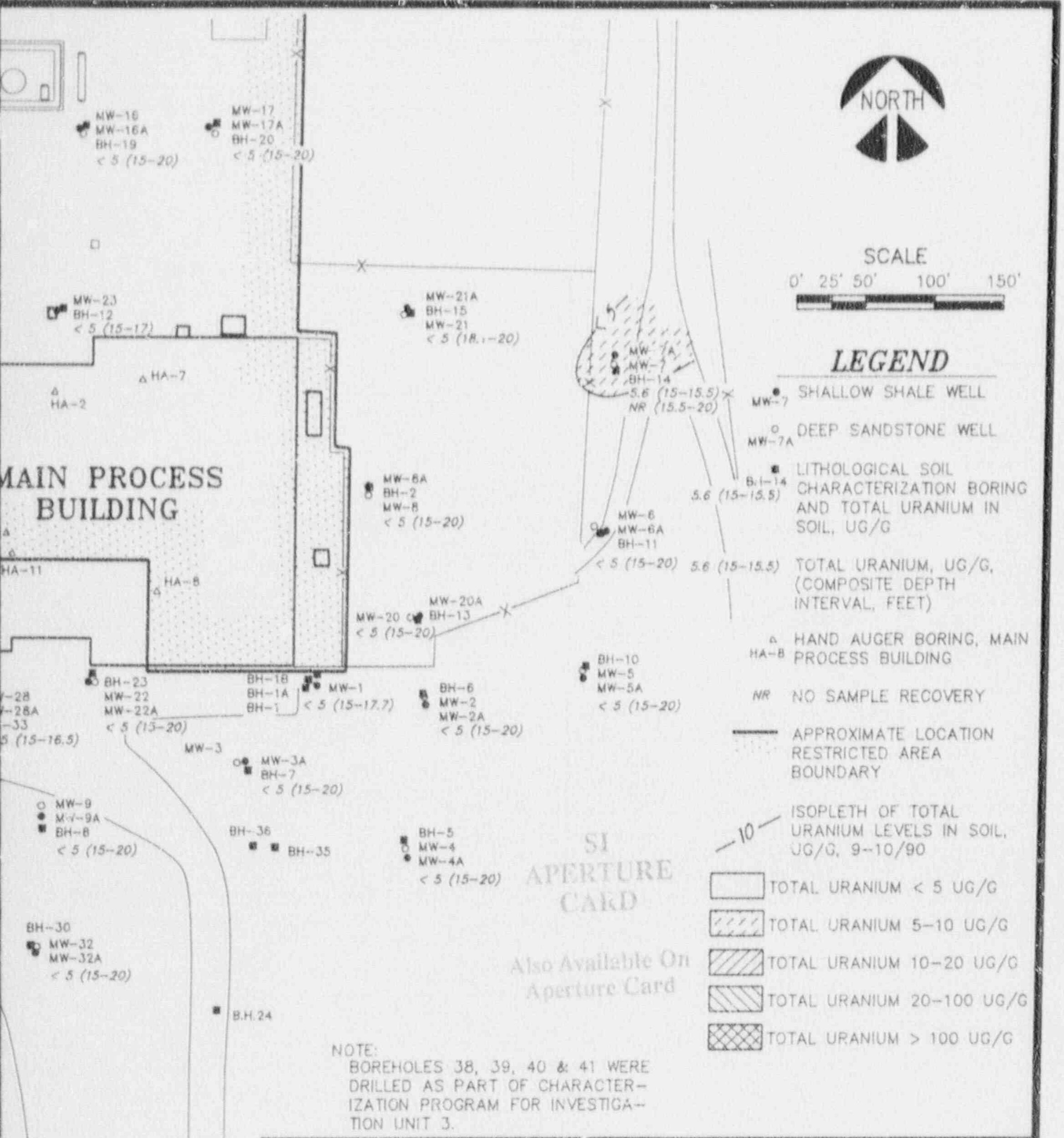


NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 10-15 FOOT DEPTH		Client: SEQUOYAH FUELS, CORP.	
Document Title: MPB INVESTIGATION MILESTONE REPORT		Location: GORE, OKLAHOMA	
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3896	DATE: 11/9/90	PREPARED BY: B.J.S.	
	SCALE: 1" = 100'	CHECKED BY: B.J.S.	
		DRAFTED BY: RML	
	PROJECT NO: 90067 M32	FIGURE NO. 46	

9012260268-33

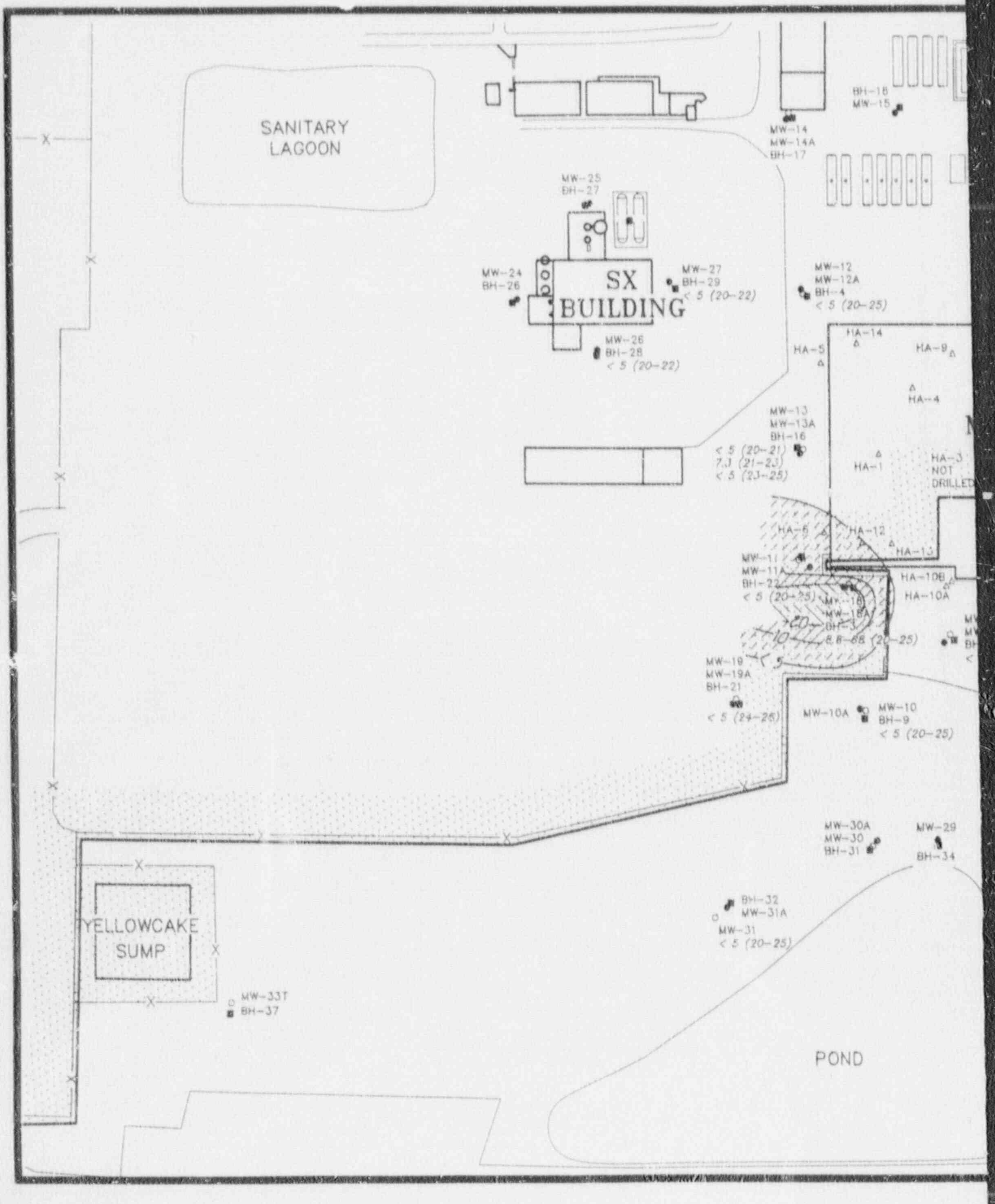

SANITARY LAGOON
BH-18
MW-15
MW-14
MW-14A
BH-17
MW-25
BH-27
< 5 (15-18)
MW-24
BH-26
< 5 (15-18)
SX BUILDING
MW-27
BH-29
< 5 (15-20)
MW-12
MW-12A
BH-4
< 5 (15-20)
MW-26
BH-28
< 5 (15-16.5)
5.2-6.3 (16.5-18.0)
< 5 (18-20)
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
< 5 (15-20)
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
HA-10B
HA-10A
MW-18
BH-3
5.5-85 8. (15-16.5)
>5 (1 .5-17.0)
7.2-32 3 (17.0-20)
MW-19
MW-19A
BH-21
< 5 (15-20)
100
MW-10A
MW-10
BH-9
8.8-121 (.5-20)
5
10
20
MW-30A
MW-30
BH-31
< 5 (14-18.5)
MW-29
BH-34
BH-32
MW-31A
MW-31
< 5 (15-20)
YELLOWCAKE SUMP
MW-33T
BH-37
POND



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 15-20 FOOT DEPTH	Client: SEQUOYAH FUELS, CORP.		
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA		
ROBERTS/SCHORNICK & ASSOCIATES, INC. Environmental Consultants 7700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895		DATE: 11/9/90	PREPARED BY: B.J.S.
		SCALE: 1"=100'	CHECKED BY: B.J.S. DRAFTED BY: RML
		PROJECT NO: 90067 M31	FIGURE NO. 47

9012260268-34


SANITARY
LAGOON
MW-25
BH-27
MW-24
BH-26
SX
BUILDING
MW-27
BH-29
< 5 (20-22)
MW-26
BH-28
< 5 (20-22)
BH-18
MW-15
MW-14
MW-14A
BH-17
MW-12
MW-12A
BH-4
< 5 (20-25)
HA-14
HA-9
HA-5
HA-4
MW-13
MW-13A
BH-16
< 5 (20-21)
7.3 (21-23)
< 5 (23-25)
HA-1
HA-3
NOT
DRILLED
HA-6
HA-12
HA-13
HA-10B
HA-10A
MW-11
MW-11A
BH-22
< 5 (20-25)
MW-18
MW-18A
BH-3
8.6-68 (20-25)
20
10
5
MW-19
MW-19A
BH-21
< 5 (24-26)
MW-10A
MW-10
BH-9
< 5 (20-25)
MW-30A
MW-30
BH-31
MW-29
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MW-31
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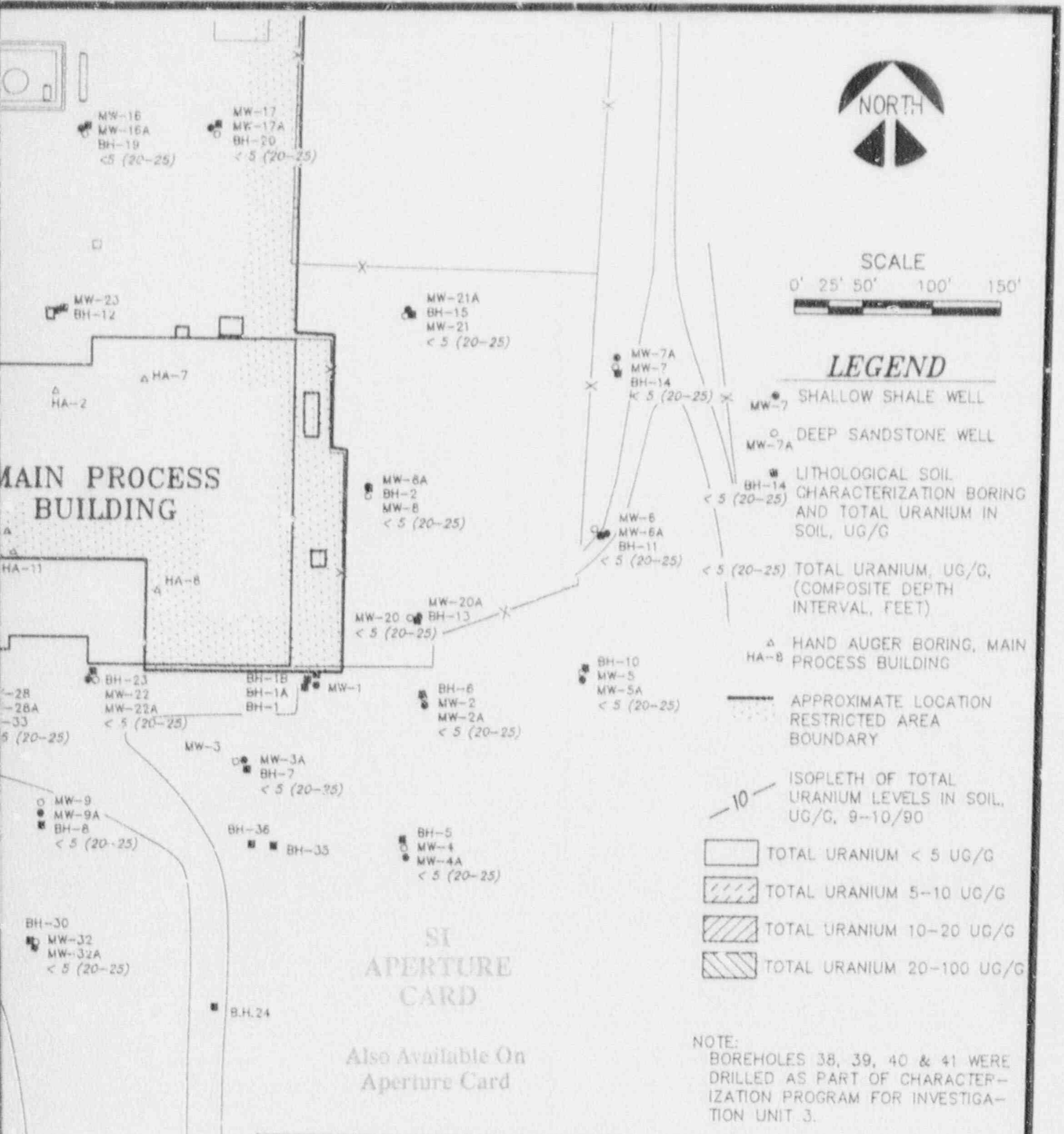
SUMP
MW-33T
BH-37
POND



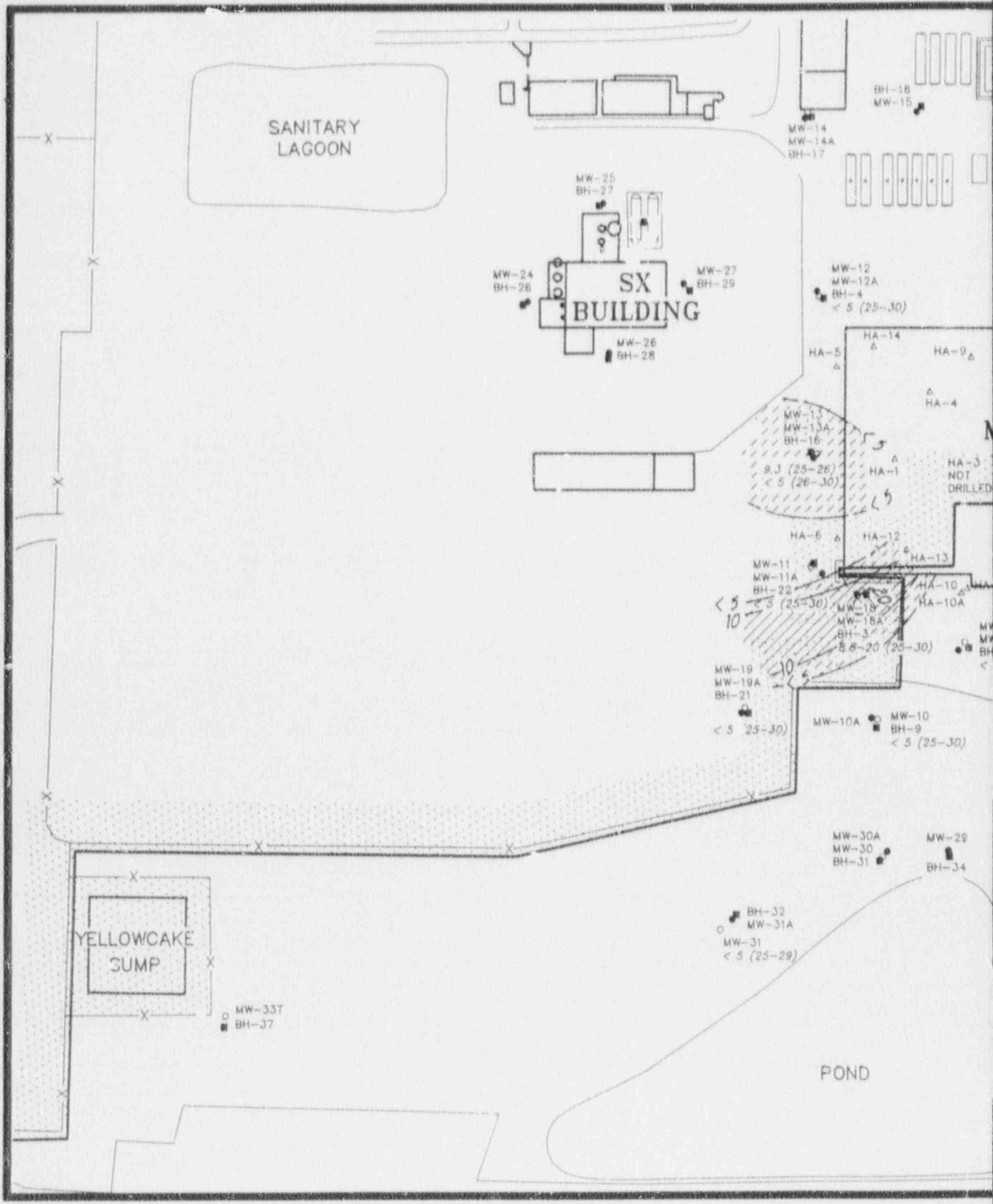
NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

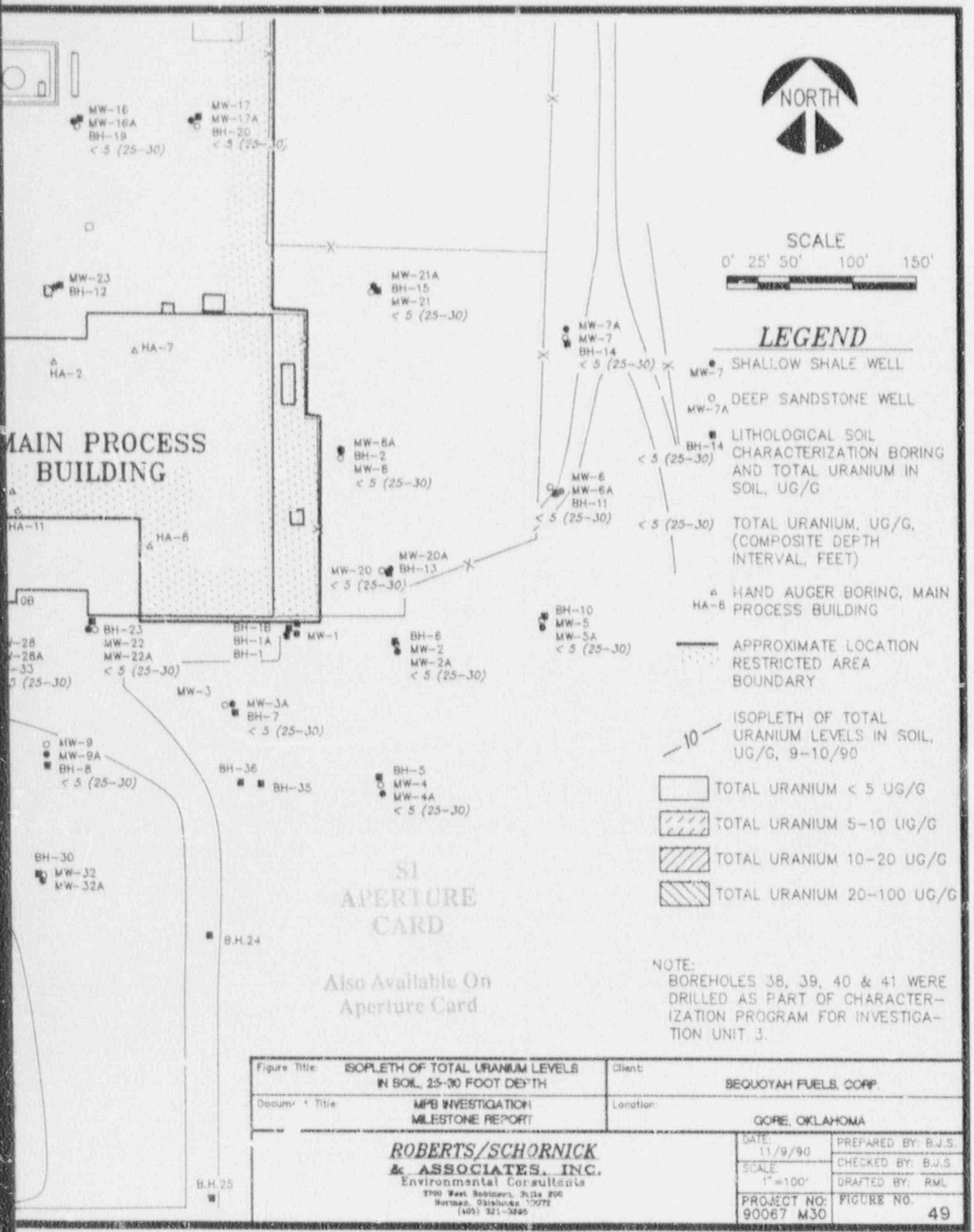
Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 20-25 FOOT DEPTH	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

ROBERTS/SCHORNICK & ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/8/90	PREPARED BY: B.J.S.
SCALE: 1" = 100'	CHECKED BY: B.J.S.
	DRAFTED BY: RML
PROJECT NO: 90067 M29	FIGURE NO. 48

9012260268-35


SANITARY LAGOON
MW-25
BH-27
MW-24
BH-26
SX BUILDING
MW-27
BH-29
MW-26
BH-28
BH-18
MW-15
MW-14
MW-14A
BH-17
MW-12
MW-12A
BH-4
< 5 (25-30)
HA-14
HA-5
HA-9
HA-4
MW-13
MW-13A
BH-16
9.3 (25-26)
< 5 (26-30)
< 5
HA-1
HA-3
NOT
DRILLED
< 5
HA-6
HA-12
HA-13
MW-11
MW-11A
BH-22
< 5
< 5 (25-30)
10
HA-10
HA-10A
MW-18
MW-18A
BH-3
8.8-20 (25-30)
MW-19
MW-19A
BH-21
10
< 5 (25-30)
MW-10A
MW-10
BH-9
< 5 (25-30)
MW-30A
MW-30
BH-31
MW-29
BH-34
BH-32
MW-31A
MW-31
< 5 (25-29)
YELLOWCAKE SUMP
MW-33T
BH-37
POND
X



NOTE:
BOREHOLES 38, 39, 40 & 41 WERE DRILLED AS PART OF CHARACTERIZATION PROGRAM FOR INVESTIGATION UNIT 3.

Figure Title: ISOPLETH OF TOTAL URANIUM LEVELS IN SOIL, 25-30 FOOT DEPTH	Client: SEQUOYAH FUELS, CORP.
Document Title: MPB INVESTIGATION MILESTONE REPORT	Location: GORE, OKLAHOMA

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& ASSOCIATES, INC.
Environmental Consultants
3700 West Robinson, Suite 200
Norman, Oklahoma 73072
(405) 321-3895

DATE: 11/9/90	PREPARED BY: B.J.S.
	CHECKED BY: B.J.S.
SCALE: 1" = 100'	DRAFTED BY: RML
PROJECT NO: 90067 M30	FIGURE NO. 49

9012260268-36

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ROBERTS SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants

APPENDICES
SEQUOYAH FUELS CORPORATION
REVISION 2
MAIN PROCESS BUILDING
INVESTIGATION
FINAL FINDINGS REPORT

Prepared by:

Roberts/Schornick and Associates, Inc.

Environmental Consultants

Norman, Oklahoma 73072

(405) 321-3895

December 15, 1990

LIST OF APPENDICES

APPENDIX A

SEQUOYAH FUELS CORPORATION

WORK PLAN

FOR

NRC ORDER MODIFYING LICENSE

DOCKET NO. 40-08027

LICENSE NO. SUB-1010

EA 90-162

SEPTEMBER 28, 1990

SEQUOYAH FUELS CORPORATION
WORK PLAN
FOR
NRC ORDER MODIFYING LICENSE
DOCKET NO. 40-08027
LICENSE NO. SUB-1010
EA 90-162
SEPTEMBER 28, 1990

1.0 BACKGROUND

On September 20, 1990 the NRC issued the Sequoyah Fuels Corporation (SFC) an Order Modifying License (OML) to take actions at the site to investigate and prevent further releases of licensed material from the Main Process Building (MPB) and develop an environmental assessment plan for other locations on the SFC property. Based on the schedule of activities outlined in the OML and assuming a hearing is not requested by SFC or other party, the actions are required to be completed on or before October 16, 1990. The SFC has retained an environmental consulting firm, Roberts/Schornick and Associates, Inc., (RSA) to assist in developing and implementing a Wor Plan to complete the OML actions. The Work Plan developed by SFC and RSA is outlined herein.

2.0 WORK PLAN

The OML identifies six (6) actions (see Paragraph IV, Pages 4 and 5 of OML) to be completed by SFC. The following Work Plan tasks have been defined by SFC and RSA to respond to the six (6) actions. The OML actions are interrelated. The first digit of a task number indicates the task is primarily associated with the action numbers as presented in the OML.

Task 1.1: SFC will immediately cease intentional placement of liquids in sumps or on the floors of the MPB until the integrity of the sumps and floors has been assured.

Task 1.2: A comprehensive inspection of the MPB floors and sumps will be performed.

Task 1.3: Repairs to potential release sources identified by the MPB floor and sump inspection will be completed.

Task 1.4: An interim MPB floor and sump inspection report will be prepared for documentation.

Task 1.5: An interim MPB floor and sump repair report will be prepared for documentation.

Task 2.1: A boring location map to investigate the MPB floor and sump areas will be developed.

Task 2.2: A boring investigation of the MPB floor and sump areas will be implemented.

Task 2.3: The licensed material present beneath the MPB floor will be quantified.

Task 2.4: A map will be prepared depicting the location of any licensed material determined to be present beneath the MPB floor.

Task 2.5: An interim MPB floor investigation report will be prepared for documentation.

Task 3.1: Appropriate MPB construction drawings will be reviewed to identify potential migration pathways.

Task 3.2: A map depicting MPB potential migration pathways will be prepared.

Task 3.3: The utilities and construction details of the MPB will be investigated.

Task 3.4: Migration barriers to potential migration pathways will be installed.

Task 3.5: An interim MPB utilities and construction details report will be prepared.

Task 4.1: The adequacy of the MPB groundwater monitoring system will be evaluated.

Task 4.2: The groundwater monitoring data for the MPB will be reviewed for evidence of licensed material attributable to the MPB activities and to identify migration from the MPB.

Task 4.3: A report on this subject will be generated and will include recommendations as appropriate.

Task 5.1: The location of borings and monitoring wells for the restricted area boundary and the MPB will be determined.

Task 5.2: The borings and monitoring wells for the MPB and the restricted area boundary will be installed.

Task 5.3: The boring samples from the restricted area boundary and MPB will be analyzed.

Task 5.4: The monitoring well samples for the restricted area boundary and MPB will be analyzed.

Task 5.5: The lithology and groundwater aquifer characteristics for the restricted area boundary and MPB will be established.

Task 5.6: The licensed material migration potential for the restricted area boundary and MPB will be determined.

Task 5.7: An interim restricted area boundary and MPB findings report will be prepared.

Task 5.8: A milestone investigation findings report will be prepared. This report will summarize tasks to date.

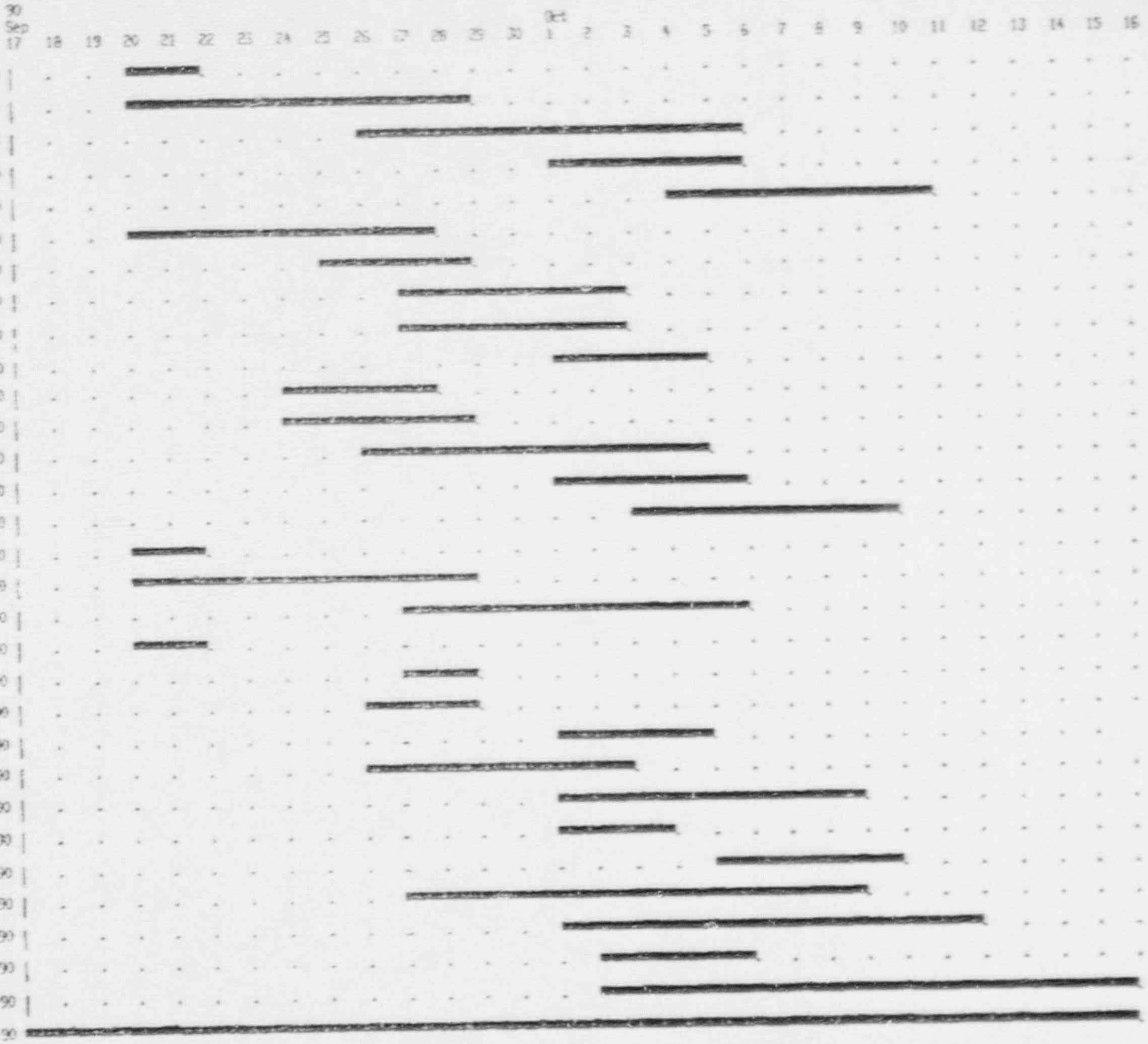
Task 6.1: A SFC property environmental investigation plan will be developed.

3.0 SCHEDULE

A schedule depicting the sequence for starting and completing the Work Plan tasks is presented in Figure 1. As indicated by the schedule, the Work Plan will be implemented by October 15, 1990 in conformance with the OML requirements.

hedule Name : SEQUOYAH FUELS CORPORATION WORK PLAN
sponsible :
-of Date : 17-Sep-90   Schedule File : D:\SFC27SEP

sk Name	Duratn (Days)	End Date
1.1 CS LOD PLC TO MPB FLRS/SMP	2	21-Sep-90
1.2 PRFM MPB FLR/SMP INSPCT	9	28-Sep-90
1.3 RPR MPB FLR/SMP BLS SRCS	10	5-Oct-90
1.4 INTRM MPB FLR/SMP INSP RPT	5	5-Oct-90
1.5 INTRM MPB FLR/SMP RPR RPT	7	10-Oct-90
2.1 DEVLP MPB FLR/SMP BRNG MAP	8	27-Sep-90
2.2 IMPLMT MPB FLR/SMP BRNG IN	4	28-Sep-90
2.3 QUNTFY LC MTL BNTH MPB FLR	6	2-Oct-90
2.4 PREP BNTH MPB FLR LC MTL L	6	2-Oct-90
2.5 INTRM MPB FLR INVST RPT	4	4-Oct-90
3.1 RVW MPB CONST DRWGS	4	27-Sep-90
3.2 MPB PTNL MGRT PTHWY MAP	5	28-Sep-90
3.3 IMPLMT MPB CONST/UTLTY INV	9	4-Oct-90
3.4 INSTL CONST/UTLTY MGRT BRS	5	5-Oct-90
3.5 INTRM MPB CONST/UTLTY RPT	7	9-Oct-90
4.1 EVAL MPB GW MNT SYST ADQCY	2	21-Sep-90
4.2 RVW GW MNT DATA, MGRT EVID	9	28-Sep-90
4.3 GW MNT DATA MGRT RPT	9	5-Oct-90
5.1 DTRM RAB-MPB BRNG/MW LOCS	2	21-Sep-90
___DTRM RAB-MPB BRNG/MW LOCS	2	28-Sep-90
5.2 INSTL RAB-MPB BRNG/MW	3	28-Sep-90
___INSTL RAB-MPB BRNG/MW	4	4-Oct-90
5.3 ANLZ RAB/MPB BRNG SMPLS	7	2-Oct-90
___ANLZ RAB/MPB BRNG SMPLS	6	8-Oct-90
5.4 ANLZ RAB/MPB MW SMPLS	3	3-Oct-90
___ANLZ RAB/MPB MW SMPLS	5	9-Oct-90
5.5 RAB/MPB GW LTHL/AQFR CHRC	12	8-Oct-90
5.6 RAB/MPB LC MTL MGRT PTHL	11	11-Oct-90
5.7 INTRM RAB/MPB FNDGS RPT	4	5-Oct-90
5.8 MILSTONE INVST FNDGS RPT	14	15-Oct-90
6.1 SFC PRPTY ENVR INVST PLN	23	15-Oct-90



APPENDIX B

SEQUOYAH FUELS CORPORATION, FINAL REPORT, INSPECTION AND REPAIRS OF MPB FLOORS AND SUMPS

INTERNAL CORRESPONDENCE
MAINTENANCE DEPARTMENT

To: Distribution

Date: October 15, 1990

From: Richard A. Parker

Re: SFC Final Report Of Inspection And Repairs To MPB Floor And Sumps

The purpose of this memo is to report on item #1 of the September 19, 1990 Order Modifying License (OML) No. SUB-1010.

Upon receipt of the OML, James H. Mestepey, Senior Vice President, SFC directed the Operations Department to stop all activities that could place process liquids in sumps or on floors to minimize process liquids in these areas until the integrity of the sumps and floor had been assured. In addition, Mr. Mestepey has directed the operations effort to make modifications that will minimize process liquids in sumps and on floors in the future. Some of these modifications are complete, while others are in various stages of design. The goal is to minimize process liquids on the floors and in the sumps in future operations.

Activities to ensure the integrity of the floor of the Main Process Building (MPB) and make repairs as necessary, have been directed by Sam R. Fryer, Manager of Engineering, SFC and Richard A. Parker, Manager of Maintenance, SFC. All initial and final inspections were performed under the direction of Mr. Fryer, while repairs to suspect areas were made under the direction of Mr. Fryer and Mr. Parker. SFC Engineering, in conjunction with the Operations and Maintenance Departments, have identified all floors, pits, and sumps in the Main Process Building and assigned these unique identification numbers for reference purposes. SFC has also identified floors, pits, and sumps outside of the Main Process Building where liquids containing licensed materials could be present. Areas outside of the MPB have undergone the same inspection process and where necessary, repairs are being completed and final inspections are being made.

This report covers pits, floors, and sumps in the Main Process Building. A separate report covering areas outside of the Main Process Building will be made to Jim Mestepey, Senior Vice President, SFC, and will be available for review if so desired. A summary of each pit, sump, and floor in the Main Process Building follows.

For the purpose of this report, and for future reference, the identification system is as follows:

1. The first three numbers identify the area of the plant as designated by original SFC assigned numbers.
2. The next two letters designate weather this is a pit (PT), sump (SP) or floor (FL).
3. The last four numbers were sequentially assigned on a random basis.

1. NOX SYSTEM FLOOR (170 FL 0100)

   1. This is the floor area of the NOX Scrubber.
   2. Construction is coated concrete.
   3. Liquids possible: Mild caustic solution that could contain very low levels of uranium. Normally dry.
   4. Initial inspection showed no defects.
      Final inspection approved.

2. NOX SYSTEM FLOOR SUMP (170 SP 0001)

   1. This is the sump in the Nox Scrubber Floor.
   2. Construction is coated concrete.
   3. Liquids possible: Mild caustic solution that could contain very low levels of uranium.
   4. Initial inspection showed no defects.
      Final inspection approved.

3. DECON ROOM FLOOR (201 FL 0101)

   1. Floor of Decontamination Room on west end of MPB.
   2. Coated concrete construction.
   3. Liquids possible: Water/dilute nitric acid with uranium present at times.
   4. Initial inspection showed no defects.
      Final inspection approved.

4. DECON ROOM FLOOR SUMP (201 SP 0002)

   1. Sump for Decon Room Floor.
   2. Coated concrete construction.
   3. Liquids possible: Water/dilute nitric acid with uranium present at times.
   4. Initial inspection showed no defects.
      Final inspection approved.

5. **YELLOW CAKE SAMPLING DRUM ELEVATOR PIT (220 PT 0007)**

   1. Elevator Pit.
   2. Concrete construction.
   3. No liquids normally present (dry powder elevator).
   4. Initial inspection showed no defects.
      Final inspection approved.

6. YELLOWCAKE SAMPLING REDRUM SCALE PIT (220 PT 0008)

   1. Scale Pit.
   2. Concrete construction.
   3. No liquids normally present.
   4. Initial inspection showed no defects.
      Final inspection approved.

7. DIGESTION FLOOR SUMP (230 SP 0009)

   1. Sump for Digestion floor.
   2. Welded stainless steel construction.
   3. Process liquids and washdown water present when process upsets occur.
   4. Initial inspection showed a small hole in the top southwest corner of sump. Hole was welded and reinspected.
      Final inspection approved.

8. DIGESTION AREA FLOOR (230 FL 0103)

   1. Floor under Digestors.
   2. Welded stainless steel construction.
   3. Process liquids and washdown water present if process upsets occur or certain maintenance activities take place (pump leaks etc.).
   4. Initial inspection identified potential leak paths in welds. All welds were inspected and rewelded if any question of integrity existed.
      Final inspection approved.

9. BOILDOWN FLOOR (250 FL 0111)

   1. Floor under Boildown Tanks.
   2. Welded stainless steel construction.
   3. Process liquids possible if any upset occurs or leaks develop in associated equipment.
   4. Initial inspection could not approve welds because welds had been made from the backside initially. All seams were rewelded.
      Final inspection approved.

10. SECONDARY REFRIGERATION SYSTEM SUMP (270 SP 0020)

1. Sump for Refrigeration System condensation.
2. Concrete construction.
3. Process liquids not present in area. Liquid condensation may be present.
4. Initial inspection of sump showed deterioration after sandblasting surfaces. All deteriorated concrete was removed and repaired. After concrete was repaired, the entire sump was coated with acid resistant Tufco R-19 material to stop any reoccurrence. Repair work was approved. Final inspection approved.

11. BUCKET ELEVATOR 1332 PIT FLOOR (260 FL 0112)

1. UF4 Bucket Elevator Pit Floor.
2. Concrete construction.
3. Process liquids not present in area, but liquid condensation from Secondary Refrigeration System could leak into pit.
4. Initial inspection showed liquid seeping into pit from east wall - northeast side at bottom. North half of floor looked poor and deteriorated. Indication of liquids entering the pit from ground floor sources. After deteriorated material was removed, concrete was repaired and coated with Tufco R-19 material (vinyl-ester). Final inspection approved.

12. BUCKET ELEVATOR 1332 PIT SUMP (260 PT 0021)

1. UF4 Bucket Elevator Pit Sump.
2. Concrete construction.
3. Process liquids not present in area, but water/liquid condensation could leak into pit.
4. Initial inspection indicated very deteriorated concrete but did not indicate leaking. Deteriorated concrete was repaired and pit sump was coated with Tufco R-19 material. Final inspection approved.

13. BUCKET ELEVATOR 1333 PIT FLOOR (260 FL 0113)

1. UF4 Bucket Elevator Pit Floor.
2. Concrete construction.
3. No process liquids present in area, Refrigeration System condensation could leak in from plant floor.
4. Initial inspection showed liquid leaking into pit area from plant floor. Floor was deteriorated and south wall of pit at southwest corner halfway up wall was very deteriorated. All deteriorated concrete was repaired and coated with Tufco R-19 vinyl ester material. Final inspection approved.

14. BUCKET ELEVATOR 1333 PIT SUMP (260 PT 0022)

1. UF4 Bucket Elevator Pit Sump.
2. Concrete construction.
3. No process liquids in area water/condensation could leak into pit from plant floor.
4. Initial inspection showed walls and floor [illegible] bad. Deteriorated concrete was repaired [illegible] sump was coated with Tufco R-19 vinyl ester material. Final inspection approved.

15. UF6 ACCOUNTABILITY SCALE PIT FLOOR (280 FL 0114)

1. Scale Pit.
2. Concrete construction.
3. No process liquids present - pit dry and clean.
4. Initial inspection showed no defects. Final inspection approved.

16. UF6 ACCOUNTABILITY SCALE PIT SUMP (280 SP 0023)

1. Scale Pit Sump.
2. Concrete construction.
3. No process liquids present - pit dry and clean.
4. Initial inspection showed minor concrete defects, repaired concrete. Final inspection approved.

17. UF6 NORTH SCALE PIT (280 PT 0024)

1. Scale Pit.
2. Concrete construction.
3. No process liquids in area - pit dry.
4. No defects, final inspection approved.

18. UF6 SOUTH SCALE PIT (280 PT 0025)

1. Scale Pit.
2. Concrete construction.
3. no process liquids in area - pit dry.
4. No defects, final inspection approved.

19. PROCESS LAB TUNNEL FLOOR (290 FL 0115)

1. Lab Tunnel Floor.
2. Concrete construction.
3. Lab process liquids and water possible.
4. No defects - final inspection approved.

20. PROCESS LAB TUNNEL SUMP (290 SP 0026)

1. Lab Tunnel Sump.
2. Concrete/lined sump.
3. Lab process liquids and water present.
4. Initial inspection not possible without shutdown of lab process. Decision was made to install a tank to collect all lab liquids and pump from the tank to the chemical waste header. This eliminates the sump from being used as a collection point for lab liquids in the future. Liner was removed to inspect concrete, no defects were identified. Existing sump used as a secondary containment system only. New system operating, old sump was coated. Final inspection approved

21. HF VAPORIZOR ROOM FLOOR (340 FL 0118)

1. Floor in Vaporizor Room.
2. Coated concrete.
3. No uranium bearing liquids present.
4. Final inspection approved.

22. HF VAPORIZOR ROOM SUMP (340 SP 0032)

1. Floor Sump.
2. Coated concrete.
3. No uranium bearing liquids present
4. Final inspection approved.

23. CELL REWORK SUMP (400 SP 0033)

1. Floor Sump.
2. Concrete construction
3. No uranium bearing liquids in area.
4. Sump inspection good, final inspection approved.

24. ABSORBER PAD FLOOR (600 FL 0120)

1. Floor under Absorber.
2. Welded stainless construction.
3. Steam condensate and recovered nitric acid solution possible.
4. Initial inspection showed welds needed repair prior to inspection. After repairs were complete, final inspection was approved.

25. ABSORBER PAD SUMP (600 SP 0036)

1. Floor Sump.
2. Welded stainless construction.
3. Steam condensate and recovered nitric acid solution possible.
4. Initial inspection showed no defects. Final inspection approved.

26. MAIN PROCESS FLOOR (201 FL 0121)

1. Main Building Floor (General)
2. Concrete/painted concrete construction.
3. Normally dry.
4. Initial inspection showed minor defects such as construction joint caulking needing repair, or minor stress cracks away from process area. Joints cleaned and caulked, crack repaired with Tufco material. Final inspection approved.

Final inspection reports are on file in the SFC Engineering office, and a procedure for inspecting all pits, sumps, and floors is being developed to ensure that the integrity of these areas is maintained during future operations.

Prepared By Richard A. Parker
Richard A. Parker

Reviewed BY Sam R. Fryer, Jr.
Sam R. Fryer, Jr.

Reviewed By James H Mestepey
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Ken Berlin/Winthrop, Stimson, Putnam and Roberts

APPENDIX C

SEQUOYAH FUELS CORPORATION, FINAL REPORT, INVESTIGATION OF PIPEWAYS AS POTENTIAL PATHWAYS FOR LICENSED MATERIAL MIGRATION FROM THE MAIN PROCESS BUILDING

SEQUOYAH FUELS CORPORATION

FINAL REPORT

INVESTIGATION OF PIPEWAYS AS POTENTIAL PATHWAYS FOR LICENSED MATERIAL MIGRATION FROM THE MAIN PROCESS BUILDING

CAROL L. COUCH,
MANAGER, ENVIRONMENTAL

October 16, 1990

INTRODUCTION

This report contains the analytical data, specific findings and observations related to the investigation of utility trenches as potential pathways of migration of license material away from the Main Process Building.

Sequoyah Fuels Corporation Engineering Department reviewed piping details of the Main Process Building and provided recommendations for excavation locations. Details are provided in this summary for each individual excavation.

TRENCH 16 - Northwest of Main Process Building (MPB) Restricted Area

This utility trench was identified as a potential pathway of migration because of the discovery of the sub-floor investigation pipe in the denitration area floor. It was reported that at one time electrical conduit ran from the motor control center (to the south of this area) under the boildown area and to the north toward the cooling towers. The utility lines (electrical conduit encased in concrete) was excavated and found to be approximately 3-feet deep, with only a shallow sand channel. In completing this trench excavation, it was discovered that a deeper, approximately 6-foot, sand channel was lensed into the electrical conduit sand channel. Further excavation of this line showed that it was the 8-inch laundry drain line leading to the Sanitary Lagoon.

The laundry drain line was clay tile construction with bell joint fittings. The caulking material was brittle and water was encountered in the bottom of the channel. The tile pipe had a leak that may have pre-existed or could have been a result of the excavation process. The line was repaired and the repair was encased in concrete as a part of the "cut-off" wall pour. A sump was installed with a monitoring pipe and a gravel pack to allow collection of any liquids moving along the channel. The top was completed with a clay cap.

Analysis of the sand channel showed that uranium was present in the channel below the laundry pipe where water was also encountered. The sand along the electrical conduit was dry and did not show elevated uranium levels. Possible explanations for materials in this channel could be from accumulation over the years when it was possible that laundry wash waters contained significant quantities of uranium material. Health physics and safety standards have improved significantly in recent years.

DATA SUMMARY FOR TRENCH 16

Summary of Water Analysis

Date	U g/1	Nitrate mg/1	pH	Cond.	F mg/1
09/28/90	0.03	15.0	6.2	686	104.0
09/29/90	<0.01	15.3	6.6	576	102.0
09/29/90	<0.01	13.4	6.6	524	19.6
09/29/90*	0.07	9.4	11.3	1350	18.5
09/29/90*	0.06	10.5	11.3	1350	17.2

*Note: Duplicate Sample

Summary of Soil Analysis

Date	Location	Uranium ug/g
09/28/90	16A (above electric lines)	<400.0
09/28/90	16B (below electric lines)	<400.0
09/29/90	16C (above laundry line)	<400.0
09/29/90	16D (below laundry line)	790.0

TRENCH 17 - Southwest of Main Process Building (MPB) Unrestricted Area

Trench 17 excavation centered around an 8-inch concrete drain line moving away from the MPB to the southwest. It was reported by long term employees that this line was put into place during the early operations of the facility when the areas to the west and southwest corner of the process building were not paved. This line provides drainage of the area during rainfall events.

The trench was excavated just to the south of the restricted area fence. The concrete pipe was ruptured so that a concrete plug could be placed both up and down gradient. A concrete cut-off wall was poured across this section. A collection sump and monitoring pipe was installed into the clay-shale layer on the up gradient side. The sump was completed with a gravel pack and sealed with a clay cap.

This trench was found to contain elevated uranium levels. The specific source of this uranium has not been identified. The sump is on a routine pumping and monitoring schedule. Monitor wells have also been installed near this trench with additional wells down-gradient to monitor any migration. The shallow monitor well near the trench indicates elevated uranium values. The deeper sandstone well does not. The down-gradient wells do not appear to indicate elevated levels. Futher monitoring of this area will be followed closely.

DATA SUMMARY FOR TRENCH 17

Summary of Water Analysis

Date	U ug/l	Nitrate mg/l	pH	F mg/l
09/26/90	2450.0	4.3	7.3	2.4
09/26/90	968.0	4.5	7.2	2.3
09/27/90	1143.0	6.0	7.1	2.5
10/04/90	289.0	--	---	1.1

Summary of Soil Analysis

Date	Depth (ft.)	U ug/g
09/25/90	0.0 - 1.0	93.3
	1.0 - 1.5	58.9
	1.5 - 2.0	45.7
	1.0 - 2.5	44.0
	2.5 - 3.0	87.1
	3.0 - 3.5	98.8
	3.5 - 4.0	65.2
	4.0 - 4.5	39.5
10/01/90	Sand above pipe	< 5.0

TRENCH 18 - South of Main Process Building (MPB) Unrestricted Area

This utility trench carried a 2-inch gas line that was installed a few years back. The trench was shallow, approximately 3-feet, with a very minimal sand channel above the pipe.

There was not any water in the sand channel. The soils around the excavation did not produce water either. Despite this fact, a monitoring system and cut-off wall was installed to provide for future monitoring. This pipeway was not found to contain licensed material.

DATA SUMMARY FOR TRENCH 18

Summary of Water Analysis

Trench was dry - no samples.

Summary of Soil Analysis

Date	Depth (ft.)	U ug/g
10/01/90	18A-Sand above pipe	< 5.0
10/01/90	18B-Sand below pipe	< 5.0

TRENCH 19 - South of Main Process Building (MPB) Unrestricted Area

This utility trench was identified as an abandoned drain line from the flower bed to the south of the front office area. Though this pipeway did not provide a direct line of communication for materials to move away from the building, it was excavated and sampled. Because it was not a potential pathway nor a candidate for any future migration, a collection sump was not installed. The line was recovered after obtaining samples.

DATA SUMMARY FOR TRENCH 19

Summary of Water Analysis

Trench was dry - no samples.

Summary of Soil Analysis

Date	Depth (ft.)	U ug/g
10/01/90	1.0 - 1.5	10.0
	2.0 - 2.5	6.5
	2.5 - 3.0	< 5.0

TRENCH 20 - South (Southeast) of Main Process Building (MPB) Unrestricted Area

Trench 20 contained a series of electrical lines in concrete as well as water lines in sand channels. This entire area to the southeast of the MPB had a saturated zone near the surface. The trench contained a substantial quantity of water which was magnified when an abandoned sprinkler line was ruptured during this excavation. This trench was found to contain levels of uranium below the environmental action level. A monitoring system and concrete cut-off wall was put into place to provide a method of future monitoring.

SUMMARY OF DATA FOR TRENCH 20

Summary of Water Analysis

Date	U ug/l	Nitrate mg/l	pH	Cond.	F mg/l
09/26/90	93.3	0.3	6.6	---	3.6
09/27/90	16.3	0.6	7.1	---	0.3
09/27/90	19.4	0.3	7.3	---	2.1
10/01/90	157.8	2.8	7.8	580	4.7

Summary of Soil Analysis

Date	Depth (ft.)	U ug/g
10/01/90	1.5 - 2.0	< 5.0
	2.5 - 3.0	< 5.0
	3.5 - 4.0	< 5.0
	4.0 - 4.5	< 5.0
	5.0 - 5.5	< 5.0

TRENCH 21 - South (Southeast) of Main Process Building (MPB) Unrestricted Area

Trench 21 was located a short distance to the east of Trench 20. The two pipes in this area were not in a sand channel and were embedded in the clay gravel backfill material typical for the entire facility. Water was encountered when excavating for the cut-off wall installation, and was sampled. Because of the lack of a sand channel, it was possible to excavate around the lines and utilize the clay banks as forms for the cut-off wall. Once the concrete had set, the pipes were excavated by hand and a collection sump built up gradient to provide for future monitoring. This excavation was dry. It is not believed that this pipeway is a migration pathway. The uranium found in this area may be either surface accumulation from past operations or from the 1986 accident.

SUMMARY OF DATA FOR TRENCH 21

Summary of Water Analysis

Date	U ug/1	Nitrate mg/1	pH	F mg/1
09/26/90	58.8	0.2	7.5	1.2
09/[illegible]/90	60.9	0.4	6.9	0.8

Summary of Soil Analysis

Date	Depth (ft.)	U ug/g
10/09/90	0.5 - 0.5	49.6
	0.5 - 1.0	< 5.0
	1.0 - 1.5	13.7
	1.5 - 2.0	< 5.0
	2.0 - 2.5	< 5.0
	2.5 - 3.0	< 5.0

TRENCH 22 - Northeast of Main Process Building (MPB) Unrestricted Area

Trench 22 was located to the northeast of the facility and was the excavation of the firewater line at the point where it turns from an easterly direction to the south. The excavation was to see if any licensed material had traveled away from the MPB to the east. It was surprising to find the sand channel relatively dry. It did not produce enough water for a sample at the time. Due to the physical limitations imposed by this area, a cut-off wall could not be established. A collection sump and monitoring pipe was located to the east of the line where it makes its turn to the south to provide future monitoring. Based upon analysis of the sand trench, this is not felt to be a migration pathway.

SUMMARY OF DATA FOR TRENCH 22

Summary of Water Analysis

Trench was dry - no samples.

Summary of Soil Analysis

Date	Depth (ft.)	Uranium ug/g
10/03/90	22A-Sand above pipe	< 5.0
	22B-Sand below pipe	< 5.0

TRENCH 23 - Southwest of Main Process Building (MPB) Restricted Area

Trench 23 involved a series of drain lines moving away from the MPB towards the northwest, and ending near the cooling tower. In addition to the drain lines, the trench also contained the firewater line and potable water line. The water in these trenches did contain uranium material. Origin of that material is not known. The lines were sealed with a concrete cut-off wall to prevent further migration and a collection sump was installed to recover seepage from the sandbed that contains all this piping.

This pipeway has been identified as a potential migration pathway moving away from the building. The pipeways end within the restricted area, so it is unlikely that they transport material to the unrestricted area. The installation of a sump system will provide for future monitoring of this location.

DATA SUMMARY FOR TRENCH 23

Summary of Water Analysis

Date	Location	Uranium g/l	Uranium ug/l
10/10/90	East Side	0.25	26,378.0
10/10/90	Firewater Line	0.03	4,233.0

Summary of Soil Analysis

Date	Location	Uranium ug/g
10/10/90	23A-Firewater line-Sand above pipe	59.3
10/10/90	23B-Firewater line-Sand below pipe	224.7
10/10/90	23A-Potable Water line-Sand above pipe	81.4
10/10/90	23B-Potable Water line-Sand below pipe	159.3
10/11/90	23A-Drain line-Sand above pipe	58.0
10/11/90	23B-Drain line-Sand below pipe	126.0

TRENCH 24 - North of Main Process Building (MPB) Restricted Area

Trench 24 contained a series of fourteen (14) different lines. All of these lines run in the north-south direction. The area was very difficult to excavate due to the OG&E substation to the east and the concrete storage pad to the west. Excavation was completed as best could be achieved to allow construction of a concrete cut-off wall to the north. A collection sump was established to the south of this wall to provide future monitoring of any migration in this direction. A good seal will be hard to achieve due to the sand bed underneath the storage pad area. The collection sump was located in the deepest part of the pipeway trench so movement should be inward to the sump, and not away from it. The area was discovered to contain uranium, and the source has not been defined yet. This area had the potential of contamination from the 1986 accident.

SUMMARY OF DATA FOR TRENCH 24

Summary of Water Analysis

Date	Location	Uranium ug/l
10/11/90	East Side	534.0
10/11/90	Center	1,412.0
10/11/90	West Side	12,074.0

Summary of Soil Analysis

Date	Location	Uranium ug/g
10/11/90	24A-West 14" water line-Sand above pipe	8.3
10/11/90	24B-West 14" water line-Sand below pipe	5.6
10/11/90	24A-East 14" water line-Sand above pipe	< 5.0
10/11/90	24B-East 14" water line-Sand above pipe	< 5.0

SPECIAL INVESTIGATION

An investigation of a drainline that is located south of the southeast corner of the MPB was also conducted. A few years back it was discovered that the roof drains from the cellroom dumped into a manway just off the southeast corner of the MPB. This came to light when elevated uranium and fluoride analysis were found in the stormwater runoff. Over periods of dry weather, uranium and fluoride material will accumulate on the roof area. During the first flush of rainfall events, elevated analyses were noted. Engineering modified the manway and installed a pump and routed this drain back to the main process drain system.

This utility trench is not felt to be a potential pathway of licensed material away from the Main Process Building.

SUMMARY OF DATA FOR SPECIAL INVESTIGATION

Summary of Water Analysis

Date	U ug/l	Nitrate mg/l	pH	Cond.	F mg/l
10/12/90	20.0	1.8	8.1	864	1.2

Summary of Soil Analysis

Date	Location	Depth (ft.)	Uranium ug/g
10/15/90	BH-35	0.0 - 3.0	< 5.0
		5.0 -11.0	< 5.0
10/11/90	BH-36	0.0 - 0.5	44.0
		0.5 - 1.0	< 5.0
		1.0 - 1.5	< 5.0
10/12/90	24" Drainline-Sand below pipe		< 5.0

CONCLUSIONS

The pipeways to the north and northwest have seen many years of uranium exposure. Where licensed materials have been found, it is not possible to determine if the material has migrated along the pipeways, or has seeped outward through joints in the pipes allowing communication to the sand channels. These pipeways terminate within the restricted area.

The pipeway to the southwest (Trench 17) indicates a pathway of migration away from the restricted area. Its levels are above the environmental action level for uranium in water. Installation of a collection sump and plugging of the pipe should aid in mitigating this problem. The installation of monitoring wells in this area will provide a method of tracking the potential problem and its migration. All other trenches to the south and east are not perceived to be migration pathways for licensed material moving away from underneath the Main Process Building. SFC will continue to monitor these areas.

APPENDIX D

BOREHOLE LOGS

BORING RECORD

GROUND SURFACE: 563.40

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	SANDY SILT: VFG, 20% SAND, 80% SILT, LOW PLAST., 10 YR 4/2, DARK GRAYISH BROWN, SLIGHTLY MOIST, GRASS ROOTS	SM
1.9' 1.3'	0.8	SILTY CLAY: 30% SILT, 70% CLAY, LOW PLAST., 2.5 Y 6/4, LT. YELLOWISH BROWN, VERY MOIST	CL
	1.4	SILTY SANDY CLAY: VF-VC SAND, MINOR ANG. SHALE GRAVEL TO 1", WET, MASSIVE DECREASING GRAVEL WITH DEPTH, 2.5 Y 5/4, ANG. SHALE FRAGS., TO 1/4", LIKELY WEATHERED SHALE FILL TO 7.6', SAT., 7.5 YR 4/4, GRAY TO DARK BROWN, 7.5-7.6'	CL
	7.6	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, SLIGHTLY MOIST, FISSILE, MOD. HARD, AFTER 10.0', 10 YR 5/4, YELLOWSH BROWN TO 10 YR 4/1, DARK GRAY, HIGHLY INDURATED. PARTIALLY WEATHERED TO SILTY CLAY, VERY MOIST, 2.5 Y 4/2, DARK GRAYISH BROWN AFTER 15.0'	SHALE
	18.0	AUGER REFUSAL 18.0', SANDSTONE	

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.1	2.6	2.0
2	0.0		2.6
NR			5.0
3	0.0	2.8	7.0
4	0.1		7.8
NR			10.0
5	0.0	4.1	12.0
6	0.0		14.1
NR			15.0
7	0.0	2.7	17.7
NR			18.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 10.0 PPM
AIR: 0.0 PPM

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
	WATER TABLE (24 HOURS)
	WATER TABLE (TIME OF BORING)
	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
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ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-1 (MW-1)*

DATE DRILLED 9/24/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

BORING RECORD

GROUND SURFACE: 565.03

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	ASPHALT DRIVE: WITH SILTY SANDY CLAY BASE, LIMESTONE GRAVEL TO 2"	A/C
	0.8	SILT: 100% SILT, NO PLAST., 2.5 Y 6/6, OLIVE YELLOW, DRY, SOFT, HOMOGENEOUS	ML
	5.2	SHALE: 10% SILT, 5 YR 4/6, YELLOWISH RED TO 5.3', 10 YR 6/6, BROWNISH YELLOW AFTER 5.3', SLIGHLTY MOIST, VERY STIFF, FISSILE, PARTIALLY WEATHERED TO SILTY CLAY FRACTURES AT 6.0' AND 7.9', IRON OXIDE STAINING TO 10 YR 4/6, DARK YELLOWISH BROWN IN FRACTURES, MOIST IN FRACTURES AFTER 10.0', 10 YR 4/1, DARK GRAY TO 10 YR 6/6, BROWNISH YELLOW, FRACTURE AT 12.7', INCREASING SILT WITH DEPTH TO 20% SILT AFTER 16.8-18.0', 2.5 Y 4/0, DARK GRAY VERY HARD AFTER 18.0', FISSILE WITH INTER-BEDDED SILTSTONE, 10 YR 7/4, VERY PALE BROWN, AND SHALE	SILTY SHALE
9/24/90 ▽15.5'	15		
	18.0	SANDSTONE: VERY FINE GRAINED SAND, 10 YR 5/3, BROWN, HARD, ANGULAR, 10 YR 7/4, VERY PALE BROWN CHERT	SANDSTONE
10/7/90 ▽20.3'	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 3/1, VERY DARK GRAY, HARD, FRACTURE ~21.0'	SANDY SHALE
	26.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, VERY HARD, STRONG SILICA CEMENT	SANDSTONE
	30	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY	SANDY SHALE
	32.0	T.D. 32.0' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	
	35		

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	0.6	0.6
NR			5.0
2	0.0	4.2	7.0
3	0.0		9.2
NR			10.0
4	0.0	3.3	12.0
5	0.0		13.3
NR			15.0
6	0.0	3.4	17.0
7	0.0		18.4
1	ND		20.0
2	ND		22.0
3	ND		24.0
4	ND		26.0
5	ND		28.0
6	ND		30.0
7	ND		32.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0-18.0', 9/24/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 18.0-32.0', 10/7/90

⊠	CME CONTINUOUS AUGER SAMPLER
⊠	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER SEQUOYAH\ 90067

BORING NUMBER BH-2 & BH-2A (MW8 & MW8A)

DATE DRILLED 9/24/90 & 10/7/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		GROUND SURFACE: 565.71	
	0	SILTY SANDY CLAY: BASE WITH ASPHALT PAVEMENT COVER	A/C
	0.9	SANDY SILTY CLAY: 10% SAND, 30% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM MINOR GRAVEL TO 1/2"	CL
9/25/90 ▽ 5.58'	5		
9/24/90 ▽ 8.1'	7.0	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1-8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE, SATURATED, 10 YR 4/3, DARK BROWN TO BROWN AFTER 8.9', MOIST 10 YR 4/1 10.0-10.8', ABUNDANT ANGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0' BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	CL
	10		
	15		
	16.4	SHALE: 20% SILT, 10 YR 5/2, GRAYISH BROWN TO 10 YR 2/1, BLACK, VERY MOIST, MOD. HARD, FISSILE, INTERBEDDED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SILTY SHALE
	20		
	21.0	SANDSTONE: VERY HARD, VERY FINE-GRAIN	SANDSTONE
	21.5	SHALE: DARK GRAY, 2.5 YR 4/0, SANDY, FINE GRAIN QUARTZ	SHALE
	25		
	30	SANDSTONE: DARK GRAY, 2.5 YR 4/0, VERY FINE GRAIN, VERY WELL CEMENTED	SANDSTONE
	35		

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.2	1.2
NR			5.0
2	0.0	5.0	7.0
3	1.0		9.0
4	0.0		10.0
5	0.0	1.4	11.4
NR			15.0
6	0.0	5.0	17.0
7	0.0		19.0
8	0.0		20.0
9	0.0		21.0
1	ND		22.0
2	ND		24.0
3	ND		26.0
4	ND		28.0
5	ND		30.0
6	ND		32.0
7	ND		34.0
8	ND		

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0-21.0', 9/24/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 21.0-40.0', 10/10/90

▱	CME CONTINUOUS AUGER SAMPLER
⊠	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-3 & BH-3A (MW-18 & MW-18A)*

DATE DRILLED 9/24/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY MJL
CHECKED BY BHS
DRAWN BY: SAR

PAGE 1 OF 2

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 565.71								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	35	SANDSTONE: DARK GRAY, 2.5 YR 4/0, VERY FINE GRAIN, VERY WELL CEMENTED	SANDSTONE			9	ND		36.0 38.0	35
	38.0	SHALE: VERY DARK GRAY, 2.5 YR 3/0, SANDY VERY FINE GRAIN QUARTZ SAND	SHALE			10	ND		40.0	
	40	BORING TERMINATED AT 40.0' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

└ LABORATORY TEST LOCATION

+ PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER SEQUOYAH\ 90067

BORING NUMBER BH-3 & BH-3A (MW-18 & MW-18A)

DATE DRILLED 9/24/90 & 10/10/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY MJL

CHECKED BY BHS

DRAWN BY: SAR

PAGE 2 OF 2

BORING RECORD

GROUND SURFACE: 565.40

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.8	SILTY SAND: VERY FINE-VERY COARSE GRAIN, SUBANG QRTZ, SAND BACKFILL, DRY, 10 YR 6/2, LIGHT BROWNISH GRAY	SM
	1.5	SILTY SANDY CLAY: VERY FINE-VERY COARSE GRAIN SAND, ABUNDANT ANGULAR GRAVEL, 10 YR 5/6, YELLOWISH BROWN TO 10 YR 7/2, LIGHT GRAY, VERY MOIST, SOFT	CL
	1.9	SILTY SHALE: WEATHERED TO A SILTY CLAY, 10% SILT, 90% CLAY, 7.5 YR 5/8, STRONG BROWN, LOW PLAST., SLIGHTLY MOIST, FISSILE, VERY STIFF, AFTER 1.9', 10 YR 6/6, BROWNISH YELLOW TO 2.5 Y 6/2, LIGHT BROWNISH GRAY 8.8--9.0', 2.5 Y 7/0, LIGHT GRAY, AFTER 9.0', LESS INDURATED 5 Y 6/3, PALE OLIVE TO 2.5 Y 5/0, GRAY, FISSILE, SM, HARD AFTER 10.0', HIGHLY FRACTURED, AFTER 16.4', PREDOMINATLY 5 Y 4/1, DARK GRAY	SHALE
	22.0	SANDSTONE: VERY FINE GRAIN, 7.5 YR 4/0, DARK GRAY, STRONG SILICA CEMENT, VERY HARD	SANDSTONE
	25	SHALE: 7.5 YR 2/0, BLACK, FISSILE, HARD FRACTURES ~ 28.0-30.0'	SHALE
10/9/90 ▽ 32.25'	30	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT	SANDSTONE
	35		

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READINGS	RECOVERY	DEPTH
1	0.0	1.8	1.8
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	3.2	12.0
6	0.0		13.2
NR			15.0
7	0.0	1.5	16.5
NR			20.0
8	0.0	2.0	22.0
1	ND		24.0
2	ND		26.0
3	ND		28.0
4	ND		30.0
5	ND		32.0
6	ND		34.0
7	ND		

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0-22.0' 9/25/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 22.0-39.0' 10/9/90

▱	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-4 & BH-4A (MW-12 & MW-12A)*

DATE DRILLED 9/24/90 & 10/9/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 2

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 565.40								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	35	SANDSTONE: AS PREVIOUS							36.0	35
	36.0	SANDY SHALE: 10 YR 3/1, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE			8	ND		38.0	
						NS	ND		39.0	
	39.0	T.D. 39.0'								
	40	NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

CME CONTINUOUS AUGER SAMPLER

STANDARD PENETRATION TEST

UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER SEQUOYAH\ 90067

BORING NUMBER BH-4 & BH-4A (MW-12 & MW-12A)

DATE DRILLED 9/24/90 & 10/9/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR

PAGE 2 OF 2

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BORING RECORD

OVM SOIL GAS SURVEY PPM x 1.0

2 4 6 8 10 12 14 16 18

REMARKS: BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM

GROUND SURFACE: 560.30

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0 – 0.6	SILTY LOAM: 10 YR 4/3, BROWN–DARK BROWN, DRY, GRASS ROOTS, MINOR ANGULAR GRAVEL TO 1/4"	OL
	0.7	SAND: VF–F GRAIN, OCCASIONALY VERY COARSE SUBANG QUARTZ, WELL GRADED, 7.5 YR 7/4, PINK, DRY	SW
9/26/90 ▽ 4.46' 9/25/90 ▽ 5.0'		CLAYEY SILT: 40% CLAY, 60% SILT, NO PLAST., 7.0 YR 4/2, BROWN–DARK BROWN, SLIGHLTY MOIST, HOMOGENEOUS	ML
	5	SILTY CLAY: 10% SILT, 90% CLAY, ABUNDANT ANGULAR CHERT GRAVEL TO 1 1/4", LOW PLAST., 7.5 YR 5/4, BROWN, SATURATED, SOFT	CL
	5.8	SILTY SHALE: WEATHERED TO SILTY CLAY, 10% SILT, 90% CLAY. LOW PLAST., 2.5 Y 6/4, LT. YELLOWISH BROWN, SLIGHLTY MOIST, VERY STIFF, HARD AFTER 9.0' AFTER 10.0', 5 Y 7/1, LT. GRAY WITH 10 YR 6/6, BROWNISH YELLOW MOTTLING TO 2.5 Y 4/0 DARK GRAY	SILTY SHALE
10/5/90 ▽ 16.5	14.0	SILTY SANDSTONE: 10 YR 4/1, DARK GRAY, VERY FINE GRAIN SAND, SILICA CEMENT, SLIGHLTY MOIST, VERY HARD	SILTY SANDSTONE
	18.0	SANDY SHALE: 20% SAND, VERY FINE GRAIN, 2.5 Y 4/2, DARK GRAYISH BROWN, HARD	SANDY SHALE
	20	SHALE: 2.5 Y 3/0, VERY DARK GRAY, HARD	SHALE
	22.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK, MOIST, VERY HARD, SILICA CEMENT, INTERBEDDED WITH CHERT, 10 YR 6/2, LIGHT BROWNISH GRAY, CONCHOIDAL FRACTURE, VERY HARD 7.5 YR 4/0, DARK GRAY AFTER 24.0'	SANDSTONE
	30	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSLE, HARD, 20% SAND, VERY FINE GRAIN,	SANDY SHALE
	35		

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	2.4	2.4
NR			5.0
2	0.0	3.0	7.0
3	0.0		8.0
NR			10.0
4	0.0	2.0	12.0
NR			14.0
1	ND		18.0
2	ND		20.0
3	ND		22.0
4	ND		24.0
5	ND		26.0
6	ND		28.0
7	ND		30.0
8	ND		32.0
9	ND		34.0
10			

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0–14.0', 9/25/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 14.0–37.0', 10/5/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *BH-5 & BH-5A (MW-4 & MW-4A)*

DATE DRILLED 9/25/90 & 10/5/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR

PAGE 1 OF 2

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 560.30								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	35	SANDY SHALE: AS PREVIOUS 10% SAND AFTER ~35.0'	SANDY SHALE				ND		37.0	35
	37.0	T.D. 37.0'								
	40	NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER SEQUOYAH\90067
BORING NUMBER BH-5 & BH-5A (MW-4 & MW-4A)
DATE DRILLED 9/25/90 & 10/5/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 2 OF 2

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BORING RECORD

GROUND SURFACE: 562.10

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	SILT: NO PLAST., 10 YR 4/3, BROWN-DARK BROWN, SLIGHTLY MOIST, SOFT, HOMOGENEOUS, GRASS ROOTS, COBBLES	OL
	1.5	SILTY CLAY: 2.5 YR 4/8, MOTTLED 2.5YR 5/0, RED AND GRAY, HIGH PLAST., SLIGHLY MOIST, SOFT TO FIRM, GRAVEL FROM 6.4-7.5', ABRUPT LOWER BOUNDARY, 70% CLAY, 30% SILT	CH
9/26/90 ▽ 7.6'	6.8	GRAVELLY SANDY SILT: 5 YR 5/5, YELLLOWISH RED, LOW PLAST., GRAVEL, 50% SILT, 20% CLAY, 20% SAND, 10% GRAVEL	ML
	7.6	SHALE: 10 YR 5/6, YELLOWISH BROWN, HIGHLY WEATHERED AND FRACTURED, CLAY LAYERS AT 8.5-10.5', CLAY IS 10 YR 6/8, BROWNISH YELLOW MOTTLED 2.5 Y 7/0, LIGHT GRAY OXIDATION ON BEDDING PLANES 2.5 Y 4/2, DARK GRAYISH BROWN	SHALE
	12.0	SHALE: 2.5 Y 4/4, OLIVE BROWN AND 2.5 Y 3/0, VERY DARK GRAY, OXIDATION ALONG BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FRACTURED, VERY THIN CLAY LENSE, GRAY AND BROWNISH YELLOW	SHALE
	16.0	SANDSTONE: 2.5 Y 3/0, VERY DARK GRAY, HIGHLY CEMENTED, VERY FINE GRAINED, VERY THINLY BEDDED TO MASSIVE	SANDSTONE
	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 5/3, BROWN, SLIGHLTY MOIST, 40% SAND, 60% SHALE DECREASING SAND WITH DEPTH, 10% SAND, 90% SHALE, 10 YR 3/1, VERY DARK GRAY	SANDY SHALE
	24.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD SILICA CEMENT, 10 YR 3/1 AFTER 27.0', VERY DARK GRAY, MINOR ANG. 10 YR 6/3, PALE BROWN CHERT	SANDSTONE
	27.5	SANDY SHALE: VERY FINE GRAIN SAND, 30% SAND, 10 YR 3/1, VERY DARK GRAY FRACTURE AT 29.0-30.0'	SANDY SHALE
10/6/90 ▽ 30.9'	31.0	SANDSTONE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY, SILICA CEMENT, VERY HARD	SANDSTONE
	33.5	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND, 7.5 YR 3/0, VERY DARK GRAY	SANDY SHALE
	34.0	T.D. 34.0'	

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE			
NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	0.8	0.8
NR			5.0
2	0.0	3.5	7.0
3	0.0		8.5
NR			10.0
4	0.0	4.0	12.0
5	0.0		14.0
NR			15.0
6	0.0	0.8	15.8
NR			20.0
1	ND		24.0
2	ND		27.0
3	ND		28.0
4	ND		29.0
5	ND		30.0
6	ND		32.0
7	ND		33.0
8	ND		34.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0-20.0', 9/26/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 20.0-34.0', 10/6/90

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
└ LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*
BORING NUMBER *BH-6 & BH-6A (MW-2 & MW-2A)*

DATE DRILLED 9/26/90 & 10/6/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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NORMAN, OKLAHOMA 73072
(405) 321-3895

BORING RECORD

GROUND SURFACE: 561.90

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG
	0	SILT: 5 YR 4/3, REDDISH BROWN	OL	
9/26/90 ▽ 5.0'	1.5	SHALE: 10 YR 5/6, YELLOWISH BROWN, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY LENSES, OXIDATION ZONES ALONG BEDDING PLANES, COLORED 10 YR 3/1, VERY DARK GRAY	SHALE	
10/11/90 ▽ 12.5'	9.4	SHALE: 10 YR 3/1, VERY DARK GRAY AND 10 YR 5/6, YELLOWISH BROWN, INTERBEDDED, FRACTURED, TRACE SAND	SHALE	
	12.5	SANDSTONE: 10 YR 6/3, PALE BROWN, HARD TO SOFT ZONES, FINE TO MED.-FINE GRAIN, RNDED QUARTZ SAND, SATURATED, MINOR IRON OXIDE CONCRETIONS	SANDSTONE	
	25	SHALE: 10 YR 3/1, VERY DARK GRAY, VERY SANDY, HARD TO VERY HARD, SOFT AT BOTTOM, SATURATED, LIMONITE STAING AND Fe_2O_3 NODULES LOCALLY	SHALE	
	29.0	SANDSTONE: 2.5 YR 4/0, VERY DARK GRAY, SOFT, VERY FINE GRAIN QUARTZ SAND, SATURATED	SANDSTONE	
	32.0	SHALE: 7.5 YR 2/0, BLACK, SOFT, FISSILE, THIN BEDDED. PETROLIFEROUS, DRY TO SLIGHTLY MOIST	SHALE	
	34.0	T.D. 34.0'		

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.1	1.1
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	2.5	12.5
NS	ND		15.0
1	ND		17.0
2	ND		19.0
3	ND		20.0
4	ND		22.0
5	ND		24.0
6	ND		26.0
7	ND		28.0
8	ND		30.0
9	ND		32.0
NS	ND		34.0

REMARKS

BACKGROUND OVM READING:

SOIL: 0.0 PPM

AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0–14.6', 9/26/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 14.6–34.0', 10/11/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
L	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
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ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***BH-7 & BH-7A (MW-3 & MW-3A)***

DATE DRILLED 9/26/90 & 10/11/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY MT

CHECKED BY BJS

DRAWN BY: SAR

PAGE 1 OF 1

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		GROUND SURFACE: 561.70	
	0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, GRAVEL AT 0.5-5.0', 65% SILT, 20% SAND, 15% CLAY	OL
9/28/90 7.0'	1.0	GRAVELLY SILTY CLAY: SOFT, MOIST, WET AT 7.0', 10 YR 5/4, YELLOWISH BROWN (5.0-5.8'), 5 YR 5/8, YELLOWISH RED (5.8-6.3'), 5 YR 5/6, YELLOWISH RED (6.3-7.7'), 10 YR 3/2, VERY DARK GRAYISH BROWN (7.7-8.5'), 5 YR 6/8, REDDISH YELLOW (10.0-10.8), GRADATIONAL LOWER BOUNDARY (1.5' BOUNDARY) 50% CLAY, 30% GRAVEL, 20% SILT	CL
	10.5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE
	17.0	SANDSTONE: VERY HARD, VERY FINE-GRAIN	SANDSTONE
10/5/90 22.1'	18.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 5/4, 30% SANDSTONE, HARD	SANDY SHALE
	22.0	SHALE: 10 YR 4/1, DARK GRAY, HARD, FISSILE	SHALE
	25.5	SANDSTONE: VERY FINE GRAIN, 10 YR 3/1, VERY DARK GRAY, VERY HARD, SILICA CEMENT, MINOR ANGULAR CHERT, 7.5 YR 6/4	SANDSTONE
	29.5	SANDY SHALE: 7.5 YR 3/0, VERY DARK GRAY, VERY FINE GRAIN SAND, HARD	SANDY SHALE
	34.0	T.D. 34.0'	

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	0.5	0.5
NR			5.0
2	0.0	4.0	7.0
3	0.0		9.0
NR			10.0
4	0.0	5.0	12.0
5	0.0		14.0
6	0.0		15.0
7	0.0	2.0	17.0
NR			18.0
1	ND		20.0
2	ND		22.0
3	ND		24.0
4	ND		26.0
5	ND		28.0
6	ND		30.0
7	ND		32.0
NS			34.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-17.0', 9/28/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 17.0-34.0', 10/5/90

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *BH-8 & BH-8A (MW-9 & MW-9A)*

DATE DRILLED 9/28/90 & 10/5/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

GROUND SURFACE: 562.30

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0–0.5	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, ROOTLETS, MOIST, 55% SILT, 30% CLAY, 15% SAND	OL
9/28/90 ▽ 9.0'	0.5–15.5	GRAVELLY SILTY CLAY: SOFT, MOIST, HIGH PLAST., 10 YR 3/3, DARK BROWN (5.0–5.6'), YELLOWISH RED (5.6–6.6'), AND 10 YR 3/3 (6.6–7.5'), 5 YR 5/6 (7.5–15.0') GRAVEL LENSE AT 15.0–15.5'	CH
	15.5–19.5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTEREBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE
	19.5–22.0	SANDSTONE: VERY FINE GRAIN SAND, 2.5 Y 4/2, DARK GRAYISH BROWN, HARD, SILICA CEMENT, CHERT INTERBEDDED 10 YR 5/6	SANDSTONE
	22.0–26.0	SHALE: 10 YR 4/1, DARK GRAY, FISSILE, HARD	SHALE
	26.0–29.0	SANDY SHALE: VERY FINE GRAIN SAND, 20% SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD	SANDY SHALE
	29.0–33.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 4/2, DARK GRAYISH BROWN, SILICA CEMENT, VERY HARD, MINOR 10 YR 7/3, VERY PALE BROWN, ANGULAR CHERT	SANDSTONE
	33.0–35	SANDY SHALE: VERY FINE GRAIN SAND, 20% SAND, 7.5 YR 3/0, VERY DARK GRAY, HARD	SANDY SHALE

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	0.5	1.5
NR			2.5
1			5.0
2	0.0	3.4	7.0
3	0.0		8.4
NR			10.0
4	0.0	2.5	12.0
5	0.0		12.5
NR			15.0
6	0.0	3.2	17.0
7	0.0		18.2
NR	ND		19.5
NS	ND		22.0
2	ND		24.0
3	ND		26.0
4	ND		28.0
5	ND		30.0
6	ND		32.0
7	ND		33.0
8	ND		35.0

REMARKS

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'–19.5', 9/28/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 19.5'–36.0', 10/6/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-9 & BH-9A (MW-10 & MW-10A)*

DATE DRILLED 9/28/90 & 10/6/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR

PAGE 1 OF 2

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 562.30								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	35	SANDY SHALE: AS PREVIOUS	SANDY SHALE			9	ND		36.0	35
	36.0	T.D. 36.0'								
		NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								
	40									40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-9 & BH-9A (MW-10 & MW-10A)**

DATE DRILLED 9/28/90 & 10/8/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 2 OF 2

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BORING RECORD

GROUND SURFACE: 560.50

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS TO 2.0', TRACE OF GRAVEL, CLAYEY LENSE AT 0.9-1.0', GRADATIONAL LOWER BOUNDARY (0.6'), 60% SILT, 20% CLAY, 20% SAND	OL
	2.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, MOTTLED 2.5 YR 4/8, RED, LOW PLAST., FIRM, SLIGHTLY MOIST, 65% CLAY, 35% SILT, GRAVEL LENSE AT 5.0-6.0'	CL
9/27/90 ▽ 9.0'	6.0	SHALE: 10 YR 5/8, YELLOWISH BROWN AND 10 YR 3/1, VERY DARK GRAY, FRACTURED AND HIGHLY WEATHERED, CLAY LENSE 2.5 Y 5/6, LIGHT OLIVE BROWN WITH 2.5 Y 7/0, LIGHT GRAY ELIPTICAL LENSES , THICK CLAY SHOWS AT 12.0-12.5'	SHALE
	12.5	SANDSTONE: VERY FINE GRAIN SAND, 10 YR 5/3, BROWN, HARD	SANDSTONE
10/5/90 ▽ 17.4	17.0	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND 10 YR 4/1, DARK GRAY, SLIGHTLY MOIST, HARD	SANDY SHALE
	18.5	SHALE: 7.5 YR 2/0 BLACK, SLIGHTLY MOIST, HARD	SHALE
	21.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 4/0, VERY HARD	SANDSTONE
	26.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD, VERY MOIST	SANDY SHALE
	28.0	SILTY SAND: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD	SILTY SAND
	30	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD, SATURATED	SANDY SHALE
	32.4	T.D. 32.4' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	4.5	2.0
2	0.0		4.5
NR			5.0
3	0.0	4.0	7.0
4	0.0		9.0
NR			10.0
			12.5
NS			14.6
NS			15.0
1	ND		17.0
2	ND		19.0
3	ND		20.0
NS			22.0
4	ND		24.0
5	ND		26.0
6	ND		28.0
7	ND		30.0
8	ND		31.0
9	ND		32.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-12.5', 9/27/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 12.5'-32.4', 10/5/90

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*
BORING NUMBER *BH-10 & BH-10A (MW-5 & MW-5A)*
DATE DRILLED 9/27/90 & 10/5/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

GROUND SURFACE: 565.80

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS, TRACE GRAVEL, 60% SILT, 20% CLAY, 20% SAND	OL
	2.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, LOW PLAST., GRAVEL LENSE AT 5.0-6.0', SLIGHTLY MOIST	CL
9/27/90 ▽ 9.0'	7.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDIZED ZONE WITH GROUNDWATER AT 15.2-15.4', OXIDATION ALONG BEDDING PLANES AT 9.0 TO 7.0.	SHALE
	15.8	SANDSTONE: VERY FINE GRAIN SAND, POORLY GRADED, 5 Y 3/1, VERY DARK GRAY, MINOR 2.5 YR 2.5/4, DARK REDDISH BROWN IRON OXIDE STAINING, SLIGHTLY MOIST, VERY HARD, STRONG POSSIBLE SILICA CEMENT	SANDSTONE
	20.4	SHALE: 2.5 Y 4/0, DARK GRAY, SLIGHTLY MOIST, VERY, HARD, FISSILE, 2.5 Y 6/2, LIGHT BROWNISH GRAY ALONG PARTINGS	SHALE
	21.5	SILTY SANDSTONE: VERY FINE GRAIN SAND, 20% SILT, 80% SAND, 10 YR 5/3, BROWN, INTERBEDDED SHALE, VERY HARD, SILICA CEMENT	SILTY SS
	21.9	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, SLIGHTLY MOIST, VERY HARD	SHALE
	24.9	SANDSTONE: VERY FINE GRAIN QUARTZ, 2.5 Y 6/0, LIGHT GRAY-GRAY, WITH 2.5 Y 4/0, DARK GRAY CHERTY LAYERS, STRONG SILICA CEMENT, H2S ODOR IN PRODUCED WATER, HYDRO SHEEN, FRACTURE 31.5-32.8'	SANDSTONE
	31.5	SANDY SHALE: VERY FINE GRAIN SAND, POORLY GRADED, 40% SAND, 60% SHALE, 7.5 YR 2/0, BLACK, HIGHLY FRACTURED, SATURATED	SANDY SHALE
	33.7	SANDSTONE: VERY FINE GRAIN, 7.5 YR 4/0, DARK GRAY, VERY HARD, SLIGHTLY MOIST, FRACTURE 34.2-34.3	SANDSTONE
	35		

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.0	1.0
NR			5.0
2	0.0	3.0	7.0
3	0.0		8.0
NR			10.0
4	0.0	2.3	12.3
NR			15.0
5	0.0	0.8	15.8
1	0.0	5.2	22.0
2	0.0		24.0
3	0.0		25.2
NR			26.0
NS			30.0
4	0.0	5.0	32.0
5	0.0		34.0
6	0.0		35.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-15.8', 9/27/90

NOTE: DRILLING METHOD AIR ROTARY/CORE (POOL) 15.8'-40.5', 10/4/90

▭	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-11 & BH-11A (MW-6 & MW-6A)*

DATE DRILLED 9/27/90 & 10/4/90
DRILLING METHOD HSA & AIR ROTARY-CHRIST CORE BARREL
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAH PAGE 1 OF 2

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 565.80								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	35 35.2	SANDY SHALE: 40% SAND, VERY FINE GRAIN SAND, 2.5 YR 4/0, DARK GRAY, VERY MOIST TO SANTURATED IN FRACTURES. FRACTURES AT 35.2', 35.5',35.9',36.1',36.3', HIGHLY FRACTURED AFTER 36.8', DECREASING SAND WITH DEPTH, 10% SAND, AFTER 36.8'	SANDY SHALE			7	0.4	5.5	37.0	35
						8	0.0		39.0	
	40 40.5					9	0.0		40.5	40
		T.D. 40.5' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

⧄	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
┄	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-11 & BH-11A (MW-6 & MW-6A)**

DATE DRILLED 9/27/90 & 10/4/90
DRILLING METHOD HSA & AIR ROTARY-CHRIST CORE BARREL
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 2 OF 2

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start: 4:45 Stop: 5:00 GROUND SURFACE: 565.53								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	0	CONCRETE				NR		0.5	1.0	0
	1.0	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN, SLIGHTLY MOIST, VERY HIGHLY WEATHERED, SILTY	SHALE			1	0.0		1.5	
						NR			5.0	
	5					2	0.0	5.0	7.0	5
						3	0.0		9.0	
	8.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, 2.5 Y 3/2, VERY DARK GRAYISH BROWN, FRACTURED, WEATHERED, CLAY LENSES 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 8/1, WHITE	SHALE			4	0.0		10.0	
∇ 10.0'	10					5	0.0	2.0	12.0	10
	12.0	T.D. 12.0' NOTE: SANDSTONE AT 12.0'								
	15									15
	20									20
	25									25
	30									30
	35									35

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
∇	WATER TABLE (24 HOURS)
∇	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-12 (MW-23)*

DATE DRILLED 9/30/90

DRILLING METHOD HSA

DRILLED BY PSI/SE

LOGGED BY JMB

CHECKED BY BJS

DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

GROUND SURFACE: 563.85

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	ASPHALT	
		GRAVELLY SILTY CLAY: LOW TO MED. PLAST., SOFT TO FIRM, SILTY FROM 0.3–0.8' 7.5 YR 3/0, VERY DARK GRAY 0.3–0.8', 7.5 YR 5/6, STRONG BROWN, 0.8', 55% CLAY, 25% SILT, 20% GRAVEL	CL
10/2/90 ▽ 8.0'	6.5	SILTY CLAY: 10 YR 6/8, BROWNISH YELLOW AND 7.5 YR 7/0, LIGHT GRAY, HIGH PLAST., SLIGHTLY MOIST, FIRM TO HARD, FRACTURE, PEBBLES IN GRAY ZONES, 70% CLAY, 30% SILT	CH
	8.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY	SHALE
	13.5	SANDSTONE: 10 YR 5/3, BROWN, VERY FINE GRAIN, MINOR ANG. QRTZ.	SANDSTONE
	20	SANDY SHALE: VERY FINE GRAIN SAND, 30% SAND, 2.5 Y 4/0, DARK GRAY	SANDY SHALE
	23.0	SHALE: 2.5 Y 3/0, VERY DARK GRAY, HARD	SHALE
	25	SANDSTONE: VERY FINE GRAIN, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD, SILICA CEMENT	SANDSTONE
	29.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 4/0, DARK GRAY, HARD	SANDY SHALE
	30	SANDSTONE: VERY FINE GRAIN SAND, 2.5 Y 4/0 DARK GRAY , VERY HARD	SANDSTONE
	31.5	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, HARD, FRACTURE AT ~ 31.5'	SHALE
	34.0	T.D. 34.0'	

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM x 1.0

2 4 6 8 10 12 14 16 18

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
			0.3
NR 1	0.0	1.5	
			1.8
NR			
			5.0
2	0.0	4.0	
			7.0
3	0.0		
			9.0
NR			
			11.0
4	0.0	3.5	
			12.0
5	0.0		
			13.5
			18.0
1	ND		
			20.0
2	ND		
			22.0
3	ND		
			24.0
4	ND		
			26.0
5	ND		
			27.0
6	ND		
			29.0
7	ND		
			31.0
8	ND		
			33.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'–13.5', 10/2/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 13.5'–34.0', 10–6–90

⧄	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***BH-13 & BH-13A (MW-20 & MW-20A)***

DATE DRILLED 10/2/90 & 10/6/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0
2 4 6 8 10 12 14 16 18

REMARKS
BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

GROUND SURFACE: 570.20

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS, GRAVEL, 65% SILT, 20% CLAY, 15% SAND	OL
	1.5	CLAYEY SILTY GRAVEL: 5 YR 5/8, YELLOWISH RED, SLIGHTLY MOIST, 50% GRAVEL, 30% CLAY, 20% SILT	GC
	3.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, LOW PLAST., GRAVEL LENSE AT 5.0-6.0', SLIGHTLY MOIST	CL
	8.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED 2.5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDIZED ZONES, GROUNDWATER AT 15.2-15.4', OXIDATION ALONG BEDDING PLANES AT 9.0 TO T.D.	SHALE
9/27/90 15.2'	15		
	20	SANDSTONE: VERY HARD, VERY FINE GRAINED	SANDSTONE
	20.6	SHALE: 7.5 YR 4/0, DARK GRAY, VERY HARD, SLIGHTLY MOIST, MINOR VERY FINE GRAIN SAND, INCREASES WITH DEPTH	SHALE
	24.0	SILTY SANDSTONE: VERY FINE GRAIN SAND, 40% SILT, 7.5 YR 4/0, DARK GRAY, SLIGHTLY MOIST, HARD	SILTY-SANDSTONE
	29.0	SANDSTONE: VERY FINE GRAIN, 7.5 YR 3/0, VERY DARK GRAY, VERY HARD, SLIGHTLY MOIST	SANDSTONE
	32.0	SANDY SHALE: 20% VERY FINE GRAIN SAND, 7.5 YR 4/0, DARK GRAY, SLIGHTLY MOIST, HARD	SANDY SHALE
	35		

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	3.0	2.0
2	0.0		3.0
NR			5.0
3	0.0	0.8	5.8
NR			10.0
4	0.0	0.5	10.5
NR			15.0
5 NR	0.0	0.5	15.1
			20.0
NS	ND		21.6
1	ND		25.0
2	ND		27.0
NS	ND		30.0
3	ND		32.0
NS	ND		35.0

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0'-20.0', 9/27/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 20.0'-40.0', 10/5/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
∇	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-14 & BH-14A (MW-7 & MW-7A)**

DATE DRILLED 9/27/90 & 10/5/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 570.20								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: ______ PPM
	35	SANDY SHALE: AS PREVIOUS	SANDY SHALE			4	ND		37.0	
						5	ND		40.0	
	40	T.D. 40.0' WATER LEVEL 33.7' AFTER DRILLING NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								
	45									
	50									
	55									
	60									
	65									
	70									

▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

∟ LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-14 & BH-14A (MW-7 & MW-7A)*

DATE DRILLED 9/27/90 & 10/5/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY PSI & POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR

PAGE 2 OF 2

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(405) 321-3895

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

GROUND SURFACE: 564.93

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	ASPHALT	
	0.5	GRAVELLY SANDY CLAY: SLIGHTLY MOIST, FIRM, MED. PLAST., COLOR BLACK BY ASPHALT 0.5-0.7' 10 YR 5/6, YELLOWISH BROWN, 0.7-1.2', 7.5 YR 5/8, STRONG BROWN, 1.2-5.0', GRADATIONAL BOUNDARY	CL
	5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, CLAY LENSES 2.5 Y 7/0, LIGHT GRAY AT 5.0-7.0', VERY HIGHLY WEATHERED TO 7.0', FRACTURED, SILTY, OXIDIZED ZONES DARK GRAYISH BROWN BECOMES THE DOMINANT COLOR FROM 10.0-12.0'	SHALE
	12.0	SANDSTONE: VERY FINE GRAIN, 10 YR 3/4, YELLOWISH BROWN, HARD	SANDSTONE
10/7/90 ▽15.7	15		
	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 3/1, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE
	23.5	SHALE: 10 YR 7/1, DARK GRAY, FISSILE, HARD	SHALE
	25	SANDSTONE: VERY FINE GRAIN, 7.5 YR 3/0, VERY DARK GRAY, VERY HARD, SILICA CEMENT	SANDSTONE
	31.0	SANDY SHALE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY	SANDY SHALE
	33.3	T.D. 33.3' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	
	35		

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		2.0	0.5
1	0.0		2.5
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	2.0	12.0
NR			18.1
1	ND		20.0
2	ND		22.0
3	ND		24.0
4	ND		25.0
5	ND		27.0
6	ND		29.0
7	ND		30.0
NR			31.0
8	ND		33.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0'-12.0', 10/2/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 12.0'-33.3', 10/7/90

0 5 10 15 20 25 30 35

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEUOYAH\ 90067**

BORING NUMBER **BH-15 & BH-15A (MW-21 & MW-21A)**

DATE DRILLED 10/2/90 & 10/7/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

REMARKS: BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 565.11						
	0	CONCRETE		NR		0.3	0.9	DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-22.8', 9/29/90
	0.9	GRAVELLY SILTY CLAY: 10 YR 3/3, DARK BROWN, MED. PLAST., SOFT TO FIRM, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL	CL	1	0.0		1.2	
				NR			5.0	
	5.5	GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, LOW PLAST., SOFT, SLIGHTLY MOIST, 40% CLAY, 30% SILT, 30% GRAVEL	CL	2	0.0	2.0	7.0	
				NR			10.0	
9/29/90 ∇ 10'	9.5	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 6/_, OLIVE YELLOW, MOIST, WEATHERED, FRACTURED, SOFT, SILTY	SHALE	3	0.0	2.0	12.0	
				NR			15.0	
	14.5	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, WET, FRACTURED, OXIDATION ALONG BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, THINNLY BEDDED WITH 2.5 6/6, OLIVE BROWN, MODERATLY HARD, SILTY	SHALE	4	0.0	3.0	17.0	
				5	0.0		18.0	
				NR			20.0	
				6	0.0	2.0	22.0	
				NR			22.5	
				NR			23.0	
	22.8	SHALE: 2.5 Y 6/4, LIGHT OLIVE BROWN, WET, SILTY, SOME GRAVEL, THINNLY LAMINATED, OXIDIZED ZONES	SHALE	1	ND		25.0	NOTE: DRILLING METHOD AIR ROTARY (POOL) 22.8'-33.0', 10/10/90
	24.0	SANDSTONE: 2.5 Y 4/6, DARK GRAY, DRY TO MOIST, FINE TO MED. GRAIN	SANDSTONE	2	ND		26.0	
				3	ND		28.0	
	27.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, SILTY, WET, VERY HIGHLY ORGANIC	SANDY SHALE	4	ND		30.0	
				NS	ND		33.0	
	33.0	T.D. 33.0' NOTE: ND. NO SAMPLE COLLECTED FOR OVM ANALYSIS						

CME CONTINUOUS AUGER SAMPLER

STANDARD PENETRATION TEST

UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90087**

BORING NUMBER **BH-16 & BH-16A (MW-13 & MW-13A)**

DATE DRILLED 9/29/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

GROUND SURFACE: 563.37

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.6	GRAVELLY SANDY CLAY: 10 YR 5/6, YELLOWISH BROWN, LOW PLAST., FIRM, SLIGHTLY MOIST, 40% CLAY, 29% SAND, 30% GRAVEL	CL
9/29/90 ▽ 6.0'	5.6	SILTY CLAY: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 35% SILT, 5% GRAVEL	CL
		GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, WET, MED. PLAST., FIRM, 40% CLAY, 30% GRAVEL, 30% SILT	CL
	9.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, AND 2.5 Y 6/6, OLIVE BROWN, WEATHERED, FRACTURED	SHALE
	14.7	SANDSTONE: VERY HARD, VERY FINE GRAIN	SANDSTONE
	15.2	SHALE: DARK GRAY, 2.5 YR 3/0, SANDY, VERY FINE GRAIN QUARTZ SAND	SHALE
	25	SANDSTONE: DARK GRAY 2.5 YR 3/0, QUARTZ, VERY FINE GRAIN	SANDSTONE
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY, VERY FINE GRAIN QUARTZ SAND	SHALE
	33.0	T.D. 33.0' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		2.5	0.6
1	0.0		2.0
NR			5.0
2	0.0	3.5	7.0
3	0.0		8.5
NR			10.0
4	0.0	2.0	12.0
NR			14.7
KS	ND		20.0
1	ND		22.0
2	ND		24.0
3	ND		26.0
4	ND		28.0
5	ND		30.0
6	ND		32.0
7	ND		33.0

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-14.7', 9/29/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 14.7'-33.0', 10/10/90

CME CONTINUOUS AUGER SAMPLER

STANDARD PENETRATION TEST

UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH/90067**

BORING NUMBER **BH-17 & BH-17A (MW-14 & MW-14A)**

DATE DRILLED 9/29/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY M.L.
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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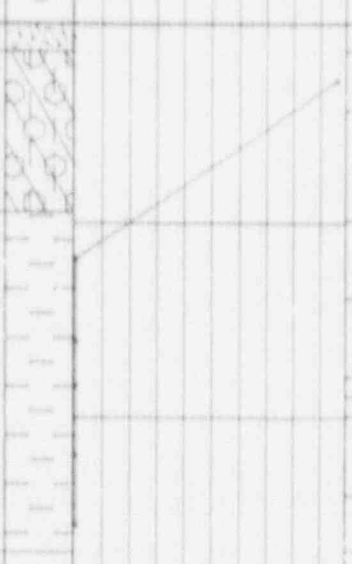
BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		Start: 2:45 Stop: 3:15 GROUND SURFACE: 364.22	
	0	CONCRETE	
	.7	GRAVELLY SILTY CLAY: 5 YR 5/8, YELLOWISH RED, SLIGHTLY MOIST, MED. PLAST., FIRM, 60% CLAY, 20% SILT, 20% GRAVEL, SAND FILL 0.7–1.0'	CL
	4.8	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, VERY HIGHLY WEATHERED, FRACTURED, WEATHERED TO A LESSER DEGREE AT 8.0', SILTY	SHALE
	13.5	T.D. 13.5' NOTE: SANDSTONE AT 13.5'	



SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		1.5	0.7
1	269.0		2.2
NR			5.0
2	1.0	4.5	7.0
3	0.0		9.0
4	1.0		9.5
NR			10.0
5	1.0	3.5	12.0
6	0.4		13.5

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
╌	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-18 (MW-15)*

DATE DRILLED 9/26/91
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY SAR

PAGE 1 OF 1

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		GROUND SURFACE: 565.24	
	0	CONCRETE	
	1.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, FRACTURED, SILTY, MOIST (SAND FILL 1.0'-1.5')	SHALE
	6.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, HIGHLY WEATHERED, FRACTURED, SLIGHLTY MOIST, SILTY, WET AT 10.5', OXIDATION ALONG BEDDING PLANES	SHALE
9/30/90 ▽ 10.5'	10		
	18.5	SANDSTONE: DARK GRAY 2.5 YR 3/0, QUARTZ, FINE GRAIN, MASSIVE	SANDSTONE
	22.0	SHALE: DARK GRAY, 2.5 YR 3/0, SANDY, VERY FINE QUARTZ SAND	SHALE
	26.5	SANDSTONE: DARK GRAY, 2.5 YR 3/0, QUARTZ, VERY FINE GRAIN	SANDSTONE
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY, VERY FINE QUARTZ SAND	SHALE
	33.0	T.D. 33.0' NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	
	35		

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		1.0	1.0
1	0.0		1.5
NR			5.0
2	0.0	2.0	7.0
NR			10.0
3	0.0	1.0	11.0
NR			15.0
4	0.0	3.5	17.0
5	0.0		18.5
NS			19.0
1	ND		20.0
2	ND		22.0
3	ND		24.0
4	ND		26.0
5	ND		28.0
6	ND		30.0
7	ND		32.0
8	ND		33.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-18.5', 9/13/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 18.5'-35.0', 10/10/90

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-19 & BH-19A (MW-16 & MW-16A)**

DATE DRILLED 9/30/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY M.A.
CHECKED BY B.S.
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 565.31

OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH
	0	CONCRETE		NR		4.0	1.0
	1.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/8, OLIVE YELLOW, OXIDIZED BEDDING PLANES, CLAY LENSES 10 YR 7/8, YELLOW AND 2.5 Y 7/0, LIGHT GRAY, AT 2.3-2.6' AND 3.5-3.8'	SHALE	1	0.0		3.0
				2	0.0		5.0
	5	LENSE 10 R 3/6, DARK RED, DUE TO PRE-CIPITATION OF Fe (HEMATITE)		3	0.0	2.0	7.0
9/30/90 ▽ 9.0'				NR			10.0
	10			4	0.0	5.0	12.0
				5	0.0		14.0
				6	0.0		15.0
	15			7	0.0	2.5	17.0
				8	0.0		17.5
	17.5	SANDSTONE: DARK GRAY, 2.5 YR 3/0, VERY FINE GRAIN, WELL CEMENTED	SANDSTONE	NS			19.0
	19.0	SHALE: 2.5 YR 3/0 DARK GRAY, SANDY VERY FINE-GRAIN QUARTZ SAND	SHALE	1	ND		20.0
	20			2	ND		22.0
				3	ND		24.0
	25			4	ND		26.0
				5	ND		28.0
	27.0	SANDSTONE: 2.5 YR 3/0 DARK GRAY, VERY FINE-GRAIN SAND, WELL-CEMENTED	SANDSTONE	6	ND		30.0
	30			7	ND		32.0
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY VERY FINE QUARTZ SAND	SHALE	8	ND		34.0
	34.0	T.D. 34.0'					
	35						

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-17.5', 9/30/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 17.5'-34.0', 10/10/90

▭	CME CONTINUOUS AUGER SAMPLER
⊠	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-20 & BH-20A (MW-17 & MW-17A)*

DATE DRILLED 9/30/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY M.A.
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

GROUND SURFACE: 565.05

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.7	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 40% SILT	CL
	2.2	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML
	6.5	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 40% SILT	CL
	8.0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML
	10.5	SILTY CLAY: 7.5 YR 4/4, DARK BROWN, MOIST, GRAY LENSES, HIGH PLAST., SOFT, 70% CLAY, 30% SILT	CH
	12.0	SILTY CLAY: 10 YR 5/4, YELLOWISH BROWN WITH 2.5 YR 4/8, RED NODULES, MED. PLAST., SLIGHTLY MOIST, FIRM	CL
	14.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, GRAY CLAY LENSES, SILTY	SHALE
10/1/90 17.0'	16.0	SHALE: 2.5 Y 3/2, DARK GRAYISH BROWN, AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SILTY	SHALE
	23.0	SANDSTONE: VERY HARD, VERY FINE-GRAIN	SANDSTONE
	23.4	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, SILTY, SANDY, OXIDIZED ZONES, THINNLY LAMINATED	SHALE
	27.0	SANDSTONE: 2.5 Y 4/6, DARK GRAY, FINE TO MED. GRAIN, MOIST	SANDSTONE
	32.0	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY (BLACK), SANDY, PEBBLES, HIGHLY ORGANIC, LAMINATED	SANDY SHALE
	34.7	T.D. 34.7'	

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		3.0	0.7
1	0.0		2.7
2	0.0		3.7
NR			5.0
3	0.0	3.5	7.0
4	0.0		8.5
NR			10.0
5	0.0	4.0	12.0
6	0.0		14.0
7	0.0	4.0	17.0
8	0.0		19.0
NR			20.0
9	0.0		22.0
10	0.0		23.0
NR			24.0
1	ND		26.0
2	ND		28.0
3	ND		30.0
4	ND		32.0
5	ND		34.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-23.0', 10/1/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 23.0'-34.7', 10/10/90

CME CONTINUOUS AUGER SAMPLER	WATER TABLE (TIME OF BORING)
STANDARD PENETRATION TEST	LABORATORY TEST LOCATION
UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
WATER TABLE (24 HOURS)	

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-21 & BH-21A (MW-19 & MW-19A)**

DATE DRILLED 10/1/90 & 10/10/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY AJB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 585.41

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	SILTY SANDY CLAY: BASE WITH ASPHALT PAVEMENT COVER	A/C
9/25/90 ▽5.58'	0.7	SANDY SILTY CLAY: 10% SAND, 40% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM MINOR GRAVEL TO 1/2"	CL
9/24/90 ▽8.1'	7.0	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1-8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE, SATURATED 10 YR 4/3, DARK BROWN TO BROWN AFTER 8.9', MOIST 10 YR 4/1, 10.0'-10.8', ABUNDANT ANGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0' BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	CL
	16.4	SHALE: 20% SILT, 10 YR 5/2, GRAYISH BROWN TO 10 YR 2/1, BLACK, VERY MOIST, MOD. HARD, FISSILE, INTERBEDDED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SILTY SHALE
	21.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/2, DARK GRAYISH BROWN TO 2.5 Y 5/4, LIGHT OLIVE BROWN, ABUNDANT ANGULAR 2.5 Y 6/4, LIGHT YELLOWISH BROWN CHERT, HARD, SILICA CEMENT	SANDSTONE
	24.3	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 4/2, DARK GRAYISH BROWN	SANDY SHALE
	26.0	SHALE: 10 YR 2/1, BLACK, FISSILE, HARD	SHALE
	31.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT	SANDSTONE
	35		

GRAPHIC LOG

OVM SOIL GAS
SURVEY PPM X 1.0
2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.2	1.2
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	1.4	11.4
NR			15.0
6	0.0	5.0	17.0
7	0.0		19.0
8	0.0		20.0
9	0.0		21.0
1	ND		22.0
2	ND		24.0
3	ND		26.0
4	ND		28.0
5	ND		30.0
6	ND		32.0
7	ND		34.0
8	ND		

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-21.0', 9/24/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 21.0'-38.5', 10/9/90

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
▽ WATER TABLE (24 HOURS)
▽ WATER TABLE (TIME OF BORING)
└ LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-22 & BH-22A (MW-11 & MW11A)**

DATE DRILLED 9/24/90 & 10/9/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 2

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BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

REMARKS: BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE: 56[illegible] ±1								
	35	SANDSTONE: AS PREVIOUS								35
	36.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 7/0, VERY DARK GRAY, FISSILE	SANDY SHALE			9	ND		36.0 38.0	
	38.5	T.D. 38.5'				NS			38.5	
	40	NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
—	WATER TABLE (24 HOURS)
—	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-22 & BH-22A (MW-11 & MW11A)*

DATE DRILLED 9/24/90 & 10/9/90

DRILLING METHOD HSA & AIR ROTARY

DRILLED BY [illegible] & POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR PAGE 2 OF 2

BORING RECORD

GROUND SURFACE: 564.83

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.6	SILTY CLAY: 7.5 YR 4/6, STRONG BROWN, MED. PLAST., SOFT, SLIGHTLY MOIST, TRACE SAND AND GRAVEL, 55% CLAY, 45% SILT, 5 YR 5/6, YELLOWISH RED FROM 5.0-6.0'	CL
10/1/90 ▽ 6.0'	6.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, VERY HIGHLY WEATHERED, CLAY LENSES 2.5 Y 7/0, LIGHT GRAY, WET, SILTY	SHALE
	8.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, OXIDIZED BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FE ENRICHED LAYER AT 17.5'-17.8', LIMONITE AT 18.0'-18.1'	SHALE
	18.3	SANDSTONE: VERY FINE GRAIN, 10 YR 4/2, DARK GRAYISH BROWN, HARD	SANDSTONE
	22.5	SANDY SHALE: VERY FINE SAND, 10 YR 3/1, VERY DARK GRAY, HARD	SANDY SHALE
	26.0	SHALE: 10 YR 2/1, BLACK, FISSILE, HARD	SHALE
	27.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT, VERY HARD	SANDSTONE
	32.0	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 2/1, BLACK, FISSILE, HARD	SANDY SHALE
	34.0	T.D. 34.5'	
	35		

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		0.5	0.6
1			1.1
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	5.0	12.0
6	0.0		14.0
7	0.0		15.0
8	0.0	3.3	17.0
9	0.0		18.3
NR			19.7
1	ND		20.0
2	ND		22.0
3	ND		24.0
NR			25.0
4	ND		26.0
5	ND		27.0
6	ND		29.0
NR			30.0
7	ND		31.0
8	ND		33.0
NR			34.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.6'-18.3', 10/1/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 18.3'-34.0', 10/7/90

0 5 10 15 20 25 30 35

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
▽ WATER TABLE (24 HOURS)
▽ WATER TABLE (TIME OF BORING)
| LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-23 & BH-23A (MW-22 & MW-22A)**

DATE DRILLED 10/1/90 & 10/7/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

Start: 3:25
Stop: 3:40

GROUND SURFACE: 556.03

REMARKS
BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

GEOLOG UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH
	0	ASPHALT		■	NR		2.0	1.0
	1.0	SILTY CLAY: 7.5 YR 5/6, STRONG BROWN, MED. PLAST., SLIGHTLY MOIST, 65% CLAY, 35% SILT, CLAY NODULES 2.5 YR 4/6, RED	CL	▨	1	7.0		3.0
	3.0	SILTY CLAY: 10 YR 5/8, YELLOWISH BROWN, HIGH PLAST., SLIGHTLY MOIST, TRACE GRAVEL, 70% CLAY, 30% SILT, GRAY LENSES	CH	▨	2	4.0	2.0	5.0
	5	T.D. 5.0'						

NOTE: NO GROUNDWATER ENCOUNTERED DURING DRILLING

OVM SOIL GAS SURVEY PPM X 1.0

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

- OME CONTINUOUS AUGER SAMPLER
- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- WATER TABLE (24 HOURS)
- WATER TABLE (TIME OF BORING)
- LABORATORY TEST LOCATION
- + PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *RH-24*

DATE DRILLED [illegible]/90
DRILLING METHOD HSA
DRILLED BY PS/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

GEOLOG. UNIT | DEPTH (FEET) | LITHOLOGIC DESCRIPTION | UNIFIED SOIL CLASSIFICATION | GRAPHIC LOG | OVM SOIL GAS SURVEY PPM X 1.0 | SAMPLE | REMARKS

Start: 3:10
Stop: 3:22

GROUND SURFACE: 553.78

DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
0 – 0.4	ASPHALT	
0.4 – 5	SILTY CLAY: 10 YR 4/4, DARK YELLOWISH BROWN, DRY TO SLIGHTLY MOIST, MED. PLAST., SOFT, 65% CLAY, 35% SILT. GRAVELLY SANDY SILT LENSE AT 2.5-3.0', 10 YR 5/6, YELLOWISH BROWN, GRADATIONAL UPPER AND LOWER BOUNDARY	PL
5	T.D. 5.0' NOTE: GROUNDWATER NOT ENCOUNTERED DURING DRILLING	

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		0.5	0.4
1	6.0		0.9
NR			
			2.5
2	3.0	0.5	3.0
NR			
			5.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

⊠	CME CONTINUOUS AUGER SAMPLER
⊠	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
┼	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *BH-25*

DATE DRILLED 10/1/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

OVM SOIL GAS SURVEY PPM x 1.0 (2 4 6 8 10 12 14 16 18)

REMARKS: BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM

GROUND SURFACE: 565.70

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	GRAVELLYB SANDY CLAY: 5 YR 5/8, YELLOWISH RED AND 2.5 YR 4/8, RED, SLIGHTLY MOIST, LOW PLAST., 40% CLAY, 30% SAND, 30% GRAVEL	CL
	5.2	SILTY CLAY: 5 Y 4/1, DARK GRAY GRADING TO 5 Y 7/1, LIGHT GRAY AT 5.4', HIGH PLAST., SLIGHTLY MOIST, HARD, 75% CLAY, 25% SILT	CH
	6.7	SHALE: 5 Y 4/2, OLIVE GRAY AND 10 YR 5/8, YELLOWISH BROWN, FRACTURED, WEATHERED, THINNLY BEDDED, SILTY, DRY TO SLIGHTLY MOIST, SILTSTONE LENSE 10 YR 3/1, VERY DARK GRAY 10.0-10.2', SHALE BECOMES HARD AT 15.0' AND IS 2.5 Y 2/0, BLACK	SHALE
	19.0	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE
11/7/90 ▽ 22.0'	19.5	SHALE: 2.5 Y 4/4, OLIVE BROWN, HIGHLY WEATHERED, FRACTURED, OXIDIZED BEDDING PLANES	SHALE
	24.0	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, WEATHERED	SHALE
	25.0	SANDSTONE: 2.5 Y 5/0, GRAY, FINE GRAINED, FAIRLY HARD, SEM. CEMENTED	SANDSTONE
	26.0	SHALE: 5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, FINELY BEDDED, OXIDIZED ZONES	SHALE
	33.5	SHALE: 5 Y 2.5/1, BLACK, FISSILE, BEDDING, HIGHLY WEATHERED	SHALE
	34.0	SANDSTONE: 10 YR 6/1, GRAY TO LIGHT GRAY, VERY HIGHLY CEMENTED, VERY HARD, FINE GRAINED	SANDSTONE

T.D. 35.5'

NOTE: 1.) CONDUCTOR CASING WAS SET THROUGH A GRAY SANDSTONE UNIT AT 19.0-19.5'
2.) PILOT HOLE FOR CONDUCTOR CASING WAS DRILLED TO 26.0', HENCE NO SAMPLES WERE AVAILABLE TO 26.0'
3.) ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	2.0	2.0
NR			5.0
2	0.0	2.0	7.0
NR			10.0
3	0.0	5.0	12.0
4	0.0		14.0
5	0.0		15.0
6	0.0	3.0	17.0
7	0.0		18.0
NR			19.0
NS			26.0
1	ND		28.0
2	ND		30.0
3	ND		32.0
4	ND		34.0
5	ND		35.0

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0' - 15.0' 10/3/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 19.0' - 35.5' 11/7/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-26 & BH-26A (MW-24 & MW-24A)*

DATE DRILLED 10/3/90 & 11/7/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAB

PAGE 1 OF 1

BORING RECORD

EOLOG. NIT

0/3/90 ∇ 15.0'

/8/90 ∇ 21.0'

GROUND SURFACE: 565.80

DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 Y 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3–5.6', 65% CLAY, 35% SILT	CH
5.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 7/1, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 9.5'	SHALE
7.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES	SHALE
18.0	SANDSTONE: 2.5 Y 7/', LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE
18.6	CONDUCTOR CASING	
19.5	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATLEY HARD	SANDSTONE
20.2	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN, HIGHLY WEATHERED, OXIDIZED BEDDING PLANES, MOIST TO WET	SHALE
24.8	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE
25.5	SHALE: 2.5 Y 3/2, VERY DARK GRAYISH BROWN, WEATHERED, OXIDATION, FRACTURED, WET, SOFT	SHALE
29.0	SHALE: 2.5 Y 3/0, BLACK, FISSILE, SOFT, HIGHLY ORGANIC, WET	SHALE
30.5	SANDSTONE: 2.5 Y 2/0, BLACK AND 2.5 Y 6/1, GRAY, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAINED	SANDSTONE
32.0	T.D. 32.0'	

NOTE:
1) CONDUCTOR SET ACROSS SANDSTONE AT 18.0–18.6'
2) ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.0	1.0
NR			5.0
2	0.1	3.0	7.0
3	0.0		8.0
NR			10.0
4	0.0	2.0	12.0
NR			15.0
5	0.0	3.0	17.0
6	0.0		18.0
NS	ND		20.0
1	ND		22.0
2	ND		24.0
3	ND		26.0
4	ND		28.0
5	ND		30.0
6	ND		32.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0' – 18.0' 10/3/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 18.0' – 32.0' 11/8/90

▱	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
∇	WATER TABLE (TIME OF BORING)
L	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-27 & BH-27A (MW-25 & MW-25A)*

DATE DRILLED 10/3/90 & 11/8/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

GROUND SURFACE: 585.8C

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	GRAVELLY SANDY CLAY: 5 YR 5/8, YELLOWISH RED AND 2.5 YR 4/8, RED, LOW PLAST., DRY TO SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL
	1.8	SILTY CLAY: 2.5 6/6, OLIVE YELLOW, MOTTLED 2.5 Y 6/0, GRAY, HIGH PLAST., HARD, SLIGHTLY MOIST, 70% CLAY, 30% SILT	CL
	8.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SLIGHTLY MOIST, SILTY, FE STAINING AT 10.4', SHALE BECOMES HARD AT 19.5', 2.5 Y 2/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW, SILTY NOTE: 1) CONDUCTOR CASING SET ACROSS THE SANDSTONE AT 23.8' TO 24.9' 2) ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	SHALE
	23.8	SANDSTONE: 2.5 Y 7/1, LIGHT GR., FINE GRAINED, MODERATELY HARD	SANDSTONE
11/8/90	24.9	CONDUCTOR CASING	
▽ 26.0	25.5	SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, SANDY AT 26.0-28.0', VERY FINELY LAMINATED	SHALE
	31.0	SHALE: 2.5 Y 2/0, BLACK, FISSILE, HIGHLY ORGANIC, WET	SHALE
	31.5	SANDSTONE: 2.5 Y 8/1 AND 2.5 Y 2/0, GRAY AND BLACK, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAINED	SANDSTONE
	34.0	T.D. 34.0	

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	2.0	2.0
NR			5.0
2	0.0	4.0	7.0
3	0.0	4.0	9.0
NR		4.0	15.0
6	5.0	4.0	17.0
7	0.0		19.0
NR			20.0
NR			24.0
NS	ND		26.0
1	ND		28.0
2	ND		30.0
NS	ND		34.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0' – 24.0' 10/3/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 24.0' – 34.0' 11/8/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
L	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER SEQUOYAH\90067

BORING NUMBER BH-28 & BH-28A (MW-26 & MW-26A)

DATE DRILLED 10/3/90 & 11/8/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF

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NORMAN, OKLAHOMA 73072
(405) 321-3895

BORING RECORD

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

GROUND SURFACE: 565.20

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3-5.0', 65% CLAY, 35% SILT	CH
	5.0	SHALE: 2.5 6/6, OLIVE YELLOW AND 2.5 Y 7/1, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 8.5'	SHALE
		NOTE: 1) CONDUCTOR CASING SET ACROSS SANDSTONE AT 18.0' - 18.2', AND 19.0' - 19.4', AND 22.0' - 23.5' 2) SHALE, 2.5 Y 2/0, BLACK 29.5' - 30.0' 3) ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	
	18.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES, MINOR SANDSTONE LENSES AT 18.0-18.2', 19.0-19.4', 22.0-23.5'	SHALE
11/3/93 23.5		CONDUCTOR CASING	
	23.5	SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, FINELY LAMINATED	SHALE
	25.0	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE
	26.0	SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, OXIDATION COMMON, FINELY LAMINATED	SHALE
	30.0	SANDSTONE: 2.5 Y 2/0, AND 2.5 Y 6/1, BLACK AND GRAY, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAIN	SANDSTONE
	34.0	T.D. 34.0'	

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	1.0	1.0
NR			5.0
2	0.0	5.0	7.0
3	0.0		9.0
4	0.0		10.0
5	0.0	3.0	12.3
6	0.0		13.0
NR			15.0
7	0.0	5.0	17.0
8	0.0		19.0
9	0.0		20.0
10	0.0	2.0	22.0
NS	ND		25.0
1	ND		27.0
2	ND		29.0
3	ND		31.0
4	ND		33.0

REMARKS

BACKGROUND
OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER
(PSI) 0.0' - 22.0' 10/3/90

NOTE: DRILLING METHOD AIR ROTARY
(POOL) 22.0' - 34.0' 11/8/90

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER SEQUOYAH\90067

BORING NUMBER BH-29 & BH-29A (MW-27 & MW-27A)

DATE DRILLED 10/3/90 & 11/8/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 552.70

OVM SOIL GAS SURVEY PPM X 1.0

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SILT: 10 YR 4/4, DARK YELLOWISH BROWN, MOIST, ROOTLETS, 70% SILT, 30% CLAY	OL
	1.0	SILTY CLAY: 10 YR 3/1, VERY DARK GRAY, AND 5 YR 5/6, YELLOWISH RED, MED. PLAST., SLIGHTLY MOIST, TO MOIST, FIRM, 60% CLAY, 40% SILT	CL
	5.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, AND 2.5 Y 3/0, VERY DARK GRAY, BROWN DOMINANT FROM 6.5-8.5', GRAY IS DOMINANT FROM 5.0-6.5' SILTY, HIGHLY WEATHERED, FRACTURED	SHALE
	8.5	SANDSTONE: 10 YR 6/3, PALE BROWN, SOFT TO HARD, VERY FINE GRAIN QUARTZ SAND, LIMONITE STAINING, IRON OXIDE CONCRETIONS, MOIST	SANDSTONE
	13.0	SHALE: 7.5 YR 3/0, VERY DARK GRAY, MOIST, HARD, FISSILE, THIN LAMINATIONS, VERY SANDY, 40% FINE GRAINED SAND, LIMONITE STAINING LOCALLY	SHALE
	18.0	SHALE: 7.5 YR N2/0, BLACK, HARD, PETROLIFEROUS, FISSILE, THIN BEDDED	SHALE
	19.0	SANDSTONE: 7.5 YR 6/0, LIGHT GRAY, VERY HARD, VERY FINE GRAIN QUARTZ SAND, SLIGHTLY MOIST	SANDSTONE
	24.5	SHALE: 7.5 YR N2/0, BLACK, DRY, SOFT, PETROLIFEROUS, FISSILE	SHALE
	26.5	T.D. 26.5	

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

SAMPLE NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	2.0	2.0
NR			5.0
2	0.0	3.5	7.0
3	0.0		8.5
NS			9.7
1	ND		12.0
2	ND		14.0
3	ND		16.0
4	ND		18.0
5	ND		20.0
6	ND		22.0
7	ND		24.0
8	ND		26.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-8.5', 10/5/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 8.5'-28.5', 10/11/90

- CME CONTINUOUS AUGER SAMPLER
- ☒ STANDARD PENETRATION TEST
- ☐ UNDISTURBED SAMPLE
- WATER TABLE (24 HOURS)
- WATER TABLE (TIME OF BORING)
- LABORATORY TEST LOCATION
- \+ PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-30 & BH-30A (MW-32 & MW-32A)**

DATE DRILLED 10/5/90 & 10/11/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY MT
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 550.50

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS, PEBBLES, 70% SILT, 30% CLAY	OL
	1.0	SILTY CLAY: 10 YR [illegible] DARK GRAYISH BROWN, MOTTLED 5 [illegible] YELLOWISH RED, LOW TO MED. PLAST., [illegible], 55% CLAY, 45% SILT	CL
	2.5	SILTY CLAY: WEATHERED SHALE, 2.5 Y 5/4, LIGHT OLIVE BROWN, MOTTLED 2.5 Y 7/0, LIGHT GRAY, MOIST, PEBBLES, HIGH PLAST.	CH
	7.0	SANDSTONE: VERY HARD, VERY FINE GRAIN	SANDSTONE
	7.5	SHALE: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, SILTY, DRY, MINOR SAND	SHALE
	10.2	SANDY SHALE: 2.5 Y 5/4, LIGHT YELLOWISH BROWN, GRADING INTO SANDSTONE, DRY	SANDY SHALE
	12.5	SANDSTONE: 2.5 Y 4/6, DARK GRAY, MOIST TO WET, HARD	SANDSTONE
	16.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, DRY, VERY THINLY BEDDED, FISSILE	SANDY SHALE
	18.5	T.D. 18.5'	

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0	2.0	2.0
NR			5.0
2	0.0	0.0	7.0
MS			9.0
1	ND		10.0
2	ND		12.0
3	ND		14.0
4	ND		16.5
5	ND		18.5

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'–7.0', 10/5/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 7.0'–18.5', 10/11/90

DEPTH: 0 5 10 15 20 25 30 35

☐ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **BH-31 & BH-31A (MW-30 & MW-30A)**

DATE DRILLED 10/5/90 & 10/11/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 551.10'

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS TO 2.0', 70% SILT, 30% CLAY	CL
	5.2	GRAVELLY SILTY CLAY: 7.5 YR 5/8, STRONG BROWN, MOTTLED 7.5 YR 7/0, LIGHT GRAY, MOIST, MED. PLAST., FIRM, 50% CLAY, 30% SILT, 20% GRAVEL	CL
	9.0	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, SILTY, WEATHERED, FRACTURED, GRAY CLAY LENSES AT 10.5'	SHALE
	11.5	SANDSTONE: VERY FINE GRAIN, 10 YR 6/4, LIGHT YELLOWISH BROWN, HARD	SANDSTONE
	16.0	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 5/1, GRAY, HARD, 30% SAND, 10 YR 3/1, AFTER 18.0', 10% SAND	SANDY SHALE
	19.5	SHALE: 10 YR 2/1, BLACK, FISSILE	SHALE
	21.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONGLY CEMENTED WITH SILICA	SANDSTONE
	25	SANDY SHALE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE
	29.0	T.D. 29.0'	

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
1	0.0		2.0
NR			5.0
2	0.0	4.5	7.0
3	0.0		9.0
4	0.0		9.5
NR			10.0
5	0.0		11.5
1	NC		14.0
2	ND		16.0
3	ND		18.0
4	ND		20.0
5	ND		21.0
6	ND		22.0
7	ND		24.0
8	ND		25.0
9	ND		27.0
10	ND		29.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'-11.5', 10/5/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 11.5-29.0', 10/7/90

▭	CME CONTINUOUS AUGER SAMPLER
⊠	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-32 & BH-32A (MW-31 & MW-31A)*

DATE DRILLED 10/5/90 & 10/7/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

BORING RECORD

GROUND SURFACE: 564.61

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	ASPHALT	
	0.5	GRAVELLY SANDY CLAY: 7.5 YR 5/8, STRONG BROWN, LOW PLAST., FIRM, DRY TO SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	ML
	6.2	SANDY CLAYEY SILT: 2.5 Y 4/2, DARK GRAYISH BROWN, AND 2.5 Y 5/4, LIGHT OLIVE BROWN (6.4–6.6'), DRY TO SLIGHTLY MOIST, 50% SILT, 30% SAND, 20% CLAY	ML
	8.2	SILTY CLAY: 2.5 YR 4/8, RED, MOTTLED 2.5 Y 5/4, LIGHT OLIVE BROWN WITH LIGHT OLIVE COLOR BECOMING DOMINANT AT 10.5', HIGH PLAST., HARD, 70% CLAY, 30% SILT	CH
	12.7	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY, GRAY CLAY LENSE AT 15.5'	SHALE
	19.5	SANDSTONE: VERY HARD, VERY FINE-GRAIN	SANDSTONE
	20	SILTY SHALE: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, WET, SOFT	SHALE
	22.6	SHALY SANDSTONE: 2.5 Y 5/4, LIGHT OLIVE BROWN, SILTY, WET, PEBBLES	SANDSTONE
	25	SANDSTONE: 2.5 Y 4/6, DARK GRAY, HARD, FINE-MED. GRAIN SAND	SANDSONE
	29.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, PEBBLES COMMON, HIGHLY ORGANIC	SANDY SHALE
	32.2	T.D. 32.2'	

NOTE: ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS

GRAPHIC LOG

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	OVM READING	RECOVERY	DEPTH
NR		0.5	0.5
1	0.1		1.0
NR			5.0
2	0.4	4.0	7.0
3	1.0		9.0
NR			
4	0.0	5.0	12.0
5	0.0		14.0
6	0.0		15.0
7	0.0	0.0	17.0
8	0.0		19.0
NR			19.5
1	ND		22.0
2	ND		24.0
NR	ND		26.0
3	ND		28.0
4	ND		30.0
5	ND		32.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

DRILLING METHOD HOLLOW STEM AUGER (PSI) 0.0'–19.5', 10/4/90

NOTE: DRILLING METHOD AIR ROTARY (POOL) 19.5'–32.2', 10/11/90

0 5 10 15 20 25 30 35

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-33 & BH-33A (MW-28 & MW-28A)*

DATE DRILLED 10/4/90 & 10/11/90
DRILLING METHOD HSA & AIR ROTARY
DRILLED BY PSI & POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

ROBERTS/SCHORNICK
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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start 5:12 Stop 5:30 GROUND SURFACE								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	0	CLAYEY SILT: 10 YR 3/4, DARK YELLOWISH BROWN, LOW PLAST., SLIGHTLY MOIST, SOFT, 65% SILT, 35% CLAY, ROOTLETS 0.0-1.0'	ML			1	0.0	3.0	2.0	
	2.0	SILTY CLAY: 2.5 Y 5/2, GRAYISH BROWN, SLIGHTLY MOIST TO WET, HIGH PLAST., GRAVEL AT 5.5-6.0', FE NODULES 5.0-6.0', 65% CLAY, 35% SILT	CL			2	0.1		3.0	
						NR			5.0	
	5					3	0.0	2.5	6.5	
						4	0.0		7.5	
	7.5	T.D. 7.5' AUGER REFUSAL AT 7.5' (SANDSTONE)								
	10									
	15									
	20									
	25									
	30									
	35									

▨ CME CONTINUOUS AUGER SAMPLER
⊠ STANDARD PENETRATION TEST
▭ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-34 (MW-29)*

DATE DRILLED 10/4/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	GROUND SURFACE	
		TOPSOIL: WET TO SATURATED GRASS	
	1.0	GRAVELLY SILTY CLAY: 7.5 YR 7/8 TO 5/6, REDDISH YELLOW TO STRONG BROWN, HIGH PLAST., MOTTLED TO FINE LAMINATIONS, FIRM TO SOFT, WET TO SAT., QTZ. GRAVEL TO 1.5", (REDUCED ZONE 1.3–1.8)	CH
	5.9	WEATHERED SHALE: 7.5 YR 6/6 TO 5/2, REDDISH YELLOW TO BROWN, DRY, FRIABLE, FAINT LAMINATIONS, DARKENS WITH DEPTH, CONCRETION ZONE 8.7–9.9'	SHALE
	11.0	AUGER REFUSAL 11.0'	

OVM SOIL GAS SURVEY PPM X 1.0

2 4 6 8 10 12 14 16 18

SAMPLE NUMBER	OVM READING	RECOVERY	DEPTH
1		3.0	2.0
2			3.0
NR			5.0
3		5.0	7.0
4			9.0
5			10.0
6		1.0	11.0

REMARKS

BACKGROUND OVM READING:
SOIL: 0.0 PPM
AIR: 0.0 PPM

▧	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
	WATER TABLE (24 HOURS)
	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *BH-35*

DATE DRILLED 10/11/92
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY TPC
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		GROUND SURFACE								BACKGROUND OVM READING SOIL 0.0 PPM AIR 0.0 PPM
	0	TOPSOIL: GRASS, ROOTS, CLAY LOAM				1		1.5	1.5	
	0.8	GRAVELLY CLAY: 7.5 YR 7/0, LIGHT GRAY TO 6/8, REDDISH YELLOW, UPPER 0.1', 7/0, THEN 6/8, MOIST TO WET, SOFT TO FIRM, 75% CLAY, 25% GRAVEL UP TO 2.0" DIAMETER	CH			NR			4.0	
	4.0	AUGER REFUSAL 4.0' HIT CONCRETE DRAINLINE								

- CME CONTINUOUS AUGER SAMPLER
- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- WATER TABLE (24 HOURS)
- WATER TABLE (TIME OF BORING)
- LABORATORY TEST LOCATION
- \+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *BH-36*

DATE DRILLED 10/11/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY TPC
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS SURVEY PPM X 1.0 2 4 6 8 10 12 14 16 18	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start Stop GROUND SURFACE:								BACKGROUND OVM READING: SOIL: 0.0 PPM AIR: 0.0 PPM
	0	ASPHALT				1		1.0		0
	0.5	SANDY CLAYEY SILT: 5 YR 4/3, REDDISH BROWN, SOFT-FIRM, MOIST, TRACE GRAVEL (1" DIAM.), 15% SAND, VERY FINE GRAIN, RND, 30% CLAY, 55% SILT, M-H PLAST.,	ML						1.0	
	5					2		1.5	5.0	5
	5.8	SAND: BACKFILL, 7.5 YR 7/8, REDDISH YELLOW, SAT., SOFT, M-C GRAIN, RND, SOME K-SPAR AND MICA	SC						6.5	
						NR				
	10					3		1.0	10.0	10
						NR			11.0	
	12.0	T.D. 12.0' AUGER REFUSAL 12.0'							12.0	
	15									15
	20									20
	25									25
	30									30
	35									35

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
⌊	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *BH-37 (MW-33T)*

DATE DRILLED 10/11/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY TPC
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

APPENDIX E

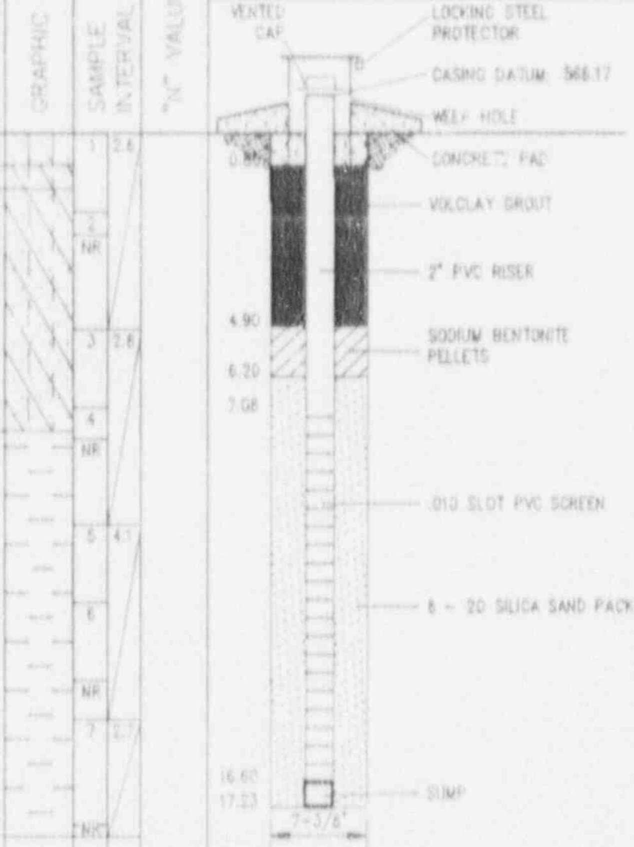
MONITORING WELL COMPLETION DIAGRAMS

(SHALE WELLS)

WELL COMPLETION RECCRD

GROUND SURFACE: 563.70

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	SANDY SILT: VFG, 20% SAND, 80% SILT, LOW PLAST., 10 TR 4/2, DARK GRAYISH BROWN, SLIGHTLY MOIST, GRAS' ROOTS	SM
▽ 1.9' ▽ 1.5'	0.8	SILTY CLAY: 30% SIL', 70% CLAY, LOW PLAST., 2.5 Y 6/4, LT. YELLOWISH BROWN, VERY MOIST	CL
	1.4	SILTY SANDY CLAY: VF-VC SAND, MINOR ANG. SHALE GRAVEL TO 1", WET, MASSIVE DECREASING GRAVEL WITH DEPTH, 2.5 Y 5/4, ANG. SHALE FRACT., TO 1/4", LIKELY WEATHERED SHALE FILL TO 7.6', SAT., 7.5 YR 4/4, GRAY TO DARK BROWN, 7.5-7.6'	CL
	7.6	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, SLIGHTLY MOIST, FISSILE, MUD. HARD. AFTER 10.0', 10 YR 5/4, YELLOWISH BROWN TO 10 YR 4/1, DARK GRAY, HIGHLY INDURATED, PARTIALLY WEATHERED TO SILTY CLAY, VERY MOIST, 2.5 Y 4/2, DARK GRAYISH BROWN AFTER 15.0'	SHALE
	18.0	SANDSTONE AT 18.0' AUGER REFUSAL	



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 17.23 FEET.

CME CONTINUOUS AUGER SAMPLER	WATER TABLE (TIME OF BORING)
STANDARD PENETRATION TEST	LABORATORY TEST LOCATION
UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
WATER TABLE (24 HOURS)	

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JOB NAME/NUMBER *SEQUOYAH\90067*

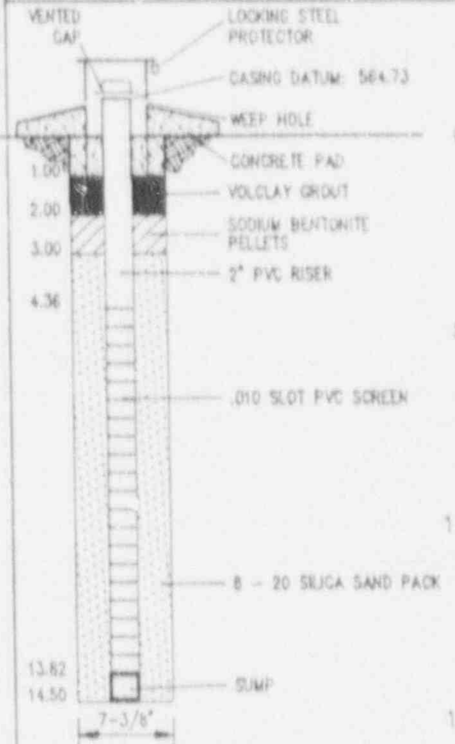
BORING NUMBER *MW-1 (BH-1)*

DATE DRILLED 9/25/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAF PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL
		Start: 9:10 Stop: 9:40 GROUND SURFACE: 562.30			
	0	SILT: NO PLAST., 10 YR 4/3, BROWN–DARK BROWN, SLIGHTLY MOIST, SOFT, HOMOGENEOUS, GRASS ROOTS, COBBLES	OL	1 NR	0.8
	1.3	SILTY CLAY: 2.5 YR 4/8, MOTTLED 2.5YR 5/0, RED AND GRAY, HIGH PLAST., SLIGHTLY MOIST, SOFT TO FIRM, GRAVEL FROM 6.4–6.8', ABRUPT LOWER BOUNDARY, 70% CLAY, 30% SILT	CL	2	3.5
▽ 7.6'	6.8	GRAVELLY CLAYEY SANDY SILT: 5 YR 5/5, YELLOWISH RED, LOW PLAST., 50% SILT, 20% CLAY, 20% SAND, 10% GRAVEL	ML	3	
	7.6	SHALE: 10 YR 5/6, YELLOWISH BROWN, HIGHLY WEATHERED AND FRACTURED, CLAY LAYERS AT 8.5–10.5', CLAY IS 10 YR 6/8, BROWNISH YELLOW MOTTLED 2.5 Y 7/0, LIGHT GRAY OXIDATION ON BEDDING PLANES 2.5 Y 4/2, DARK GRAYISH BROWN	SHALE	NR 4	 4.0
	12.0	SHALE: 2.5 Y 4/4, OLIVE BROWN AND 2.5 Y 3/0, VERY DARK GRAY, OXIDATION ALONG BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FRACTURED, VERY THIN CLAY LENSES, GRAY AND BROWNISH YELLOW	SHALE	5 NR 6	 0.8
	16.0	SANDSTONE: 2.5 Y 3/0, VERY DARK GRAY, HIGHLY CEMENTED, VERY FINE GRAINED, VERY THINLY BEDDED TO MASSIVE	SANDSTONE	NR	
	20	T.D. 20.0'			

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 14.50 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\90067*
BORING NUMBER *MW-2 (BH-6)*
DATE DRILLED 9/26/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

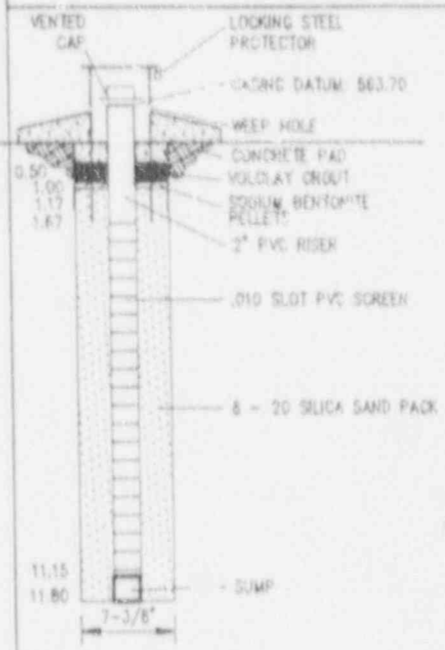
WELL COMPLETION RECORD

GROUND SURFACE: 563.00

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	SILT: 5 YR 4/3, REDDISH BROWN	OL
	1.5	SHALE: 10 YR 5/6, YELLOWISH BROWN, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY LENSES, OXIDATION ZONES ALONG BEDDING PLANES COLORED 10 YR 3/1, DARK GRAY	SHALE
∇ 5.0'	5		
	9.4	SHALE: 10 YR 3/1, VERY DARK GRAY AND 10 YR 5/6, YELLOWISH BROWN, INTERBEDDED, FRACTURED, TRACE SAND	SHALE
	12.5	T.D. 12.5' NOTE: SANDSTONE AT 12.5', AUGER REFUSAL	

SAMPLE INTERVAL	"N" VALUE
1	1.1
NR	
2	5.0
3	
4	
5	2.5

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 11.80 FEET.

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-3 (BH-7)*

DATE DRILLED 9/26/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY WEP
CHECKED BY BJS
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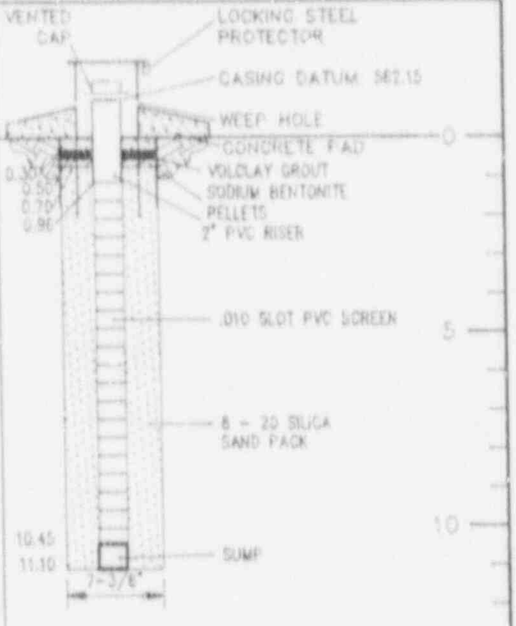
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 560.50				
	0 – 0.6	SILTY LOAM: 10 YR 4/3, BROWN-DARK BROWN, DRY, GRASS ROOTS, MINOR ANGULAR GRAVEL TO 1/4"	SM SW ML	1	2.4	
	0.7	SAND: VF-F GRAIN, OCCASIONALY VERY COARSE SUBANG QUARTZ, WELL GRADED, 7.5 YR 7/4, PINK, DRY		NR		
▽ 4.46' ▽ 5.0'		CLAYEY SILT: 40% CLAY, 60% SILT, NO PLAST., 7.5 YR 4/2, BROWN-DARK BROWN, SLIGHTLY MOIST, HOMOGENEOUS				
	5	SILTY CLAY: 10% SILT, 90% CLAY, ABUNDANT ANGULAR CHERT GRAVEL TO 1 1/4", LOW PLAST., 7.5 YR 5/4, BROWN, SATURATED, SOFT	CL	2	3.0	
	5.8	SILTY SHALE: WEATHERED TO SILTY CLAY, 10% SILT, 90% CLAY, LOW PLAST., 2.5 Y 6/4, LT. YELLOWISH BROWN, SLIGHTLY MOIST, VERY STIFF, HARD AFTER 9.0' AFTER 10.0', 5 Y 7/1, LT. GRAY WITH 10 YR 6/6, BROWNISH YELLOW MOTTLING TO 2.5 Y 4/0 DARK GRAY	SILTY SHALE	3 NR 4 NR	 2.0	
	14.0	SANDSTONE AT 14.0', AUGER REFUSAL				

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 11.10 FEET.

- ▨ CME CONTINUOUS AUGER SAMPLER
- ☒ STANDARD PENETRATION TEST
- ☐ UNDISTURBED SAMPLE
- ▽ WATER TABLE (24 HOURS)
- ▽ WATER TABLE (TIME OF BORING)
- └ LABORATORY TEST LOCATION
- \+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-4 (BH-5)*

DATE DRILLED 9/26/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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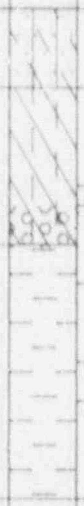
WELL COMPLETION RECORD

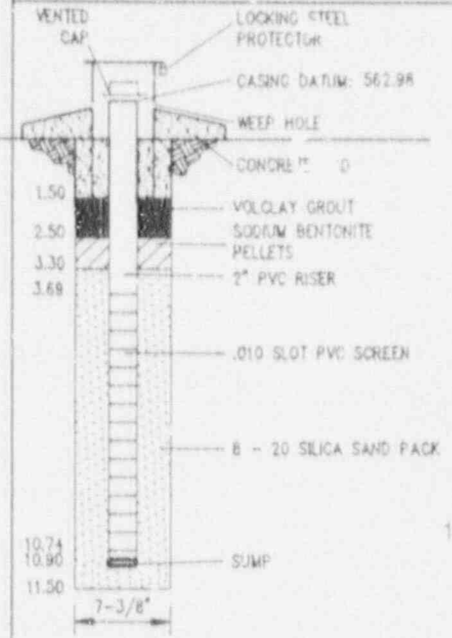
Start: 8:40
Stop: 9:15

GROUND SURFACE: 560.70

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
	0 – 2.0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOT .3 TO 2.0', TRACE OF GRAVEL, CLAYEY LENSE AT 0.9-1.0', GRADATIONAL LOWER BOUNDARY .6'), 60% SILT, 20% CLAY, 20% SAND	OL		1 4.5	
	2.0 – 6.0	SILTY CLAY 2.5 Y 6/4, LIGHT YELLOWISH BROWN, MOTTLED 2.5 YR 4/8, RED, LOW PLAST., FIRM, SLIGHTLY MOIST, 5% CLAY, 35% SILT, GRAVEL LENSE AT 5.0-6.0	CL		2 NR 3 4.0	
	6.0 – 12.5	SHALE: 10 YR 5/8, YELLOWISH BROWN AND 10 YR 3/1, VERY DARK GRAY, FRACTURED AND HIGHLY WEATHERED, CLAY LENSES 2.5 Y 5/6, LIGHT OLIVE BROWN WITH 2.5 Y 7/0, LIGHT GRAY ELIPTICAL LENSES, THICK CLAY SHOWS AT 12.0-12.5'	SHALE		4 NR NR 0.0	
	12.5	T.D. 12.5' NOTE: SANDSTONE AT 12.5'				

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 11.50 FEET.

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-5 (BH-10)*

DATE DRILLED 9/27/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
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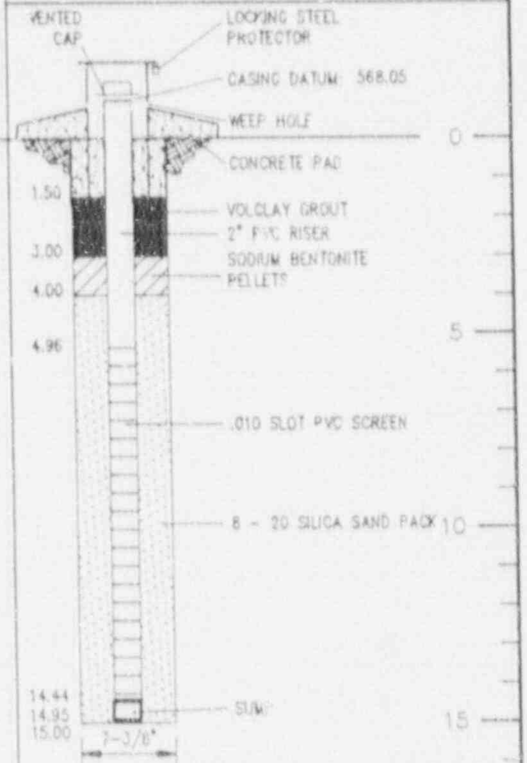
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL		"N" VALUE
		Start: 10:25 Stop: 11:00 GROUND SURFACE: 565.60					
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS, TRACE GRAVEL, 60% SILT 20% CLAY, 20% SAND	OL		1	1.0	
					NR		
	2.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWS BROWN, LOW PLAST., GRAVEL LENSE AT 5.0-6.0', SLIGHTLY MOIST	CL				
	5				2	3.0	
	7.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED WITH .5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDIZED ZONE WITH GROUNDWATER AT 15.2-15.4', OXIDATION ALONG BEDDING PLANES AT 9.0 TO TD.	SHALE		3		
∇ 9.0'					NR		
	10				4	2.3	
					NR		
	15				5	0.8	
	15.8	T.D. 15.8' NOTE: SANDSTONE AT 15.8'					
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 15.00 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
∇	WATER TABLE (24 HOURS)
∇	WATER TABLE (TIME OF BORING)
⌊	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-6 (BH-11)*

DATE DRILLED 9/27/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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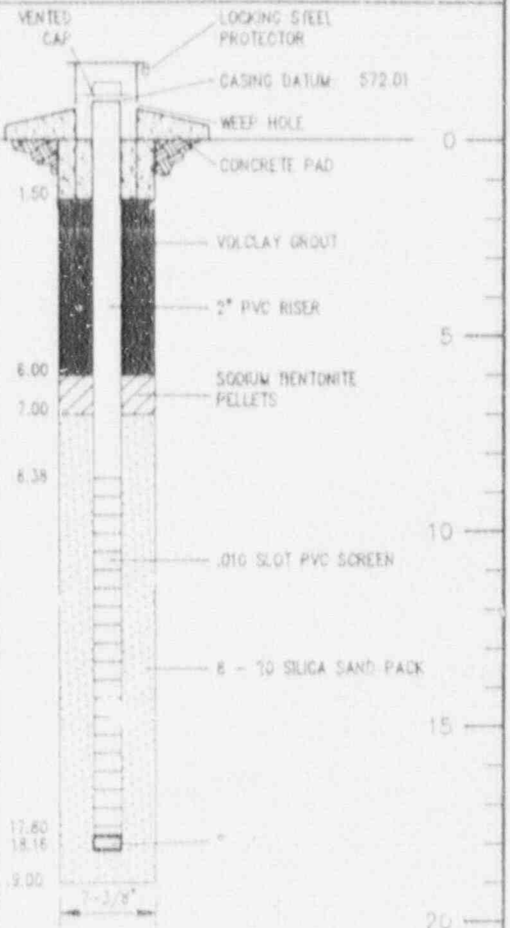
NORMAN, OKLAHOMA 73072
(405) 321-2895

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 569.90					
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS, GRASS, 65% SILT, 20% CLAY, 15% SAND	OL		1	3.0	
	1.5	CLAYEY SILTY GRAVEL: 5 YR 5/8, YELLOWISH RED, SLIGHTLY MOIST, 50% GRAVEL, 30% CLAY, 20% SILT	GC		2		
	3.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, LOW PLAST., SLIGHTLY MOIST, GRAVEL LENSES 5.0–6.0'	CL		NR		
	5				3 NR	0.8	
	8.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTER-BEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDATION ALONG BEDDING PLANES AT 9.0' TO TD.	SHALE				
	10				4 NR	0.5	
	15				5 NR	0.5	
	20	T.D. 20.0' NOTE: SANDSTONE AT 20.0'					
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 19.00 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
═	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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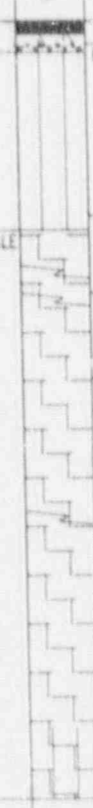
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-7 (BH-14)*

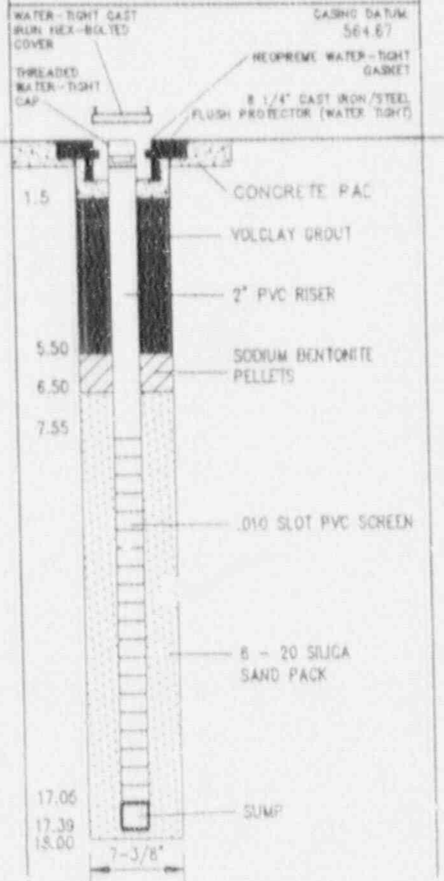
DATE DRILLED 4/27/90
DRILLING METHOD HSA
DRILLED BY PSI/LE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

WELL COMPLETION RECORD



GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE INTERVAL		"N" VALUE
		GROUND SURFACE: 565.00				
	0	ASPHALT DRIVE WITH SILTY SANDY CLAY BASE. LIMESTONE GRAVEL TO 2"	A/C	1	0.6	
	0.8	SILT: 100% SILT, NO PLAST., 2.5 Y 6/6, OLIVE YELLOW, DRY, SOFT, HOMOGENEOUS	ML	NR		
	5 5.2	SHALE: 10% SILT 5 YR 8/6, YELLOWISH RED TO 5.3', 10 YR 6/6, BROWNISH YELLOW AFTER 5.3', SLIGHTLY MOIST, VERY STIFF, FISSLE, HIGHLY INDURATED, PARTIALLY WEATHERED TO SILTY CLAY, FRACTURES AT 6.0' AND 7.0', IRON OXIDE STAINING TO 10 YR 4/6, DARK YELLOWISH BROWN, FRACTURE AT 12.7', INCREASING SILT WITH DEPTH TO 20% SILT	SILTY SHALE	2	4.2	
				3		
				NR		
	10			4	.3	
				5		
				NR		
▽ 15.5'	15			6	3.4	
		AFTER 16.8-18.2', 2.5 Y 4/0, DARK GRAY				
				7		
		VERY HARD AFTER 18.0', FISSILE WITH INTERBEDDED SILTSTONE, 10 YR 7/4, VERY PALE BROWN		NR		
	20	AUGER REFUSAL 20.0', SANDSTONE NO W/L WITH AUGERS IN HOLE NO W/L THROUGH OPEN BOREHOLE AFTER DRILLING (COLLAPSED TO 18.9')				
	25					
	30					
	35					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 18.00 FEET.

DEPTH (FEET)

▨	CME CONTINUOUS AUGER SAMPLER	▽	WATER TABLE (TIME OF BORING)
☒	STANDARD PENETRATION TEST	L	LABORATORY TEST LOCATION
☐	UNDISTURBED SAMPLE	+	PENETROMETER (TONS/SQ. FT.)
▽	WATER TABLE (24 HOURS)		

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ENVIRONMENTAL CONSULTANTS
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NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\90067*

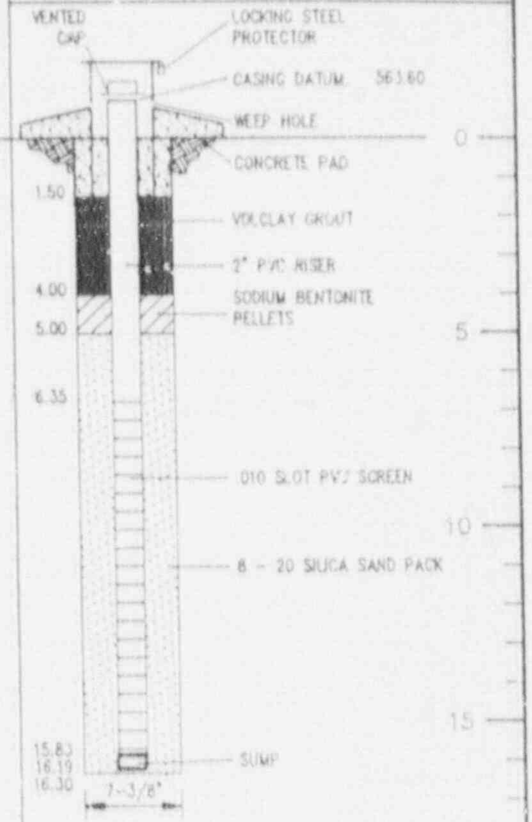
BORING NUMBER *MW-8 (BH-2)*

DATE DRILLED 9/27/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start 9.25 Stop 8.45 GROUND SURFACE 562.10					
	0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, GRAVEL AT 0.5-1.0', 65% SILT, 20% SAND, 15% CLAY	CL		1	0.5	
	1.0	GRAVELLY SILTY CLAY: SOFT, MOIST, WET AT 7.0', 10 YR 5/4, YELLOWISH BROWN (5.0-5.8'), 5 YR 5/8, YELLOWISH RED (5.8-6.3'), 5 YR 5/6, YELLOWISH RED (6.3-7.7'), 10 YR 3/2, VERY DARK GRAYISH BROWN (7.7-8.5'), 5 YR 6/8, REDDISH YELLOW (10.0-10.8'), GRADATIONAL LOWER BOUNDARY (1.5' BOUNDARY) 50% CLAY 30% GRAVEL, 20% SILT	CL		NR		
	5				2	4.0	
▽ 7.0'					3		
					NR		
	10				4	5.0	
	10.7	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE		5		
					6		
	15				7	5.0	
	17.0	T.D. 17.0' NOTE: SANDSTONE AT 17.0'					
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 16.30 FEET.

▨ CME CONTINUOUS AUGER SAMPLER	▽ WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	⌊ LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
▽ WATER TABLE (24 HOURS)	

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& ASSOCIATES, INC.
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NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\ 90067*

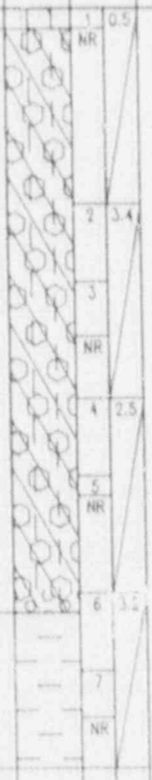
BORING NUMBER *MW-9 (BH-8)*

DATE DRILLED 9/28/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

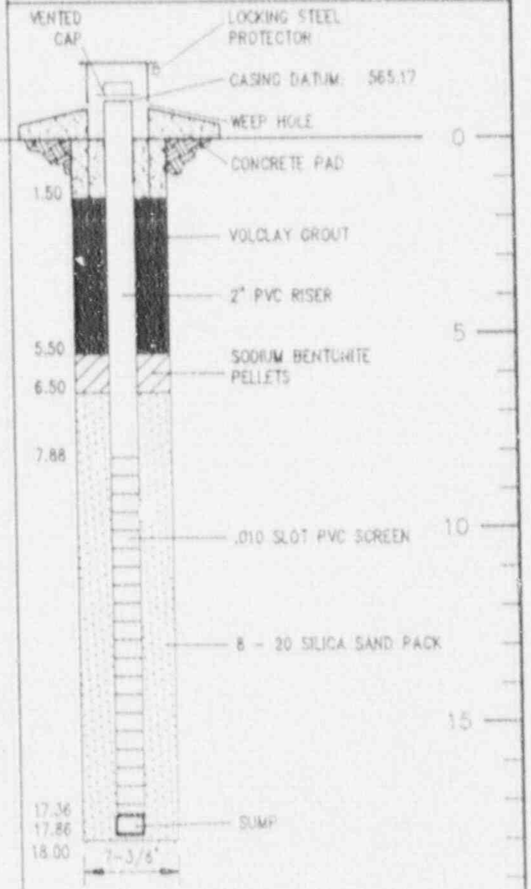
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		GROUND SURFACE: 562.80	
	0.5	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, ROOTLETS, MOIST, 55% SILT, 30% CLAY, 15% SAND	OL
		GRAVELLY SILTY CLAY: SOFT, MOIST, HIGH PLAST., 10 YR 3/3, DARK BROWN (5.0-5.6'), 5 YR 5/6, YELLOWISH RED (5.6-6.6') AND 10 YR 3/3 (6.6-7.5'), 5 YR 5/6 (7.5-15.0').	CH
∇ 9.0'			
		GRAVEL LENSE AT 15.0-15.5'	
	15.5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE
	19.5	T.D. 19.5'	
		NOTE: SANDSTONE AT 19.5'	

GRAPHIC LOG | SAMPLE INTERVAL | "N" VALUE



WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 18.00 FEET.

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

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NORMAN, OKLAHOMA 73072
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JOB NAME/NUMBER **SEQUOYAH\ 90067**
BORING NUMBER **MW-10 (BH-9)**
DATE DRILLED 9/28/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

WELL COMPLETION RECORD

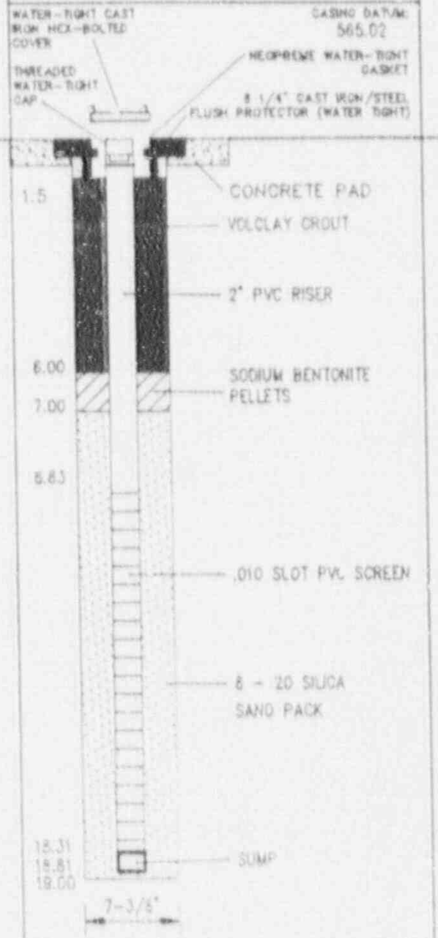
GROUND SURFACE: 565.28

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	SILTY SANDY CLAY BASE WITH ASPHALT PAVEMENT COVER		1	1.2	
	0.9	SANDY SILTY CLAY: 10% SAND, 30% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM MINOR GRAVEL TO 1/2"	CL	NR		
▽5.58' ▽5.6'	5			2	5.0	
	7.0	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1-8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE, SATURATED 10 YR 4/3, DARK BROWN TO BROWN, AFTER 8.9' MOIST 10 YR 4/1, 10.0-10.8', ABUNDANT ANGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0' BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	CL	3 4 5 NR 6	 1.4 5.0	
	16.	SHALE: [illegible], 10 YR 5/2, GRAYISH BROWN TO 10 YR 4/1, BLACK, INTERBEDDED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SILTY SHALE	7 8 9		
	21.0	AUGER REFUSAL 21.0', SANDSTONE				

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35

GRAPHIC LOG

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 19.00 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-11 (BH-22)*

DATE DRILLED 9/24/90

DRILLING METHOD HAS

DRILLED BY PSI

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR

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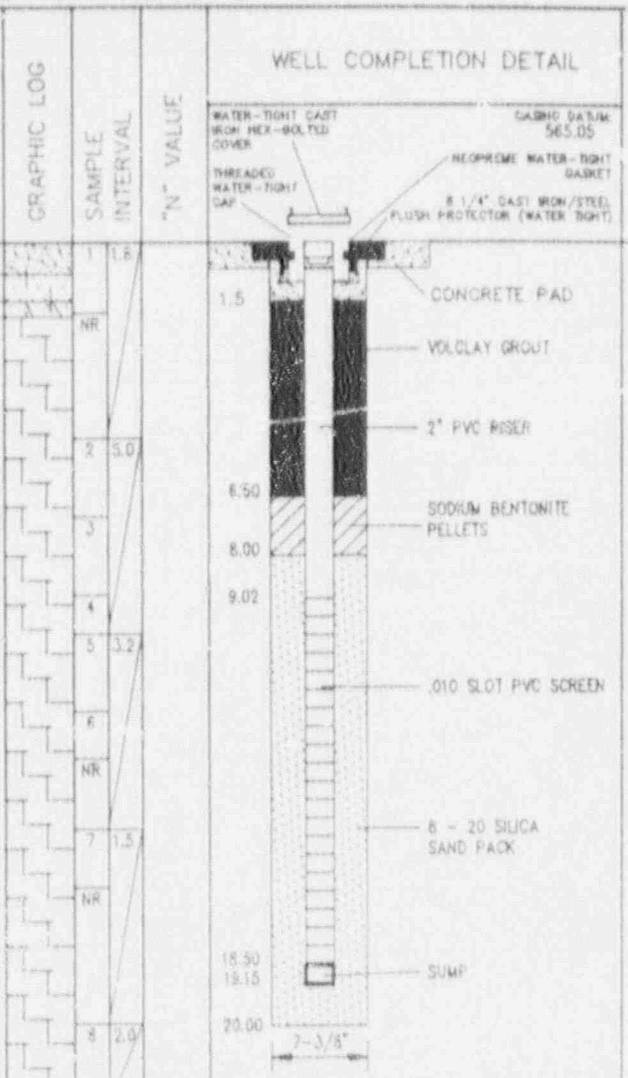
WELL COMPLETION RECORD

GROUND SURFACE: 565.32

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.8	SILTY SAND: VF-VC GRAIN, SUBANG QRTZ SAND BACKFILL, DRY, 10 YR 6/2, LT. BROWISH GRAY	SM
	1.5	SILTY SANDY CLAY: VF-VC GRAIN SAND, ABUNDANT ANGULAR GRAVEL, 10 YR 5/6, YELLOWISH BROWN TO 10 YR 7/2, LT. GRAY, VERY MOIST SOFT	CL
	1.9	SILTY SHALE: WEATHERED TO A SILTY CLAY, 10% SILT, 90% CLAY, 7.5 YR 5/8, STRONG BROWN, LOW PLAST., SLIGHTLY MOIST, FISSILE, VERY STIFF, AFTER 1.9', 10 YR 6/6, BROWNISH YELLOW TO 6/2, LT. BROWNISH GRAY, LESS INDURATED, 8.8-9.0', 2.5 Y 7/0, LT. GRAY AFTER 9.0', LESS INDURATED 5 Y 6/3, PALE OLIVE TO 2.5 Y 5/0, GRAY, FISSILE, SM. HARD AFTER 10.0', HIGHLY FRACTURED AFTER 16.4', PREDOMINANTLY 5Y 4/1, DARK GRAY	SHALE
	22.0	AUGER REFUSAL 22.0', SANDSTONE	



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 20.00 FEET.

▭	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-12 (BH-4)**

DATE DRILLED 9/28/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

WELL COMPLETION RECORD

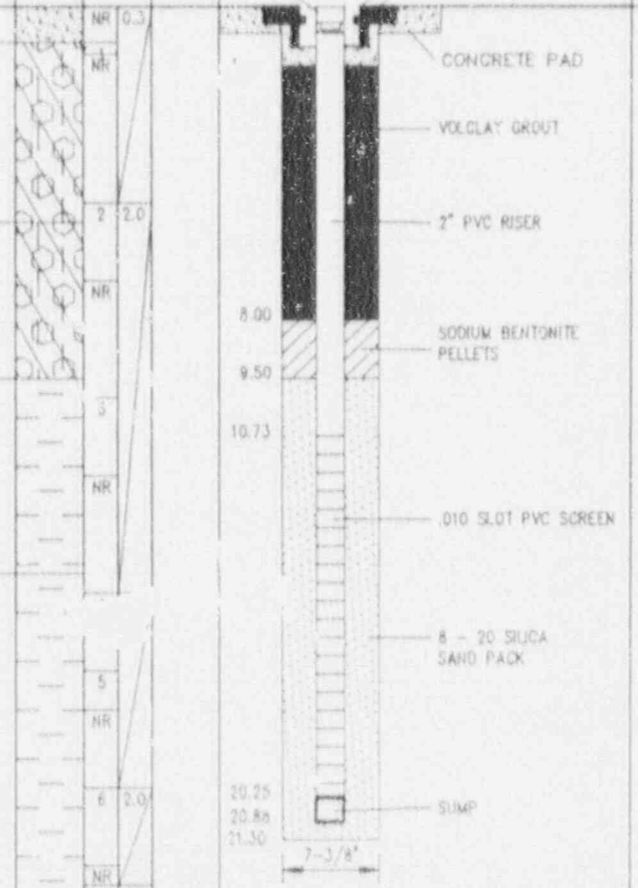
Start: 9:00
Stop: 9:30

GROUND SURFACE: 565.89

GEOLOGIC UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.9	GRAVELLY SILTY CLAY: 10 YR 3/3, DARK BROWN, MED. PLAST., SOFT-[illegible]M, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL	CL
	5.5	GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, LOW PLAST., SOFT, SLIGHTLY MOIST, 40% CLAY, 30% SILT, 30% GRAVEL	CL
▽ 11.0'	9.5	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE YELLOW, MOIST, WEATHERED, FRACTURED, SOFT, SILTY	SHALE
	14.5	SHALE: 2.5 Y 4/2, DARAK GRAYISH [illegible] WET, FRACTURED, OXIDATION ALON[illegible] PLANES DUE TO GROUNDWATER MO[illegible] THINNLY BEDDED WITH 2.5 Y 6/6, OL[illegible] MODERATELY HARD, SILTY	SHALE
	22.8	T.D. 22.8'	

NOTE: SANDSTONE AT 22.8'

GRAPHIC LOG | SAMPLE INTERVAL | "N" VALUE | WELL COMPLETION DETAIL | DEPTH (FEET)



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 21.30 FEET.

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***MW-13 (BH-16)***

DATE DRILLED 9/29/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
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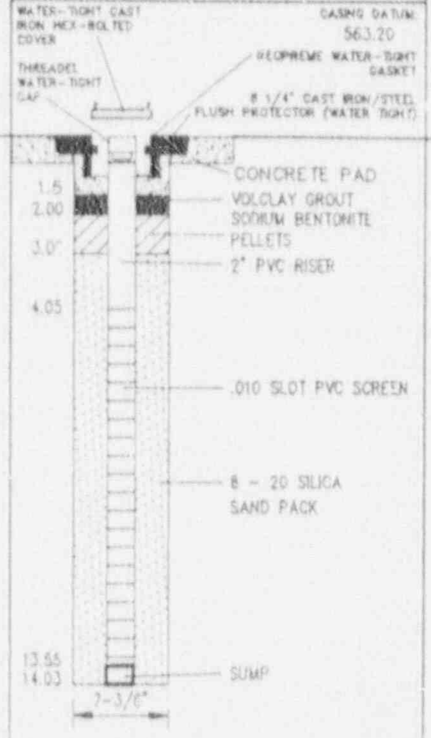
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 563.44				
	0	CONCRETE		NR	1.4	
	0.8	GRAVELLY SANDY CLAY: 10 YR 5/6, YELLOWISH BROWN, LOW PLAST., FIRM, SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL	1		
				NR		
	5	SILTY CLAY: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 35% SILT, 5% GRAVEL	CL	2	3.5	
▽ 6.0'	5.6	GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, WET, MED. PLAST., FIRM, 40% CLAY 30% GRAVEL, 10% SILT	CL	3		
				NR		
	9.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE BROWN, WEATHERED, FRACTURED	SHALE			
	10			4	2.0	
				NR		
	14.7	T.D. 14.7'				
		NOTE: SANDSTONE AT 14.7'				

GRAPHIC LOG

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 14.03 FEET.

▨ CME CONTINUOUS AUGER SAMPLER	WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
WATER TABLE (24 HOURS)	

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

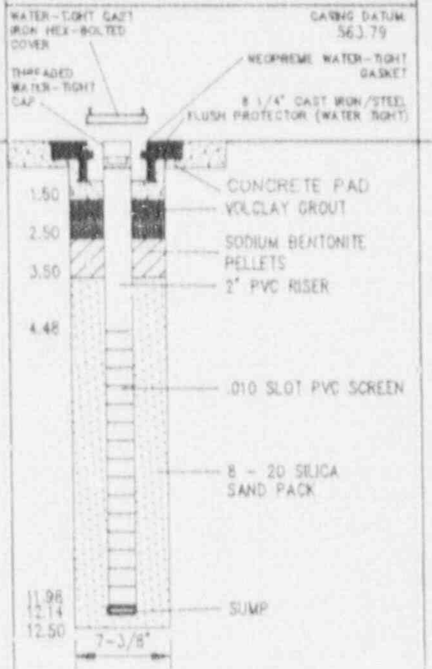
BORING NUMBER *MW-14 (BH-17)*

DATE DRILLED 9/29/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start 2:45 Stop 3:15					
		GROUND SURFACE: 564.17					
	0	CONCRETE.			NR	1.5	
	0.7	GRAVELLY SILTY CLAY: 5 YR 5/8, YELLOWISH RED, SLIGHTLY MOIST, MED. PLAST., FIRM, 60% CLAY, 20% SILT, 20% GRAVEL, SAND FILL 0.7-1.0'	CL		1		
					NR		
	4.8	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, VERY HIGHLY WEATHERED, FRACTURED, WEATHERED TO A LESSER DEGREE AT 8.0', SILTY	SHALE		2	4.5	
					3		
					4		
					NR		
	10				5	3.5	
	13.5						
	15	NOTE: SANDSTONE AT 13.5'					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 12.50 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
⩧	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-15 (BH-18)**

DATE DRILLED 9/26/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
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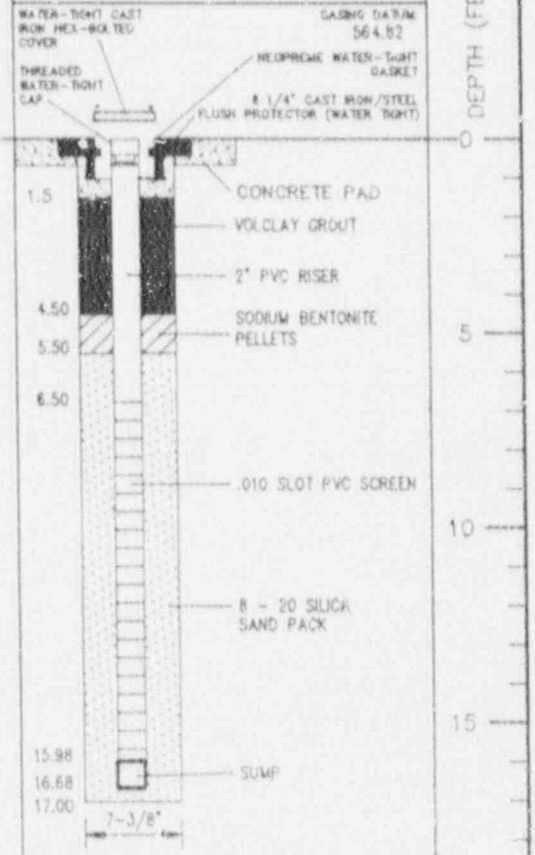
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		Start: 9:15 Stop: 9:35 GROUND SURFACE: 565.25				
	0	CONCRETE		NR	0.0	
	1.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, FRACTURED, SILTY, MOIST, (SAND FILL 1.0-1.5')	SHALE	1 NR		
	5			2	2.0	
	6.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, HIGHLY WEATHERED, FRACTURED, SLIGHTLY MOIST, SILTY, WET AT 10.5', OXIDATION ALONG BEDDING PLANES	SHALE	NR		
▽ 10.5'	.0			3 NR	1.0	
	15			4 5	3.5	
	18.5	T.D. 18.5'				
	20	NOTE: SANDSTONE AT 18.5'				
	25					
	30					
	35					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEP ATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 17.00 FEET.

▭	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-16 (BH-19)*

DATE DRILLED 9/30/90

DRILLING METHOD HSA

DRILLED BY PSI/SE

LOGGED BY JMB

CHECKED BY BJS

DRAWN BY: SAR PAGE 1 OF 1

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WELL COMPLETION RECORD

GEOLOG. UNIT | DEPTH (FEET) | LITHOLOGIC DESCRIPTION | UNIFIED SOIL CLASSIFICATION | GRAPHIC LOG | SAMPLE INTERVAL | "N" VALUE | WELL COMPLETION DETAIL | DEPTH (FEET)

Start: 11:15
Stop: 11:45

GROUND SURFACE: 565.29

0 — CONCRETE

1.0 — SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, AND 2.5 Y 6/8, OLIVE YELLOW, OXIDIZED BEDDING PLANES, CLAY LENSES, 10 YR 7/8, YELLOW AND 2.5 Y 7/0, LIGHT GRAY AT 2.3–2.6', AND 3.5–3.9' — SHALE

5 — LENSES 10 YR 7/6, DARK RED, DUE TO PRECIPITATION OF FE (HEMATITE)

9.0 (water table)

10

15

17.5

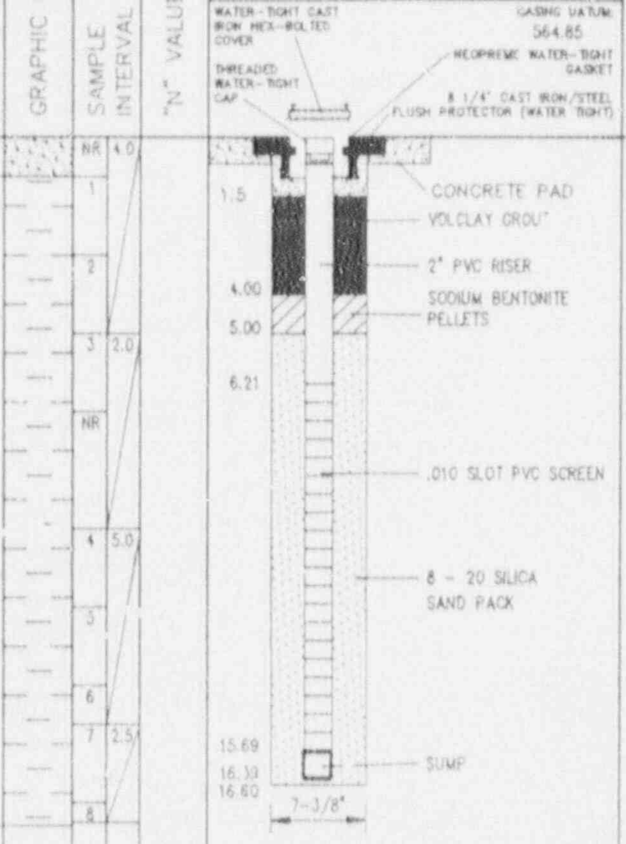
T.D. 18.5'

20 — NOTE: SANDSTONE AT 18.5'

25

30

35



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 16.60 FEET.

▨	CME CONTINUOUS AUGER SAMPLER	≡	WATER TABLE (TIME OF BORING)
☒	STANDARD PENETRATION TEST	└	LABORATORY TEST LOCATION
☐	UNDISTURBED SAMPLE	+	PENETROMETER (TONS/SQ. FT.)
≡	WATER TABLE (24 HOURS)		

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW 17 (BH-20)*

DATE DRILLED 9/30/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
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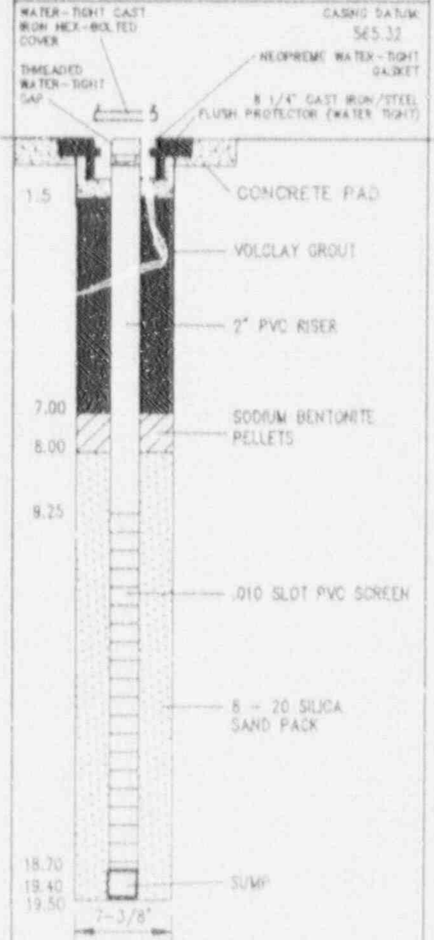
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start: Stop: GROUND SURFACE: 565.65					
	0	ASPHALT PAVEMENT WITH SILTY SANDY CLAY BASE	A/C		1	1.2	
	0.9	SANDY SILTY CLAY: 10% SAND, 40% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM	CL		NR		
▽5.58'	5	MINOR GRAVEL TO 1/2"			2	5.0	
	7.0	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1-8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE SATURATED, 10 YR 4/3, DARK BROWN TO BROWN AFTER 8.9', MOIST, 10 YR 4/1, 10.0-10.8', ABUNDANT ANGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0', BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	CL		3		
					4		
	10				5	1.4	
					NR		
	15				6	5.0	
	16.4	SHALE: [illegible]0% SILT, 10 YR 5/2, GRAYISH BROWN TO 1[illegible]2/1, BLACK, VERY MOIST, MOD. HARD, FISSILE, INTERBEDDED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SILTY SHALE		7		
					8		
	20				9		
	21.0	AUGER REFUSAL 21.0', SANDSTONE					
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 19.50 FEET.

CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS, SQ. FT.)

ROBERTS/SCHORNICK
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(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-18 (BH-3)*

DATE DRILLED 9/30/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

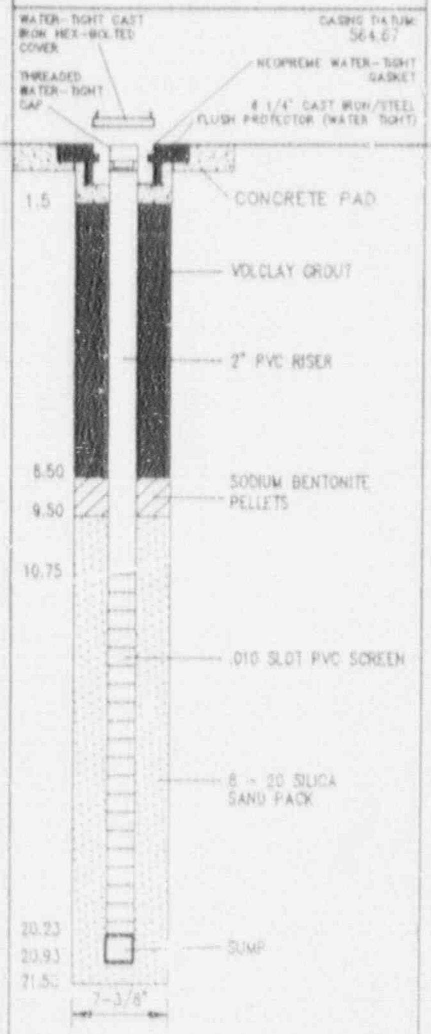
Start 9:05
Stop: 9:45

GROUND SURFACE 565.05

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	CONCRETE	
	0.7	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 40% SILT	CL
	2.2	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML
	6.5	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, PEBBLES, 60% CLAY, 40% SILT	CL
	8.0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML
	10.5	SILTY CLAY: 7.5 YR 4/4, DARK BROWN, MOIST, GRAY LENSES, HIGH PLAST., SOFT, 70% CLAY 30% SILT	CH
	12.0	SILTY CLAY: 10 YR 5/4, YELLOWISH BROWN WITH 2.5 YR 4/8, RED, NODULES, MED. PLAST., SLIGHTLY MOIST, FIRM, 70% CLAY, 30% SILT	CL
	14.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, GRAY CLAY LENSES, SILTY	SHALE
▽ 17.0'	16.0	SHALE: 2.5 Y 3/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SILTY	SHALE
	23.0	T.D. 23.0' AUGER REFUSEL AT 23.0', SANDSTONE	

SAMPLE	INTERVAL	"N" VALUE
NR	3.0	
1		
2		
NR		
3	3.5	
4		
NR		
5	4.0	
6		
NR		
7	4.0	
8		
NR		
9	0.0	
10		

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 21.50 FEET.

▭	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-19 (BH-21)*

DATE DRILLED 10/1/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

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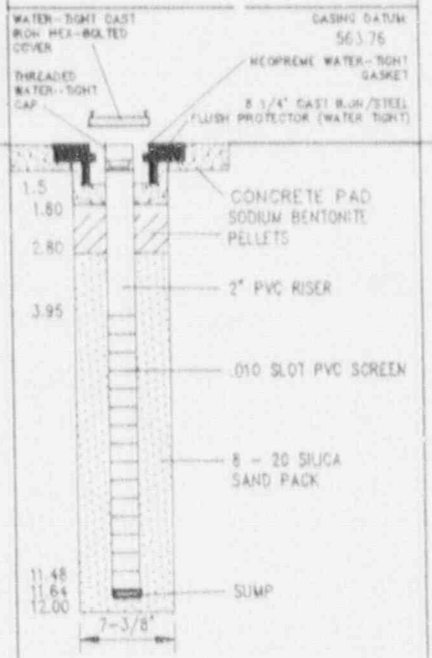
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 563.98

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
	0 0.3	ASPHALT			NR	1.5	
		GRAVELLY SILTY CLAY: LOW-MED PLAST., SOFT-FIRM, SILTY FROM 0.3–0.8' 7.5 YR 3/0, VERY DARK GRAY 0.3–0.8' 7.5 YR 5/6, STRONG BROWN 0.8–6.5', 55% CLAY, 25% SILT, 20% GRAVEL	CL		1		
					NR		
	5				2	4.0	
	6.5	SILTY CLAY: 10 YR 6/8, BROWNISH YELLOW AND 7.5 YR 7/0, LIGHT GRAY, HIGH PLAST., SLIGHTLY MOIST, FRIM TO HARD, TRACE PEBBLES IN GRAY ZONES, 70% CLAY, 30% SILT	CH		3		
▽ 8.0'	8.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY	SHALE		NR		
	10				4	3.5	
					5		
	13.5	T.D. 13.5'					
	15	NOTE: AUGER REFUSAL AT 13.5' (SANDSTONE)					
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 12.00 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-20 (BH-13)*

DATE DRILLED 10/2/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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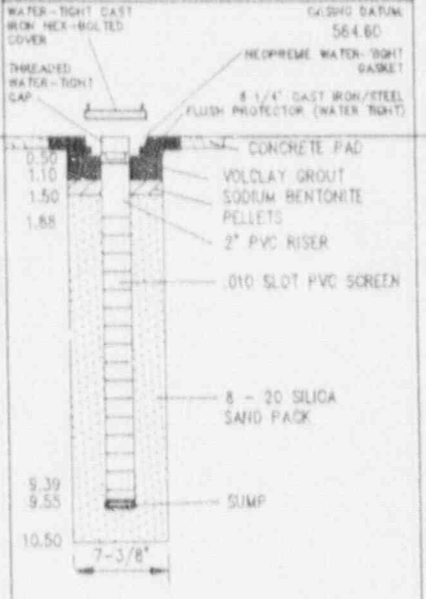
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE	DEPTH (FEET)
		GROUND SURFACE: 564.93						
	0 0.5	ASPHALT			NR	2.0		0
		GRAVELLY SANDY CLAY: SLIGHTLY MOIST, FIRM, MED. PLAST., COLOR BLACK BY ASPHALT 0.5-0.7', 10 YR 5/6, YELLOWISH BROWN, 0.7-1.2', 7.5 YR 5/8, STRONG BROWN, 1.2-5.0', GRADATIONAL BOUNDARY	CL		1			
					NR			
	5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, CLAY LENSE 2.5 Y 7/0, LIGHT GRAY AT 5.0-7.0', VERY HIGHLY WEATHERED TO 7.0', FRACTURED, SILTY, OXIDIZED ZONES, DARK GRAYISH BROWN BECOMES THE DOMINANT COLOR FROM 10.0-12.0'	SHALE		2	5.0		5
					3			
					4			
	10				5	2.0		10
	12.0	T.D. 12.0' NOTE: AUGER REFUSAL AT 12.0' (SANDSTONE)						
	15							15
	20							20
	25							25
	30							30
	35							35

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 1°.50 FEET.

▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUCYAH\ 90067*

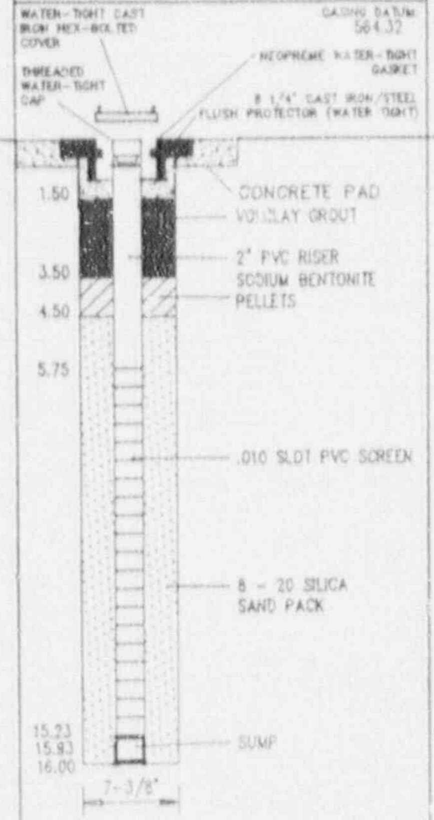
BORING NUMBER *MW-21 (BH-15)*

DATE DRILLED 10/2/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

EOLOG. NIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		Start 4:30 Stop: 5:00 GROUND SURFACE: 564.76				
	0	CONCRETE		NR	0.5	
	0.6	SILTY CLAY: 7.5 YR 4/6, STRONG BROWN, MED. PLAST., SOFT, SLIGHTLY MOIST, TRACE SAND AND GRAVEL, 55% CLAY, 45% SILT, 5 YR 5/6, YELLOWISH RED FROM 5.0-6.0'	CL	1 NR		
	5			2	5.0	
▽ 6.0'	6.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, VERY HIGHLY WEATHERED, CLAY LENSES 2.5 Y 7/0, LIGHT GRAY, WET, SILTY	SHALE	3		
	8.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, OXIDIZED BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FE ENRICHED LAYER AT 17.5-17.8', LIMONITE AT 18.0-18.1'	SHALE	4 5 6 7 8 9	 5.0 3.3 	
	18.3	T.D. 18.3'				
	20	NOTE: AUGER REFUSAL AT 18.5', SANDSTONE				
	35					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 16.00 FEET.

▨ CME CONTINUOUS AUGER SAMPLER	▽ WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	└ LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
▽ WATER TABLE (24 HOURS)	

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

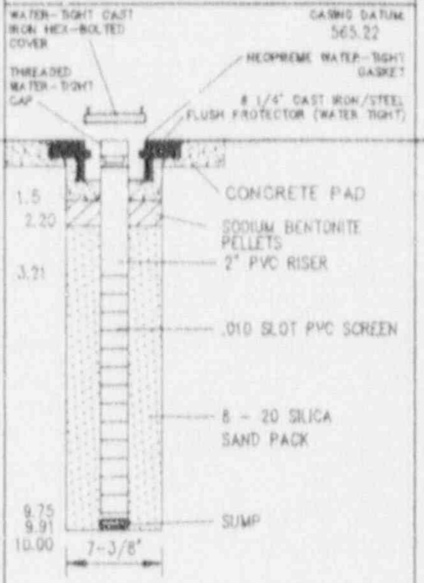
BORING NUMBER *MW-22 (BH-23)*

DATE DRILLED 10/1/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCR- 'ON	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start: 4:45 Stop: 5:00 GROUND SURFACE: 565.51					
	0	CONCRETE			NR	0.5	
	1.0	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN, SLIGHTLY MOIST, VERY HIGHLY WEATHERED, SILTY	SHALE		1 NR		
	5				2 3	5.0	
	8.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, 2.5 Y 3/2, VERY DARK GRAYISH BROWN, FRACTURED, WEATHERED, CLAY LENSES 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 8/1, WHITE	SHALE		4		
▽ 10.0'	10				5	2.0	
	12.0	T.D. 12.0' NOTE: SANDSTONE AT 12.0'					
	15						
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 10.00 FEET.

▧ CME CONTINUOUS AUGER SAMPLER	▽ WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	└ LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	┼ PENETROMETER (TONS/SQ. FT.)
▽ WATER TABLE (24 HOURS)	

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

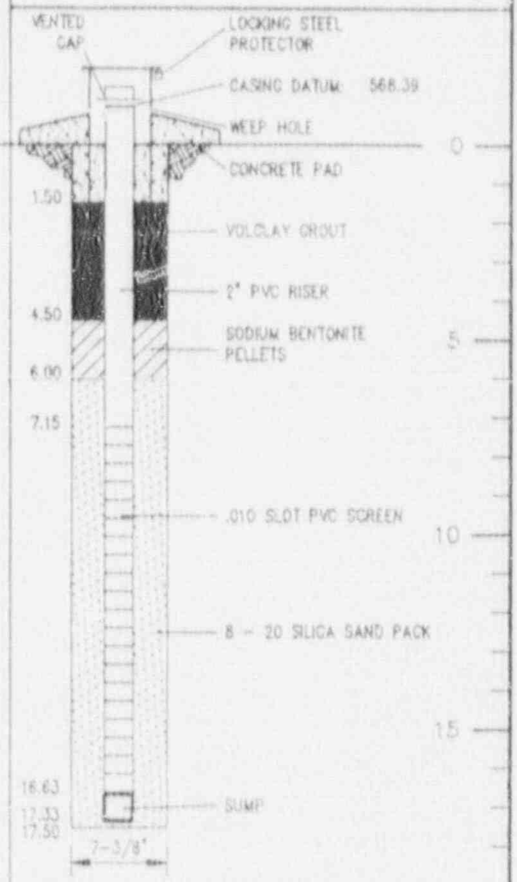
BORING NUMBER *MW-23 (BH-12)*

DATE DRILLED 9/30/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE INTERVAL		"N" VALUE
		GROUND SURFACE: 565.70				
	0	GRAVELLY SANDY CLAY: 5 YR 5/8, YELLOWISH RED AND 2.5 YR 4/8, RED, SLIGHTLY MOIST, LOW PLAST., 40% CLAY, 30% SAND, 30% GRAVEL	CL	1	2.0	
				NR		
	5.2	SILTY CLAY: 5 Y 4/1, DARK GRAY GRADING TO 5 Y 7/1, LIGHT GRAY AT 5.4', HIGH PLAST., SLIGHTLY MOIST, HARD, 75% CLAY, 25% SILT	CH	2	2.0	
	6.7	SHALE: 5 Y 4/2, OLIVE GRAY AND 10 YR 5/8, YELLOWISH BROWN, FRACTURED, WEATHERED, THINNLY BEDDED, SILTY, DRY TO SLIGHTLY MOIST, SILTSTONE LENSE 10 YR 3/1, VERY DARK GRAY 10.0-10.2', SHALE BECOMES HARD AT 18.0' AND IS 2.5 Y 2/0, BLACK	SHALE	NR		
	10			3	5.0	
				4		
				5		
	15			6	3.0	
				7		
				NR		
	19.0	T.D. 19.0' AUGER REFUSAL AT 19.0', SANDSTONE				

WELL COMPLETI N DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 17.50 FEET.

▭	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
▭	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
═	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-24 (BH-26)*

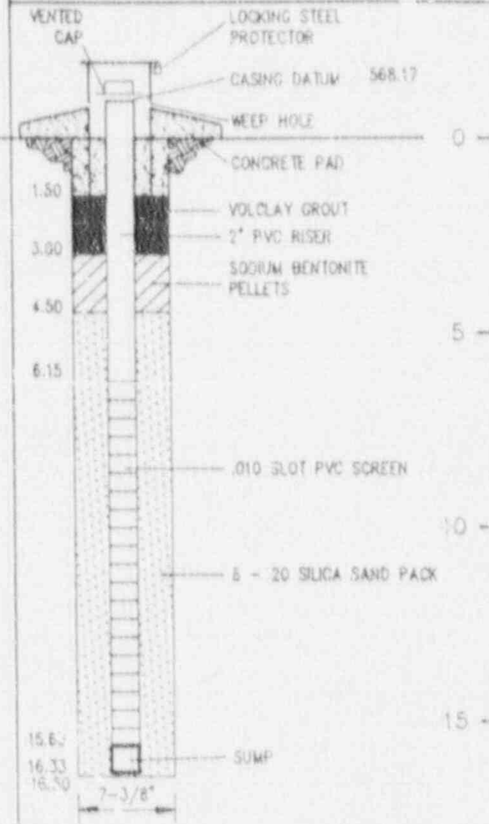
DATE DRILLED 10/3/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		Start 3:05 Stop: 3:38				
		GROUND SURFACE: 565.80				
	0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT SLIGHLTY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 Y 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3-5.6', 65% CLAY, 35% SILT	CH		1 1.0 NR	
	5.6	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 7/, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 9.5'	SHALE		2 3.0	
	7.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES	SHALE		3 NR 4 2.0 NR 5 3.0 6	
▽ 15.0'						
	18.0	T.D. 18.0' AUGER REFUSAL AT 18.0', SANDSTONE				

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 16.50 FEET

▨	CME CONTINUOUS AUGER SAMPLER	▽	WATER TABLE (TIME OF BORING)
☒	STANDARD PENETRATION TEST	└	LABORATORY TEST LOCATION
☐	UNDISTURBED SAMPLE	+	PENETROMETER (TONS/SQ. FT.)
▼	WATER TABLE (24 HOURS)		

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-25 (BH-27)*

DATE DRILLED 10/3/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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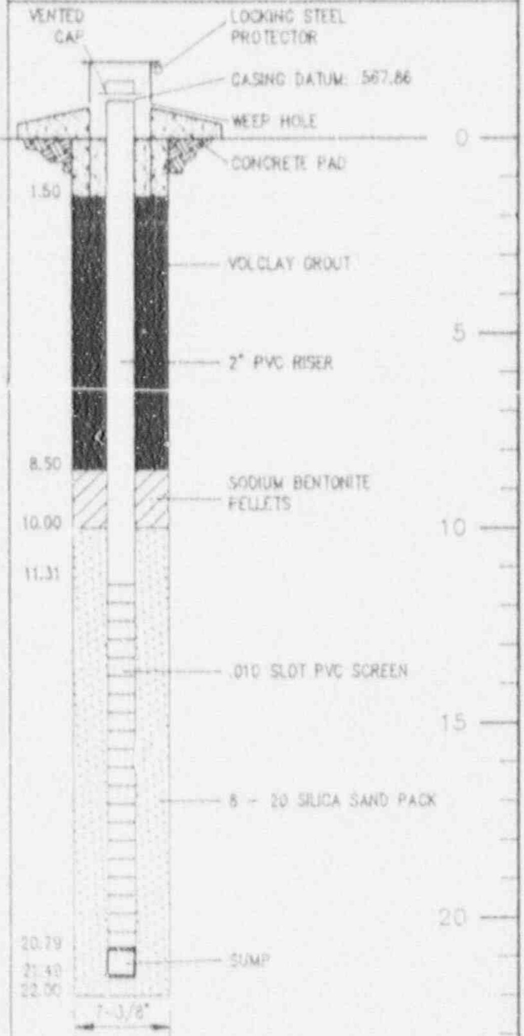
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start Stop: GROUND SURFACE: 565.80					
	0	GRAVELLY SANDY CLAY: 5 YR 5/8, YELLOWSH RED AND 2.5 YR 4/3, RED, LOW PLAST., DRY TO SLIGHLTY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL		1	2.0	
	1.8	SILTY CLAY: 2.5 Y 6/6, OLIVE YELLOW, MOTTLED 2.5 Y 6/0, GRAY, HIGH PLAST., HARD, SLIGHTLY MOIST, 70% CLAY, 30% SILT	CH		NR		
	5				2	4.0	
					3		
	8.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SLIGHTLY MOIST, SILTY, FE STAINING AT 10.4', SHALE BECOMES HARD AT 19.5', 2.5 Y 2/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW, SILTY	SHALE		NR		
	10				4	4.0	
					5		
					NR		
	15				6	4.0	
					7		
					NR		
	20				NR	0.0	
	24.0	T.D. 24.0' AUGER REFUSAL AT 24.0', SANDSTONE					
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 22.00 FEET.

- ▨ CME CONTINUOUS AUGER SAMPLER
- ☒ STANDARD PENETRATION TEST
- ☐ UNDISTURBED SAMPLE
- WATER TABLE (24 HOURS)
- WATER TABLE (TIME OF BORING)
- └ LABORATORY TEST LOCATION
- + PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-26 (BH-28)*

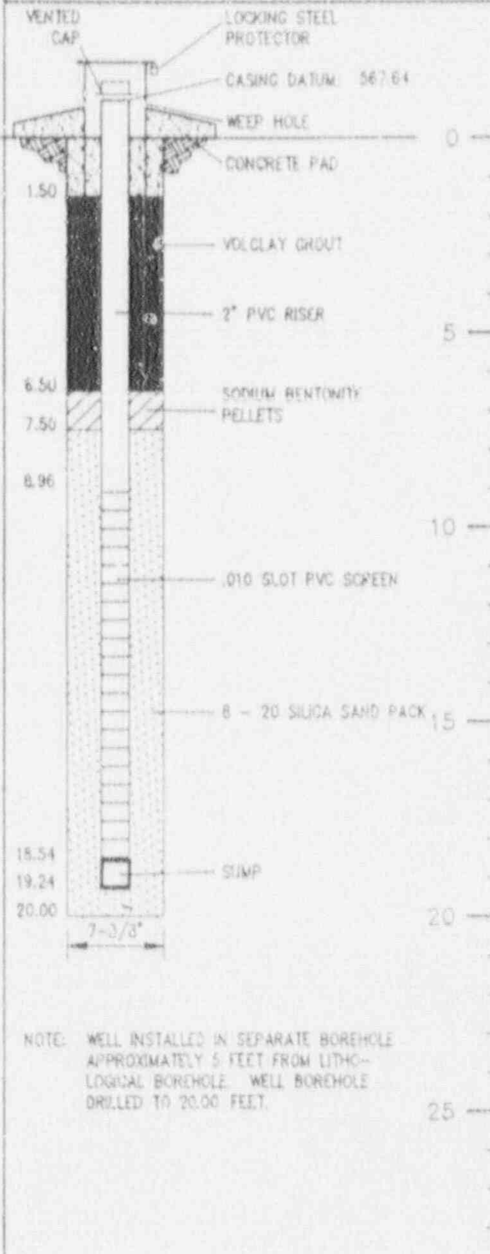
DATE DRILLED 10/3/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 565.20

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL		"N" VALUE
	0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT, SLIGHTLY MOIST,55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 Y 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3-5.0', 65% CLAY, 35% SILT	CH		1 NR	1.0	
	5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 7/1, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 9.5'	SHALE		2 3 4	5.0	
	10				5 6 NR	3.0	
	15				7 8	5.0	
	18.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES	SHALE		9 10	2.0	
	22.0	AUGER REFUSAL AT 22.0', SANDSTONE					
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 20.00 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-27 (BH-29)*

DATE DRILLED 10/3/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
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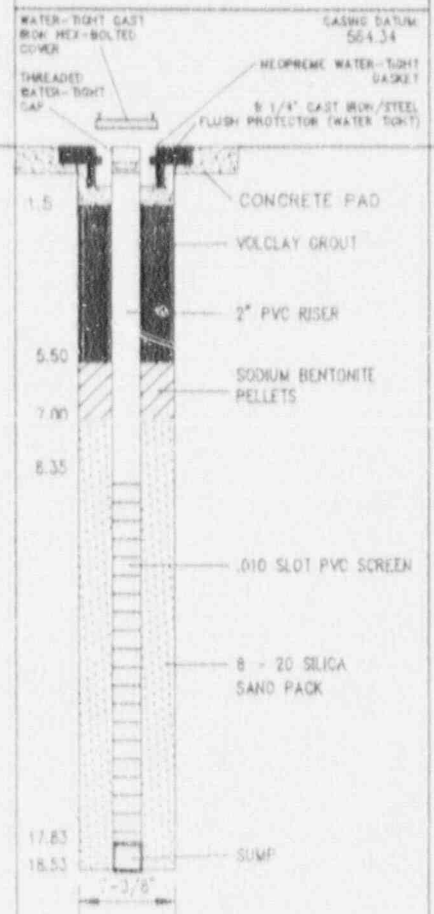
WELL COMPLETION RECORD

GROUND SURFACE: 564.66

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0.5	ASPHALT		NR	0.5	
		GRAVELLY SANDY CLAY: 7.5 YR 5/8, STRONG BROWN, LOW PLAST., FIRM, DRY TO SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL	1		
				NR		
				2	4.0	
	6.2	SANDY CLAYEY SILT: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 5/4, LIGHT OLIVE BROWN (6.4-6.6'), DRY TO SLIGHTLY MOIST, 50% SILT, 30% SAND, 20% CLAY	ML	3		
	8.2	SILTY CLAY: 2.5 YR 4/8, RED, MOTTLED WITH 2.5 Y 5/4, LIGHT OLIVE BROWN WITH LIGHT OLIVE COLOR BECOMING DOMINANT AT 10.5', HIGH PLAST., HARD, 70% CLAY, 30% SILT	CH	NR		
				4	5.0	
				5		
	12.7	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY, GRAY CLAY LENSES AT 15.5'	SHALE	6		
				7	5.0	
				8		
				NR		
	19.5	T.D. 19.5' AUGER REFUSAL AT 19.5' (SANDSTONE)				

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 18.53 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-28 (BH-33)*

DATE DRILLED 10/4/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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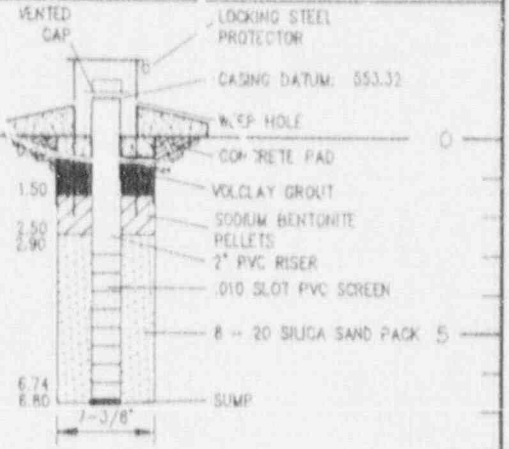
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		Start: 5:12 Stop: 5:30				
		GROUND SURFACE: 550.60				
	0	CLAYEY SILT: 10 YR 3/4, DARK YELLOWISH BROWN, LOW PLAST., SLIGHTLY MOIST, SOFT, 65% SILT, 35% CLAY, ROOTLETS 0.0-1.0'	OL		1 3.0	
	2.0	SILTY CLAY: 2.5 Y 5/2, GRAYISH BROWN, SLIGHTLY MOIST TO WET, HIGH PLAST., GRAVEL AT 5.5-6.0', FE NODULES 5.0-6.0', 65% CLAY, 35% SILT	CH		2 NR 3 2.5 4	
	7.5	T.D. 7.5'				
	10	AUGER REFUSAL AT 7.5' (SANDSTONE)				
	15					
	20					
	25					
	30					
	35					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 6.80 FEET.

- ▧ CME CONTINUOUS AUGER SAMPLER
- ☒ STANDARD PENETRATION TEST
- ☐ UNDISTURBED SAMPLE
- WATER TABLE (24 HOURS)
- WATER TABLE (TIME OF BORING)
- LABORATORY TEST LOCATION
- \+ PENETROMETER (TONS/SQ. FT.)

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NORMAN, OKLAHOMA 7??72
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-29 (BH-34)*

DATE DRILLED 10/4/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

1

IMAGE EVALUATION TEST TARGET (MT-3)

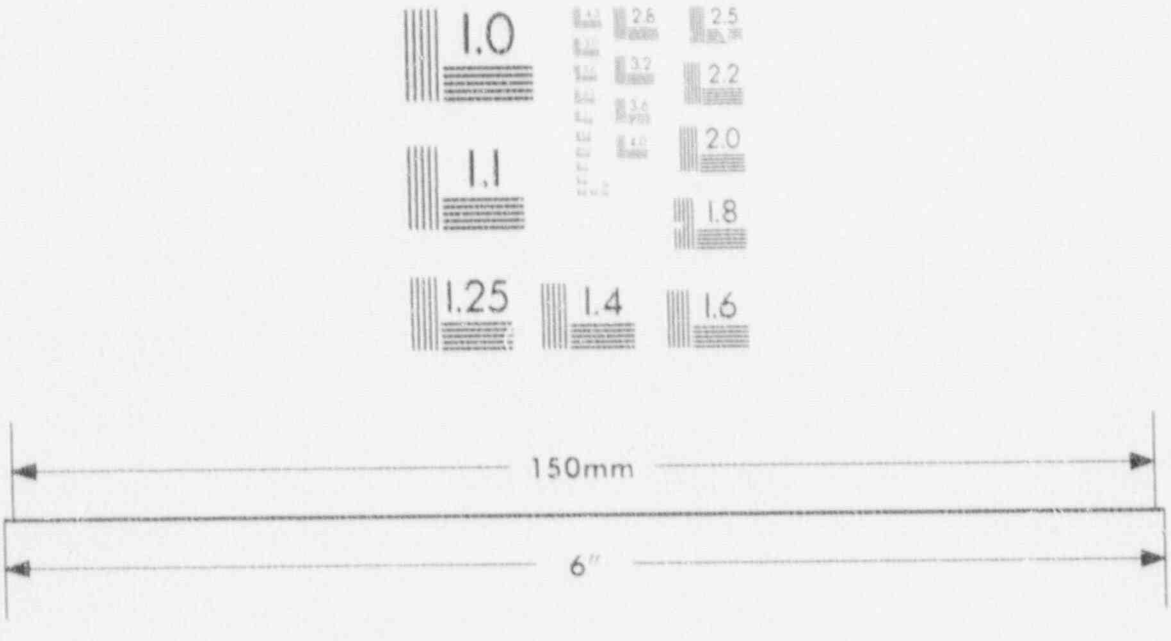

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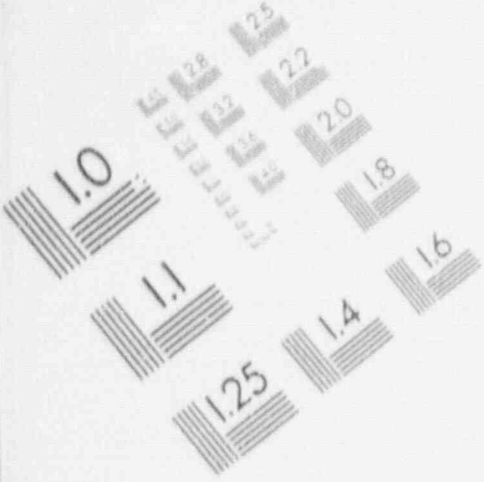
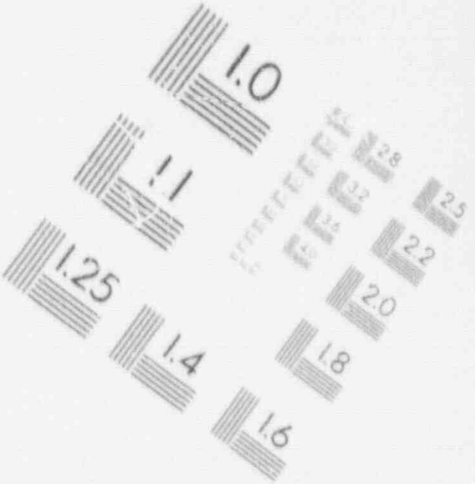
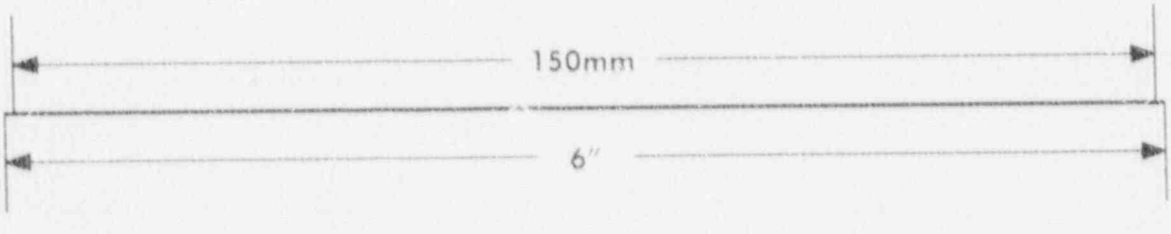
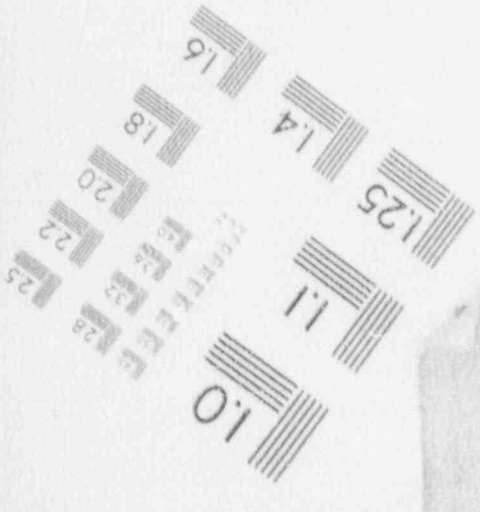
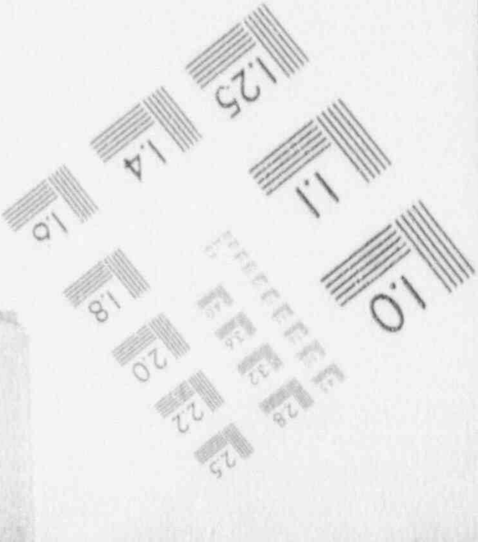
IMAGE EVALUATION
TEST TARGET (MT-3)







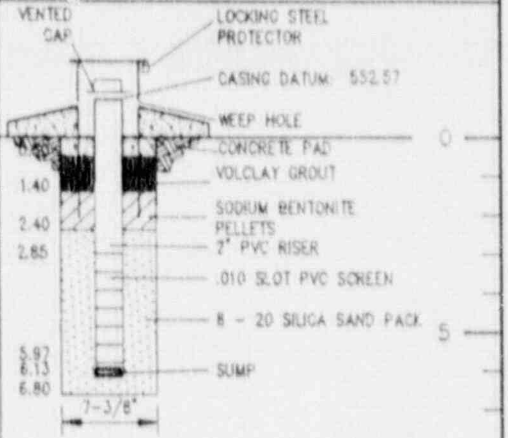




WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
		Start: 9:20 Stop: 9:40 GROUND SURFACE: 550.00					
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS, PEBBLES, 70% SILT, 30% CLAY	OL		1	2.0	
	1.0	SILTY CLAY: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOTTLED 5 YR 5/8, YELLOWISH RED, LOW PLAST., MOIST, 55% CLAY, 45% SILT	CL		NR		
	2.5	SILTY CLAY: 2.5 Y 5/4, LIGHT OLIVE BROWN, MOTTLED 2.5 Y 7/0, LIGHT GRAY, MOIST PEBBLES, HIGH PLAST.	CH				
	5				2		
	7.0	T.D. 7.0' AUAGER REFUSAL AT 7.0' (SANDSTONE)					
	10						
	15						
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 6.80 FEET.

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
═	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-30 (BH-31)*

DATE DRILLED 10/5/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

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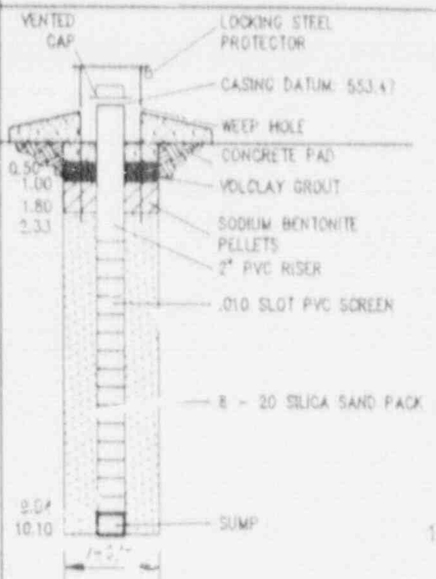
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL		"N" VALVE
		Start: 10:15 Stop: 10:35 GROUND SURFACE: 551.10					
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS TO 2.0', 70% SILT, 30% CLAY	CL		1 NR		
	5 5.2	GRAVELLY SILTY CLAY: 7.5 YR 5/8, STRONG BROWN, MOTTLED 7.5 YR 7/0, LIGHT GRAY, MOIST, MED. PLAST., FIRM 50% CLAY, 30% SILT, 20% GRAVEL	CL		2 3	4.5	
	9.0	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, SILTY, WEATHERED, FRACTURED, GRAY CLAY LENSES AT 10.5'	SHALE		4 NR 5	1.5	
	11.5	T.D. 11.5' AUGER REFUSAL AT 11.5' (SANDSTONE)					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 10.10 FEET.

▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMP.
WATER TABLE (24 ..OURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-31 (BH-32)*

DATE DRILLED 10/5/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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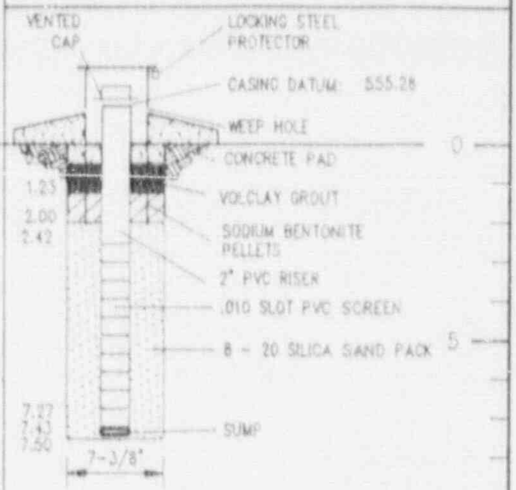
WELL COMPLETION RECORD

Start: 11:50
Stop: 12:00

GROUND SURFACE: 552.90

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
	0	CLAYEY SILT: 10 YR 4/4, DARK YELLOWISH BROWN, MOIST, ROOTLETS, 70% SILT, 30% CLAY	OL		1 2.0	
	1.0	SILTY CLAY: 10 YR 3/1, VERY DARK GRAY AND 5 YR 5/6, YELLOWISH RED, MED. PLAST., SLIGHTLY MOIST TO MOIST, FIRM, 60% CLAY, 40% SILT	CL		NR	
	5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN AND 2.5 Y 3/0, VERY DARK GRAY, BROWN DOMINANT FROM 6.5 8.5', SILTY, HIGHLY WEATHERED, FRACTURED	SHALE		2 3.5 3	
	8.5	T.D. 8.5'				
	10	AUGER REFUSAL AT 8.5', SANDSTONE				
	15					
	20					
	25					
	30					
	35					

WELL COMPLETION DETAIL



NOTE: WELL INSTALLED IN SEPARATE BOREHOLE APPROXIMATELY 5 FEET FROM LITHOLOGICAL BOREHOLE. WELL BOREHOLE DRILLED TO 7.50 FEET.

GME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-32 (BH-30)*

DATE DRILLED 10/5/90
DRILLING METHOD HSA
DRILLED BY PSI/SE
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

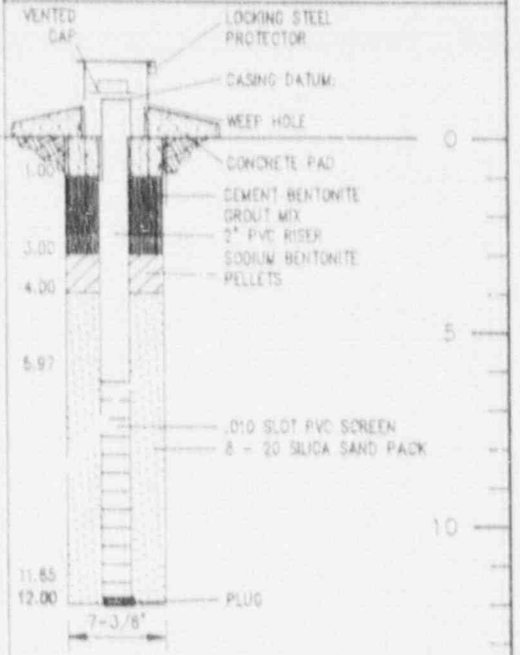
WELL COMPLETION RECORD

Start:
Stop:

GROUND SURFACE:

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
	0 – 0.5	ASPHALT:			1 1.0 NR	
	0.5 – 5.8	SANDY CLAYEY SILT: 5 YR 4/3, REDDISH BROWN, SOFT-FIRM, MOIST, TRACE GRAVEL (1" DIAM.), 15% SAND, VERY FINE GRAIN, RND., 30% CLAY, 55% SILT, M-H PLAST.	ML		2 1.5 NR	
	5.8 – 12.0	SAND: BACKFILL, 7.5 YR 7/8, REDDISH YELLOW, SAT., SOFT, M-C GRAIN, RND., SOME K-SPAR AND MICA	SC		3 1.0 NR	
	12.0	T.D. 12.0' AUGER REFUSAL 12.0'				

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
═	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-33T (BH-37)*

DATE DRILLED 10/11/90
DRILLING METHOD HSA
DRILLED BY PSI
LOGGED BY TPC
CHECKED BY BJS
DRAWN BY: SA PAGE 1 OF 1

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APPENDIX F

MONITORING WELL
COMPLETION DIAGRAMS
(SANDSTONE WELLS)

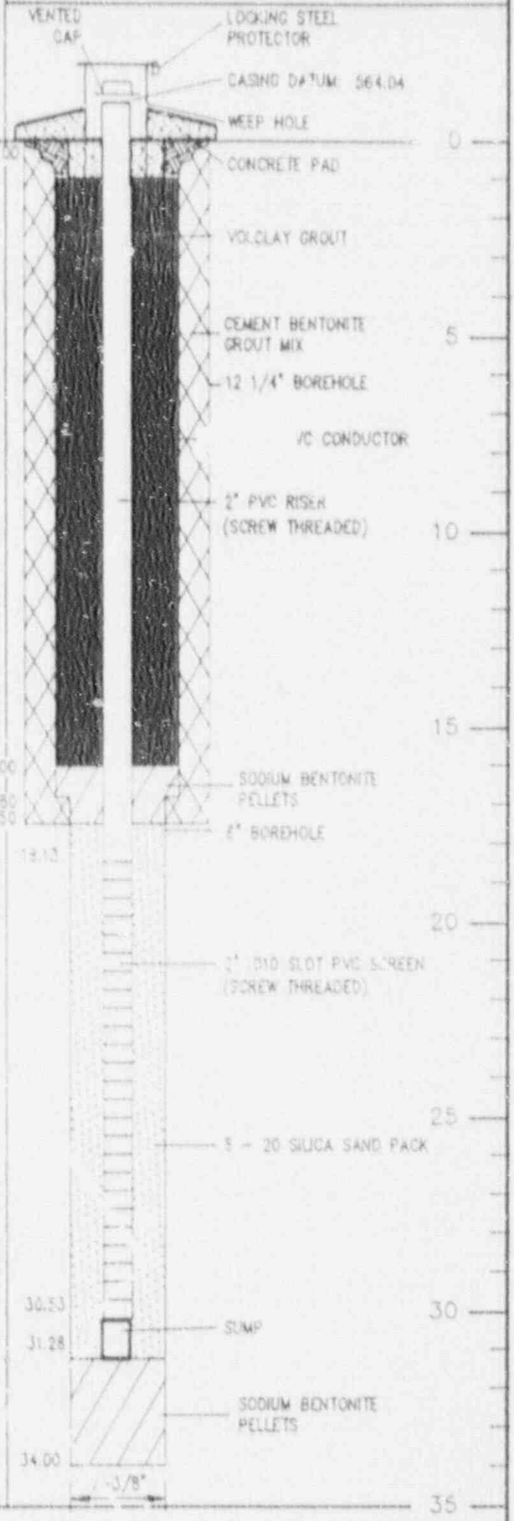
WELL COMPLETION RECORD

Start:
Stop:

GROUND SURFACE: 562.10

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE INTERVAL		"N" VALUE
	0	SILT: NO PLAST., 10 YR 4/3, BROWN-DARK BROWN, SLIGHTLY MOIST, SOFT, HOMOGENEOUS, GRASS ROOTS, COBBLES	OL	1 NR	0.8	
	1.5	SILTY CLAY: 2.5 YR 4/8, MOTTLED 2.5YR 5/0, RED AND GRAY, HIGH PLAST., SLIGHLY MOIST, SOFT TO FIRM, GRAVEL FROM 6.4-6.8', ABRUPT LOWER BOUNDARY, 70% CLAY, 30% SILT	CH	2	3.5	
9/26/90 7.6'	6.8	GRAVELLY CLAYEY SANDY SILT: 5 YR 5/5, YELLOWSH RED, LOW PLAST., GRAVEL, 50% SILT, 20% SAND, 10% GRAVEL	ML	3		
	7.6	SHALE: 10 YR 5/6, YELLOWISH BROWN, HIGHLY WEATHERED AND FRACTURED, CLAY LAYERS AT 8.5-10.5', CLAY IS 10 YR 6/8, BROWNISH YELLOW MOTTLED 2.5 Y 7/0, LIGHT GRAY, OXIDATION ON BEDDING PLANES 2.5 Y 4/2, DARK GRAYISH BROWN	SHALE	NR 4	 4.0	
	12.0	SHALE: 2.5 Y 4/4, OLIVE BROWN AND 2.5 Y 3/0, VERY DARK GRAY, OXIDATION ALONG BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FRACTURED, VERY THIN CLAY LENSES, GRAY AND BROWNISH YELLOW	SHALE	5 NR 6	 0.8	
	16.0	SANDSTONE: 2.5 Y 3/0, VERY DARK GRAY, HIGHLY CEMENTED, VERY FINE GRAINED, VERY THINLY BEDDED TO MASSIVE	SANDSTONE	NR		
	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 5/3, BROWN, SLIGHTLY MOIST, 40% SAND, 60% SHALE DECREASING SAND WITH DEPTH, 10% SAND, 90% SHALE, 10 YR 3/1, VERY DARK GRAY	SANDY SHALE	2		
	24.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD SILICA CEMENT, 10 YR 3/1 AFTER 27.0', VERY DARK GRAY, MINOR ANG. 10 YR 6/3, PALE BROWN CHERT	SANDSTONE	3 4		
	27.5	SANDY SHALE: VERY FINE GRAIN SAND, 30% SAND, 10 YR 3/1, VERY DARK GRAY FRACTURE AT 29.0-30.0'	SANDY SHALE	5 6 7 8		
10/6/90 30.9'	31.0	SANDSTONE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY, SILICA CEMENT, VERY HARD	SANDSTONE	9 10		
	33.5	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND, 7.5 YR 3/0, VERY DARK GRAY	SANDY SHALE			
	34.0	T.D. 34.0'				

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
─ ─	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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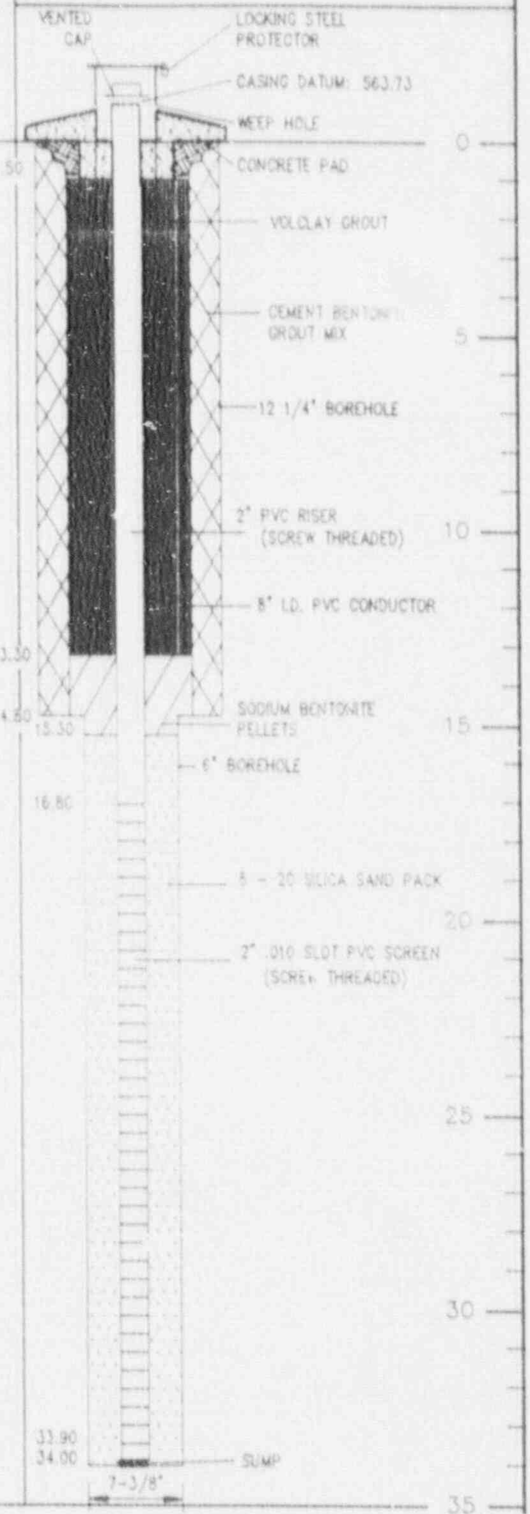
JOB NAME/NUMBER *SEQUOYAH\ 90067*
BORING NUMBER *MW-2A (BH-6 & BH-6A)*
DATE DRILLED 10/6/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAB
PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 561.90

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	SILT: 5 YR 4/3, REDDISH BROWN	OL	1	1.1	
9/26/90 5.0'	1.5	SHALE: 10 YR 5/8, YELLOWISH BROWN, VERY HIGHL. WEATHERED, FRACTURED, CLAYEY LENSES, OXIDATION ZONES ALONG BEDDING PLANES, COLORED 10 YR 3/1, VERY DARK GRAY	SHALE	NR 2 3 4	 5.0 	
10/11/90 12.5'	9.4	SHALE: 10 YR 3/1, VERY DARK GRAY AND 10 YR 5/6, YELLOWISH BROWN, INTERBEDDED, FRACTURED, TRACE SAND	SHALE	5	2.5	
	12.5	SANDSTONE: 10 YR 6/3, PALE BROWN, HARD, SOFT ZONES, FINE-MED. FINE GRAIN, RNDED QUARTZ SAND, SATURATED, MINOR IRON OXIDE CONCRETIONS	SANDSTONE	NS 1 2 3 4 5 6		
	25	SANDY SHALE: 10 YR 3/1, VERY DARK GRAY, VERY SANDY, HARD TO VERY HARD, SOFT AT BOTTOM, SATURATED, LIMONITE STAINING AND Fe_2O_3 NODULES LOCALLY	SANDY SHALE	7 8		
	29.0	SANDSTONE: 2.5 YR 4/0, VERY DARK GRAY, SOFT, VERY FINE GRAIN QUARTZ SAND, SATURATED	SANDSTONE	9		
	32.0	SHALE: 7.5 YR 2/0, BLACK, SOFT, FISSILE, THIN BEDDED, PETROLIFEROUS, DRY TO SLIGHTLY MOIST	SHALE	NS		
	34.0	T.D. 34.0'				
	35					

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER	WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
WATER TABLE (24 HOURS)	

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-3A (BH-7 & BH-7A)*

DATE DRILLED 10/11/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY MT
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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ENVIRONMENTAL CONSULTANTS
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NORMAN, OKLAHOMA 73072
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WELL COMPLETION RECORD

GEOLOG. UNIT

9/25/90 5.0'

9/26/90 4.46'

10/5/90 16.5'

DEPTH (FEET)	LITHOLOGIC DESCRIPTION
	GROUND SURFACE: 560.30
0.6 0.7	SILTY LOAM: 10 YR 4/3, BROWN-DARK BROWN, DRY, GRASS ROOTS, MINOR ANGULAR GRAVEL TO 1/4"
	SAND: VF-F GRAIN, OCCASIONALY VERY COARSE SUBANG QUARTZ, WELL GRADED, 7.5 YR 7/4, PINK, DRY
5.0 5.8	CLAYEY SILT: 40% CLAY, 60% SILT, NO PLAST., 7.5 YR 4/2, BROWN-DARK BROWN, SLIGHTLY MOIST, HOMOGENEOUS
	SILTY CLAY: 10% SILT, 90% CLAY, ABUNDANT ANGULAR CHERT GRAVEL TO 1 1/4", LOW PLAST., 7.5 YR 5/4, BROWN, SATURATED, SOFT
14.0	SILTY SHALE: WEATHERED TO SILTY CLAY, 10% SILT, 90% CLAY, LOW PLAST., 2.5 Y 6/4, LT. YELLOWISH BROWN, SLIGHTLY MOIST, VERY STIFF, HARD AFTER 9.0'
18.0	AFTER 10.0', 5 Y 7/1, LT. GRAY WITH 10 YR 6/6, BROWNISH YELLOW MOTILING TO 2.5 Y 4/0 DARK GRAY
22.0	SILTY SANDSTONE: 10 YR 4/1, DARK GRAY, VERY FINE GRAIN SAND, SILICA CEMENT, SLIGHTLY MOIST, VERY HARD
	SANDY SHALE: 20% SAND, VERY FINE GRAIN, 2.5 Y 4/2, DARK GRAYISH BROWN, HARD
	SHALE: 2.5 Y 3/0, VERY DARK GRAY, HARD
	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK, MOIST, VERY HARD, SILICA CEMENT, INTERBEDDED WITH CHERT, 10 YR 6/2, LIGHT BROWNISH GRAY, CONCHOIDAL FRACTURE, VERY HARD 7.5 YR 4/0, DARK GRAY AFTER 24.0'
37.0	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSLE, HARD, 20% SAND, VERY FINE GRAIN, 10% SAND AFTER ~35.0'
	T.D. 37.0'

UNIFIED SOIL CLASSIFICATION

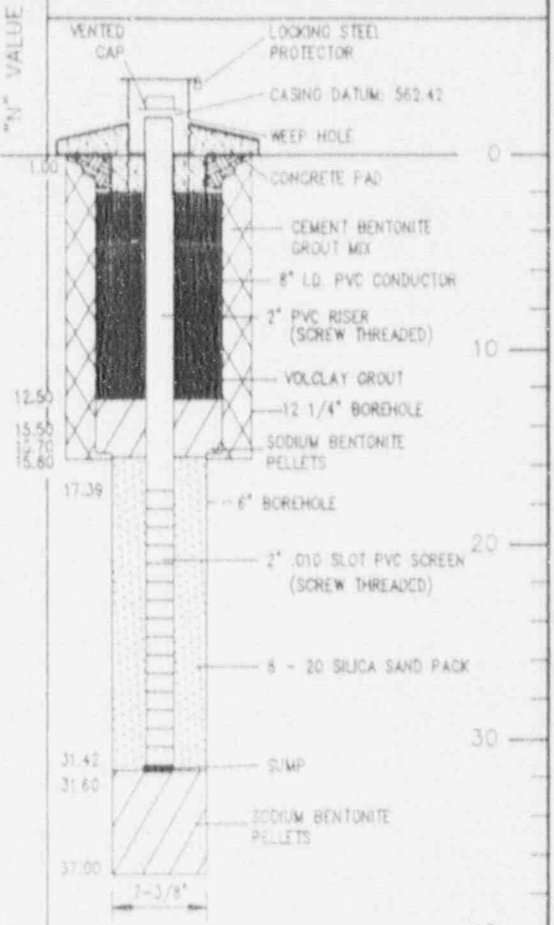
- OL
- SW
- ML
- CL
- SILTY SHALE
- SILTY SANDSTONE
- SANDY SHALE
- SHALE
- SANDSTONE
- SANDY SHALE

GRAPHIC LOG

SAMPLE INTERVAL	
1	2.4
NR	
2	3.0
3	
NR	
4	2.0
NR	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

"N" VALUE

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
‗	WATER TABLE (24 HOURS)
‗	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER ***SEQUOYAH\90067***

BORING NUMBER ***MW-4A (BH-5 & BH-5A)***

DATE DRILLED 10/5/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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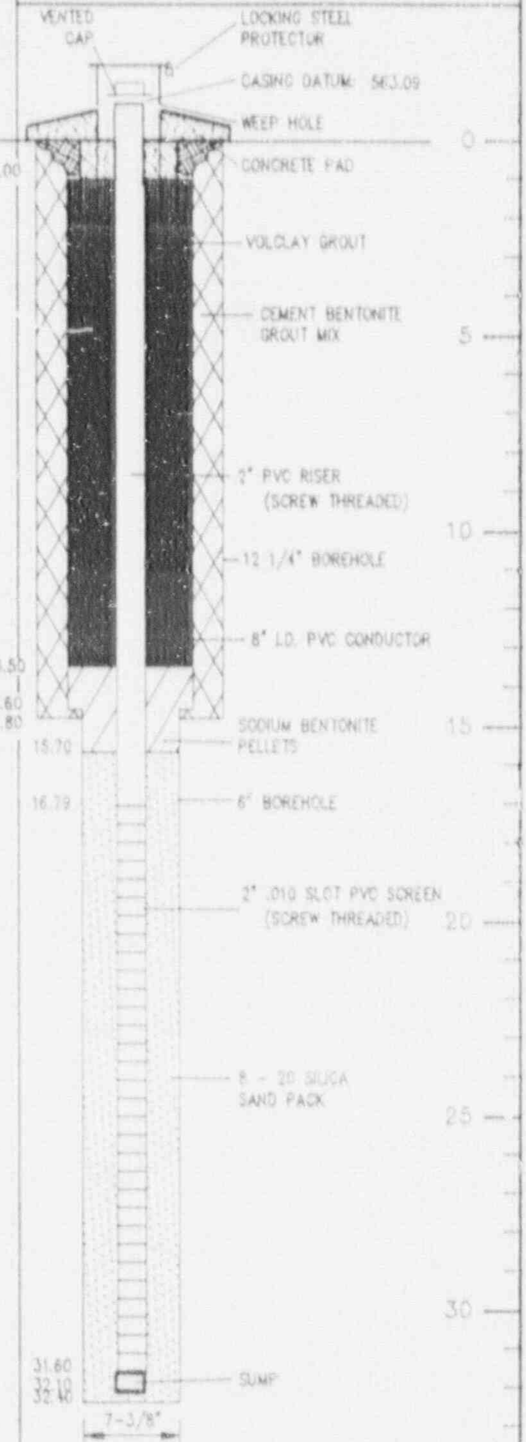
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 560.50

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL "N" VALUE
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS TO 2.0', TRACE OF GRAVEL, CLAYEY LENSE AT 0.9-1.0', GRADATIONAL LOWER BOUNDARY (0.6'), 60% SILT, 20% CLAY, 20% SAND	OL		1	4.5
	2.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, MOTTLED 2.5 YR 4/8, RED, LOW PLAST., FIRM, SLIGHTLY MOIST, 65% CLAY, 35% SILT, GRAVEL LENSE AT 5.0-6.0'	CL		2 NR 3	4.0
9/27/90 ▽ 9.0'	6.0	SHALE: 10 YR 5/8, YELLOWISH BROWN AND 10 YR 3/1, VERY DARK GRAY, FRACTURED AND HIGHLY WEATHERED, CLAY LENSE 2.5 Y 5/6, LIGHT OLIVE BROWN WITH 2.5 Y 7/0, LIGHT GRAY ELIPTICAL LENSES	SHALE		4 NR 5	2.5
10/5/90 ▽ 17.4	12.5	SANDSTONE: VERY FINE GRAIN SAND, 10 YR 5/3, BROWN, HARD	SANDSTONE		NS NS 1	
	17.0	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND 10 YR 4/1, DARK GRAY, SLIGHTLY MOIST, HARD	SANDY SHALE		2	
	18.5	7.5 YR 2/0, BLACK, SLIGHTLY MOIST, HARD	SHALE		3 NS	
	21.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 4/0, VERY HARD	SANDSTONE		4 5	
	26.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD, VERY MOIST	SHALE		6	
	28.0	SILTY SAND: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD	SILTY SAND		7	
	30	SANDY SHALE: VERY FINE GRAIN SAND, 10% SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD, SATURATED	SANDY SHALE		8 9	
	32.4	T.D. 32.4'				
	35					

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
--- WATER TABLE (24 HOURS)
--- WATER TABLE (TIME OF BORING)
└ LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-5A (BH-10 & BH-10A)**

DATE DRILLED 10/5/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

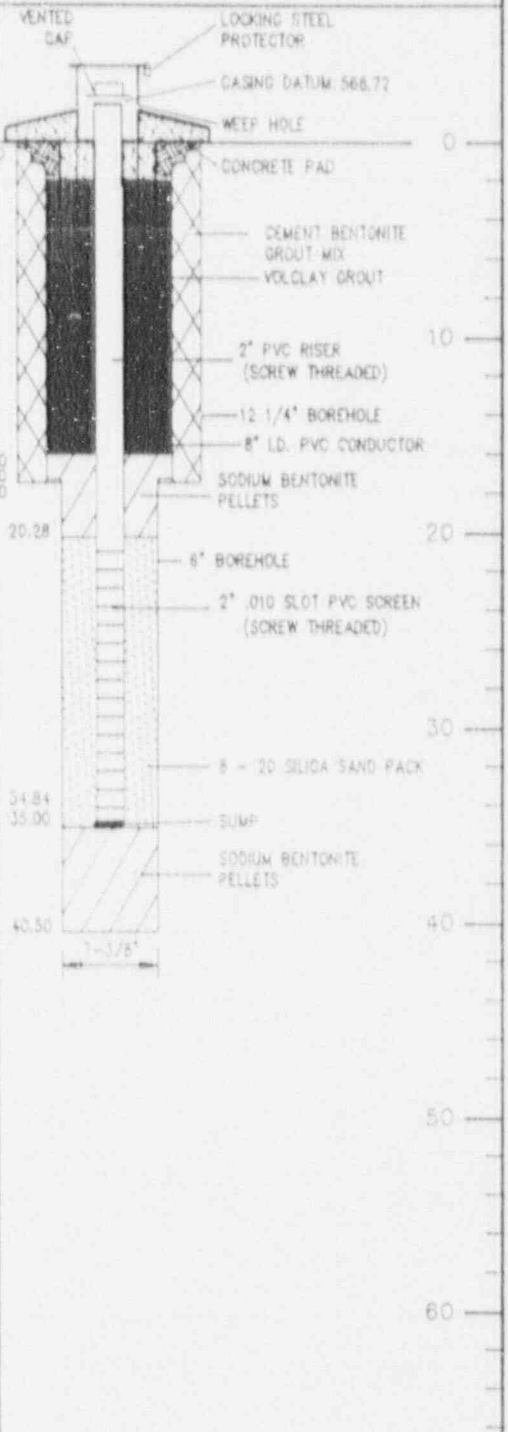
ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 565.80

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE INTERVAL	
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS GRAVEL, 60% SILT, 20% CLAY, 20% SA	CL	1 NR	1.0
	2.0	SILTY CLAY: 2.5 Y LIGHT YELLOWISH BROWN, LOW PLAST., GRAVEL LENSE AT 5.0-6.0', SLIGHTLY MOIST	CL	2	3.0
9/27/90 ▽ 9.0'	7.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDIZED ZONE WITH GROUNDWATER AT 15.2-15.4', OXIDATION ALONG BEDDING PLANES AT 9.0 TO T.D.	SHALE	3 NR 4 NR	 2.3
	15.8	SANDSTONE: VERY FINE GRAIN SAND, POORLY GRADED, 5 Y 3/1, VERY DARK GRAY, MINOR 2.5 YR 2.5/4, DARK REDDISH BROWN IRON OXIDE STAINING, SLIGHTLY MOIST, VERY HARD, STRONG, SILICA CEMENT	SANDSTONE	5 1	0.8 5.2
	20.4	SHALE: 2.5 Y 4/0, DARK GRAY, SLIGHTLY MOIST, VERY HARD, FISSILE, 2.5 Y 6/2, LIGHT BROWNISH GRAY ALONG PARTINGS	SHALE		
	21.5	SILTY SANDSTONE: VERY FINE GRAIN SAND, 20% SILT, 80% SAND, 10 YR 5/3, BROWN, INTERBEDDED SHALE, VERY HARD, SILICA CEMENT	SANDSTONE		
	21.9	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, SLIGHTLY MOIST, VERY HARD	SHALE	2 3	
	24.9	SANDSTONE: VERY FINE GRAIN QUARTZ, 2.5 Y 6/0, LIGHT GRAY-GRAY, WITH 2.5 Y 4/0, DARK GRAY CHERTY LAYERS, STRONG SILICA CEMENT, H_2S ODOR IN PRODUCED WATER, HYDRO SHEEN, FRACTURE 31.5-32.8'	SANDSTONE	NR NS 4	 0.0 5.0
	31.5	SANDY SHALE: VERY FINE GRAIN SAND, POORLY GRADED, 40% SAND, 60% SHALE, 7.5 YR 2/0, BLACK, HIGHLY FRACTURED, SATURATED	SANDY SHALE	5	
	33.7	SANDSTONE: VERY FINE GRAIN, 7.5 YR 4/0, DARK GRAY, VERY HARD, SLIGHTLY MOIST, FRACTURE 34.2-34.3'	SANDSTONE	6	
	35.2	SANDY SHALE: 40% SAND, VERY FINE GRAIN SAND, 2.5 YR 4/0, DARK GRAY, VERY MOIST TO SANTURATED IN FRACTURES, FRACTURES AT 35.2', 35.5', 35.9', 36.1', 36.3', HIGHLY FRACTURED AFTER 36.8', DECREASING SAND WITH DEPTH, 10% SAND, AFTER 36.8'	SANDY SHALE	7 8 9	5.5
	40.5	T.D. 40.5'			

WELL COMPLETION DETAIL



CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-6A (BH-11 & BH-11A)**

DATE DRILLED 10/4/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY SAR

PAGE 1 OF 1

ROBERTS/SCHORNICK
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ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

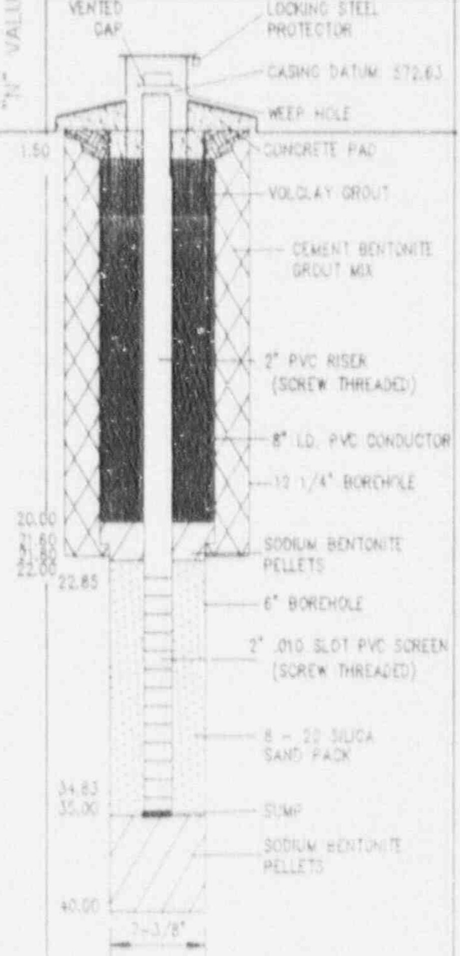
WELL COMPLETION RECORD

GROUND SURFACE: 570.20

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	CLAYEY SANDY SILT: 10 YR 4/2, DARK GRAYISH BROWN, ROOTLETS, GRAVEL, 65% SILT, 20% CLAY, 15% SAND	OL	1	3.0	
	1.5	CLAYEY SILTY GRAVEL: 5 YR 5/6, YELLOWISH RED, SLIGHTLY MOIST, 50% GRAVEL, 30% CLAY, 20% SILT	GC	2 NR		
	3.0	SILTY CLAY: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, LOW PLAST., GRAVEL LENSE AT 5.0-6.0', SLIGHTLY MOIST	CL	3 NR	0.8	
10/5/90 ▽ 15.2'	8.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED 2.5 Y 3/0, VERY DARK GRAY, HIGHLY WEATHERED, FRACTURED, OXIDIZED ZONES, GROUNDWATER AT 15.2-15.4', OXIDATION ALONG BEDDING PLANES AT 9.0 TO T.D.	SHALE	4 NR 4 NR	0.5 0.5	
	20	SANDSTONE: 10 YR 5/3, BROWN, VERY FINE GRAIN, VERY HARD	SANDSTONE	NS		
	20.6	SHALE: 7.5 YR 4/0, DARK GRAY, VERY HARD, SLIGHTLY MOIST, MINOR VERY FINE GRAIN SAND, INCREASES WITH DEPTH	SHALE	1		
	24.0	SILTY SANDSTONE: VERY FINE GRAIN SAND, 40% SILT, 7.5 YR 4/0, DARK GRAY, SLIGHTLY MOIST, HARD	SILTY SANDSTONE	2 NS		
	29.0	SANDSTONE: VERY FINE GRAIN, 7.5 YR 3/0, VERY DARK GRAY, VERY HARD, SLIGHTLY MOIST	SANDSTONE	3		
	32.0	SANDY SHALE: 20% VERY FINE GRAIN SAND, 7.5 YR 4/0, DARK GRAY, SLIGHTLY MOIST, HARD	SANDY-SHALE	NS 4 NS		
	40	T.D. 40.0' WATER LEVEL 33.7' AFTER DRILLING				

GRAPHIC LOG

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
∟	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER ***SEQUOYAH\90067***

BORING NUMBER ***MW-7A (BH-14 & BH-14A)***

DATE DRILLED 10/5/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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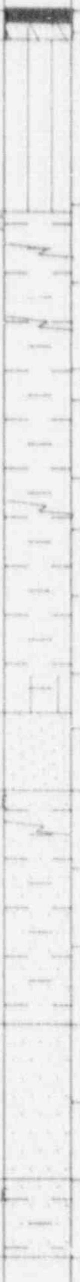
NORMAN, OKLAHOMA 73072
(405) 321-3895

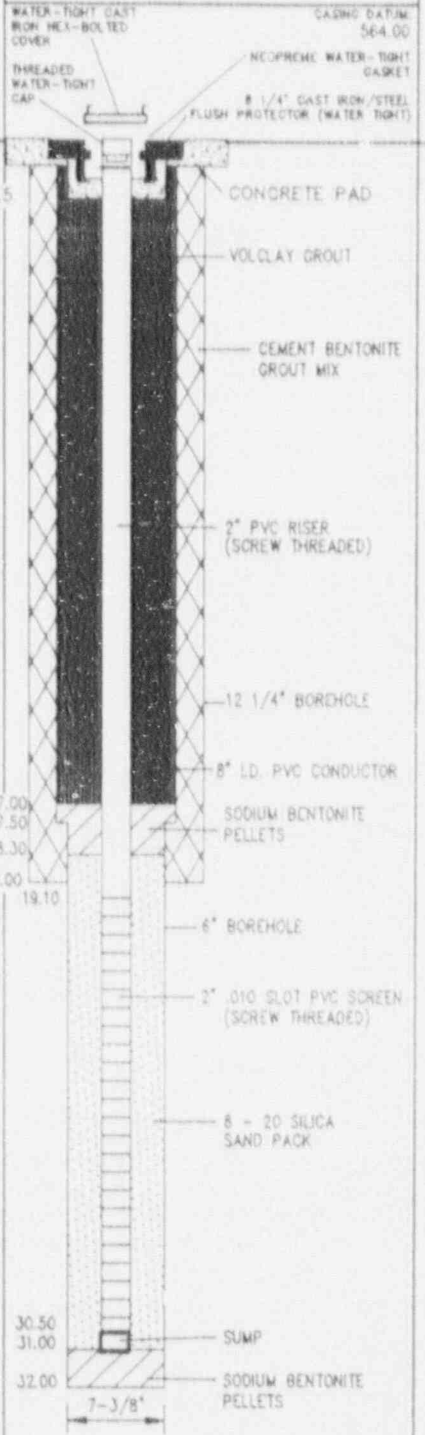
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 565.03				
	0	ASPHALT DRIVE: WITH SILTY SANDY CLAY BASE, LIMESTONE GRAVEL TO 2'	A/C	1	0.8	
	0.8	SILT: 100% SILT, NO PLAST., 2.5 Y 6/6, OLIVE YELLOW, DRY, SOFT, HOMOGENEOUS	ML	NR		
	5 5.2	SHALE: 10% SILT, 5 YR 4/6, YELLOWISH RED TO 5.3', 10 YR 6/6, BROWNISH YELLOW AFTER 5.3', SLIGHTLY MOIST, VERY STIFF, FISSILE, PARTIALLY WEATHERED TO SILTY CLAY FRACTURES AT 6.0' AND 7.9', IRON OXIDE STAINING TO 10 YR 5/6, DARK YELLOWISH BROWN IN FRACTURES, MOIST IN FRACTURES AFTER 10.0', 10 YR 4/1, DARK GRAY TO 10 YR 6/6, BROWNISH YELLOW, FRACTURE AT 12.7', INCREASING SILT WITH DEPTH TO 20% SILT	SILTY SHALE	2	4.2	
				3		
				NR		
	10			4	3.3	
				5		
				NR		
9/24/90 15.5'	15	AFTER 16.8-18.0', 2.5 Y 4/0, DARK GRAY VERY HARD AFTER 18.0', FISSILE WITH INTER-BEDDED SILTSTONE, 10 YR 7/4, VERY PALE BROWN, AND SHALE		6	3.4	
	18.0	SANDSTONE: VERY FINE GRAINED SAND, 10YR 5/3 BROWN, HARD, ANGULAR. 10 YR 7/4 VERY PALE BROWN CHERT	SANDSTONE	7		
				NR		
10/7/90 20.3'	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 3/1, VERY DARK GRAY, HARD, FRACTURE ~21.0'	SANDY SHALE	2		
				3		
				4		
	25					
	26.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, VERY HARD, STRONG SILICA CEMENT	SANDSTONE	5		
				6		
	30	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 3/0, VERY DARK GRAY	SANDY SHALE	8		
	32.0	T.D. 32.0'				
	35					

GRAPHIC LOG



WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
≡	WATER TABLE (24 HOURS)
‐ ‐ ‐	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-8A (BH-2 & BH-2\)**

DATE DRILLED 10/7/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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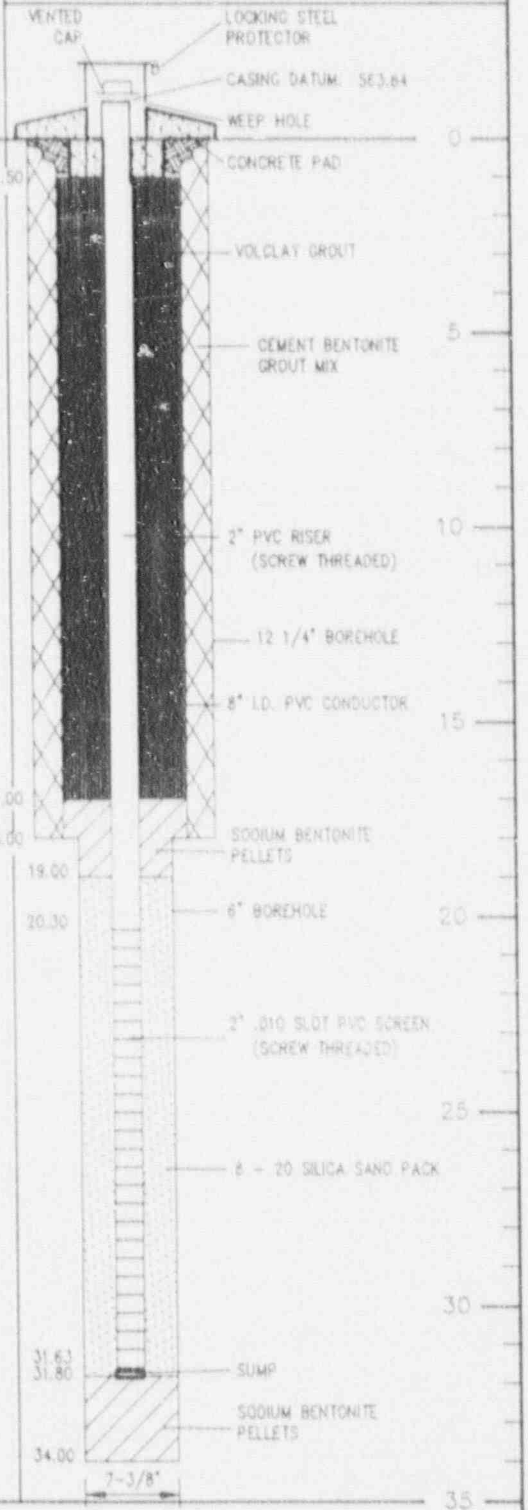
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 561.70

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	"N" VALUE
	0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, GRAVEL AT 0.5-5.0', 65% SILT, 20% SAND, 15% CLAY	OL	1 NR	0.5
9/28/90 7.0'	1.0	GRAVELLY SILTY CLAY: SOFT, MOIST, WET AT 7.0', 10 YR 5/4, YELLOWISH BROWN (5.0-5.8'), 5 YR 5/8, YELLOWISH RED (5.8-6.3'), 5 YR 5/6, YELLOWISH RED (6.3-7.7'), 10 YR 3/2, VERY DARK GRAYISH BROWN (7.7-8.5'), 5 YR 6/8, REDDISH YELLOW (10.0-10.8), GRADATIONAL LOWER BOUNDARY (1.5' BOUNDARY) 50% CLAY, 30% GRAVEL, 20% SILT	CL	2 3 NR	4.0
	10.5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTERBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE	4 5 6 7	5.0 2.0
	17.5	SANDSTONE: VERY FINE GRAIN, VERY HARD	SANDSTONE	NR	
10/5/90 22.1'	18.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 5/4, 30% SANDSTONE, HARD	SANDY SHALE	1 2	
	22.0	SHALE: 10 YR 4/1 D. K GRAY, HARD, FISSILE	SHALE	3 4	
	25.5	SANDSTONE: VERY FINE GRAIN, 10 YR 3/1, VERY DARK GRAY, VERY HARD, SILICA CEMENT, MINOR ANGULAR CHERT, 7.5 YR 6/4	SANDSTONE	5 6	
	29.5	SANDY SHALE: 7.5 YR 3/0, VERY DARK GRAY, VERY FINE GRAIN SAND, HARD	SANDY SHALE	7 NS	
	34.0	T.D. 34.0'			

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER *MW-9A (BH-8 & BH-8A)*

DATE DRILLED 10/6/90

DRILLING METHOD AIR ROTARY

DRILLED BY POOL

LOGGED BY WEP

CHECKED BY BJS

DRAWN BY: SAR PAGE 1 OF 1

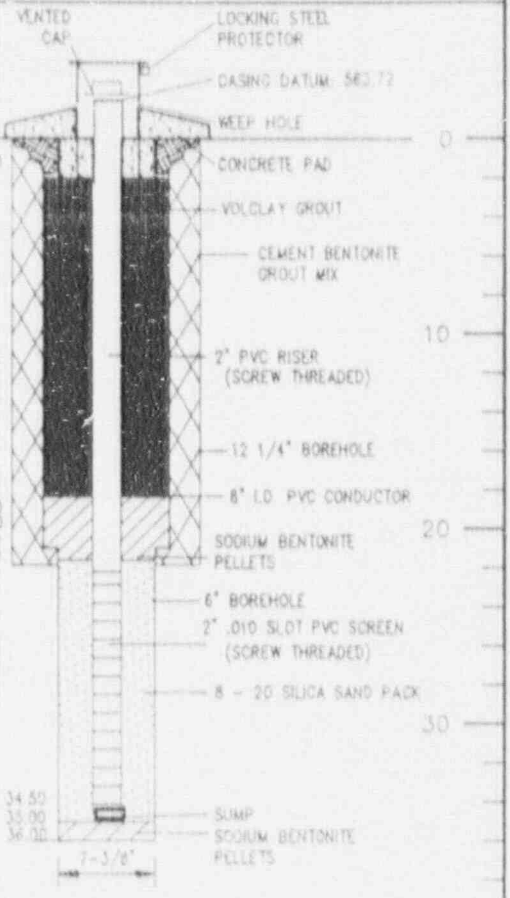
ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 562.30

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL		"N" VALUE
	0.5	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAY-2" BROWN, ROOTLETS, MOIST, 55% SILT, 30% CLAY, 15% SAND	[illegible] CH		1 NR	0.5	
9/28/90 ▽ 9.0'		GRAVELLY SILTY CLAY: SOFT, MOIST, HIGH PLAST., 10 YR 3/3, DARK BROWN (5.0-5.6'), YELLOWISH RED (5.6-6.6'), AND 10 YR 3/3 (6.6-7.5'), 5 YR 5/6 (7.5-15.0') GRAVEL LENSE AT 15.0-15.5'			2 3 NR 4 5 NR	3.4 2.5	
	15.5	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, INTEREBEDDED WITH 2.5 Y 3/0, VERY DARK GRAY, HIGHLY FRACTURED, WEATHERED	SHALE		6 7 NR	3.2	
	19.5	SANDSTONE: VERY FINE GRAIN SAND, 2.5 Y 4/2, DARK GRAYISH BROWN, HARD, SILICA CEMENT, CHERT INTERBEDDED, 10 YR 5/6	SANDSTONE		NS 1		
	22.0	SHALE: 10 YR 4/1, DARK GRAY, FISSILE, HARD	SHALE		2 3		
	26.0	SANDY SHALE: VERY FINE GRAIN SAND, 20% SAND, 2.5 Y 3/0, VERY DARK GRAY, HARD	SANDY SHALE		4 5		
	29.0	SANDSTONE: VERY FINE GRAIN, 2.5 Y 4/2, DARK GRAYISH BROWN, SILICA CEMENT, VERY HARD, MINOR 10 YR 7/3, VERY PALE BROWN, ANGULAR CHERT	SANDSTONE		6 7		
	33.0	SANDY SHALE: VERY FINE GRAIN SAND, 20% SAND, 7.5 YR 3/0, VERY DARK GRAY, HARD	SANDY SHALE		8 9		
	36.0	T.D. 36.0'					

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
⌊	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
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ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW-10A (BH-9 & BH-9A)*

DATE DRILLED 10/6/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

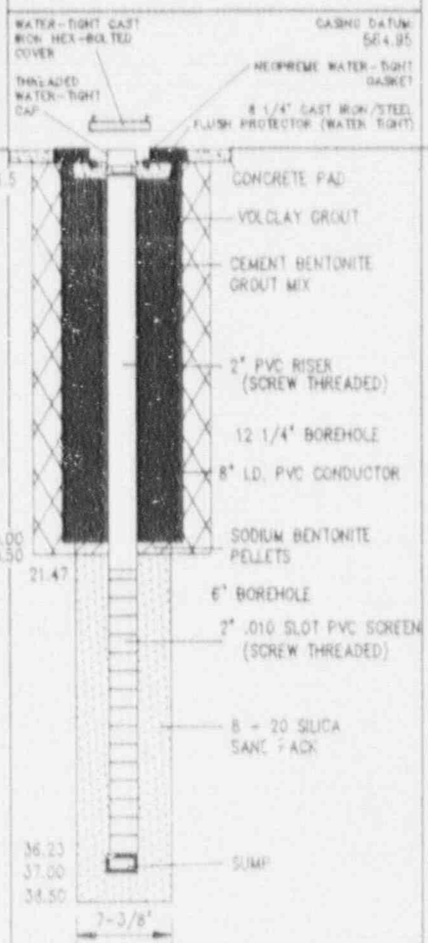
WELL COMPLETION RECORD

GROUND SURFACE: 565.41

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
	0.9	SILTY SANDY CLAY BASE WITH ASPHALT PAVEMENT COVER	A/C		1	1.2	
▽5.58'		SANDY SILTY CLAY: 10% SAND, 40% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM MINOR GRAVEL TO 1/2"	CL		NR 2	 5.0	
▽8.1'	7.0	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1-8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE, SATURATED 10 YR 4/3, DARK BROWN TO BROWN AFTER 8.9', MOIST	CL		3 4 5 NR	 1.4	
	16.4	10 YR 4/1, 10.0-10.8', ABUNDANT ANAGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0' BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	SILTY SHALE		6 7 8	5.0 9.0	
	21.0	SHALE: 20% SILT, 10 YR 5/2, GRAYISH BROWN TO 10 YR 2/1, BLACK, VERY MOIST, MOD. HARD, FISSILE, INTERBEDUED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SANDSTONE		1 2		
	24.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/2, DARK GRAYISH BROWN TO 2.5 Y 5/4, LIGHT OLIVE BROWN, ABUNDANT ANGULAR 2.5 Y 6/4, LIGHT YELLOWISH BROWN CHERT, HARD, SILICA CEMENT	SANDY SHALE		3		
	26.0	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 4/2, DARK GRAYISH BROWN	SHALE		4 5 6		
	31.0	SHALE: 10 YR 2/1, BLACK, FISSILE, HARD	SANDSTONE		7		
		SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT			8		
	36.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 7/0, VERY DARK GRAY, FISSILE	SANDY SHALE		9		
	38.5'	T.D. 38.5'			RS		

DEPTH (FEET): 0, 10, 20, 30, 40, 50, 60, 70

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
▽ WATER TABLE (24 HOURS)
▽ WATER TABLE (TIME OF BORING)
└ LABORATORY TEST LOCATION
┼ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\90067*

BORING NUMBER *MW11A (BH-22 & BH-22A)*

DATE DRILLED 10/9/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
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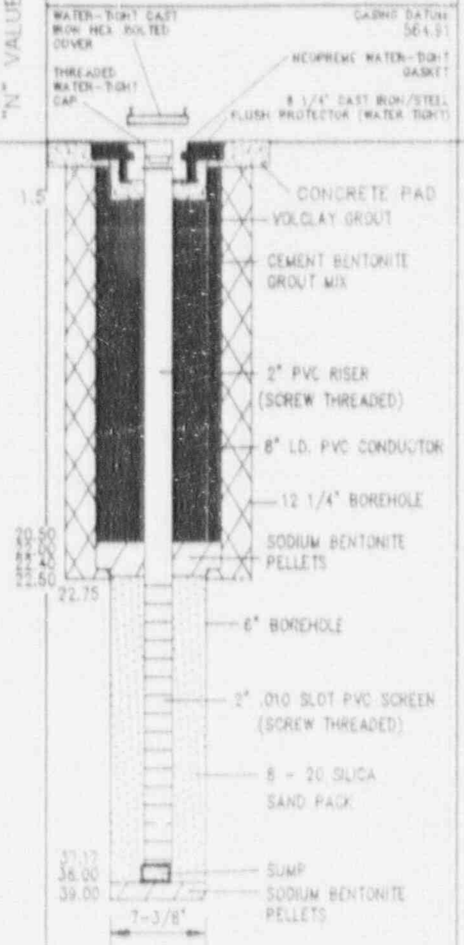
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GEOLOC. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL
		GROUND SURFACE: 565.40			
	0	CONCRETE		1	1.8
	0.8	SILTY SAND: VERY FINE-VERY COARSE GRAIN, SUBANG QRTZ, SAND BACKFILL, DRY 10 YR 6/2, LIGHT BROWNISH GRAY	SM	NR	
	1.9	SILTY SANDY CLAY: VERY FINE-VERY COARSE GRAIN SAND, ABUNDANT ANGULAR GRAVEL, 10 YR 5/6, YELLOWISH BROWN TO 10 YR 7/2, LIGHT GRAY, VERY MOIST, SOFT	CL SHALE	2 3 4	5.0
	10	SILTY SHALE: WEATHERED TO A SILTY CLAY, 10% SILT, 90% CLAY, 7.5 YR 5/6, STRONG BROWN, LOW PLAST., SLIGHTLY MOIST, FISSILE, VERY STIFF, AFTER 1.9', 10 YR 6/6, BROWNISH YELLOW TO 2.5 Y 6/2, LIGHT BROWNISH GRAY 8.8-9.0', 2.5 Y 7/0, LIGHT GRAY, AFTER 9.0', LESS INDURATED 5 Y 6/3, PALE OLIVE TO 2.5 Y 5/0, GRAY, FISSILE, SLIGHTLY MOIST, HARD AFTER 10.0', HIGHLY FRACTURED, AFTER 16.4', PREDOMINANTLY 5 Y 4/1, DARK GRAY		5 6 NR 7 NR 8	3.2 1.5 2.0
	22.0	SANDSTONE: VERY FINE GRAIN, 7.5 YR 4/0, DARK GRAY, STRONG SILICA CEMENT, VERY HARD	SANDSTONE	1	
	25.0	SHALE: 7.5 YR 2/0, BLACK, FISSILE, HARD FRACTURES ~ 28.0-30.0'	SHALE	2 3 4	
10/9/90 32.25'	30	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT	SANDSTONE	5 6	
	36.0	SANDY SHALE: 10 YR 3/1, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE	7 8 RS	
	39.0	T.D. 39.0'			

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
▽	WATER TABLE (24 HOURS)
▽	WATER TABLE (TIME OF BORING)
L	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-12A (BH-4 & BH-4A)**

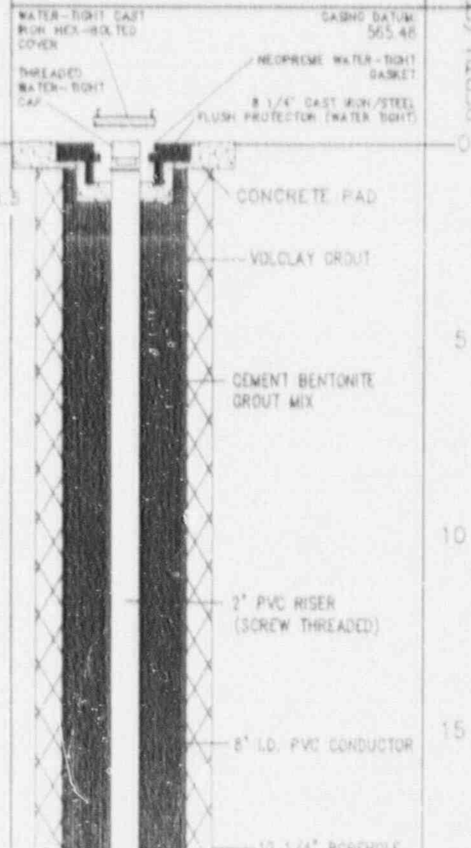
DATE DRILLED 10/9/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 2

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 565.91				
	0	CONCRETE		NR	0.3	
	0.9	GRAVELLY SILTY CLAY: 10 YR 3/3, DARK BROWN, MED. PLAST., SOFT TO FIRM, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL	CL	NR		
	5.5	GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, LOW PLAST., SOFT, SLIGHTLY MOIST, 40% CLAY, 30% SILT, 30% GRAVEL	CL	2 NR	2.0	
9/29/90 ∇ 11.0'	9.5	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 6/6, OLIVE YELLOW, MOIST, WEATHERED, FRACTURED, SOFT, SILTY	SHALE	3 NR	2.0	
	14.5	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, WET, FRACTURED, OXIDATION ALONG BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, THINNLY BEDDED WITH 2.5 6/6, OLIVE BROWN, MODERATLY HARD, SILTY	SHALE	4 5 NR 6 NR	3.0 2.0	
	22.8	SHALE: 2.5 Y 6/4, LIGHT OLIVE BROWN, WET, SILTY, SOME GRAVEL, THINNLY LAMINATED, OXIDIZED ZONES	SHALE	NR 1		
	24.0	SANDSTONE: 2.5 Y 4/8, DARK GRAY, DRY TO MOIST, FINE TO MED. GRAIN	SANDSTONE	2 3		
	27.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, SILTY, WET, VERY HIGHLY ORGANIC	SHALE	4 NS		
	33.0	T.D. 33.0'				

GRAPHIC LOG

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

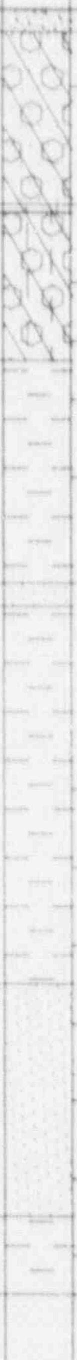
JOB NAME/NUMBER **SEQUOYAH\ 90067**

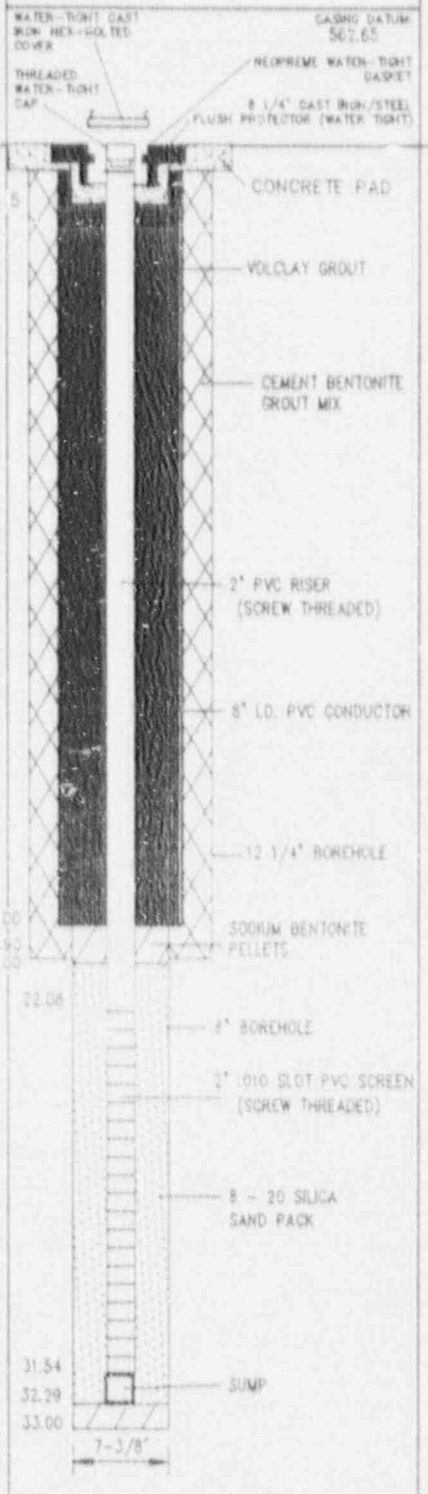
BORING NUMBER **MW-13A (BH-16 & BH-16A)**

DATE DRILLED 10/10/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		GROUND SURFACE 563.37				
	0	CONCRETE			NR 2.5	
	0.6	GRAVELLY SANDY CLAY: 10 YR 5/6, YELLOWISH BROWN, LOW PLAST., FIRM, SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL		1	
					NR	
8/29/90 6.0'	5.7	SILTY CLAY: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 35% SILT, 5% GRAVEL	CL CL		2 3.5	
		GRAVELLY SILTY CLAY: 5 YR 5/6, YELLOWISH RED, WET, MED. PLAST., FIRM, 40% CLAY, 30% GRAVEL, 30% SILT			3	
					NR	
	9.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, AND 2.5 Y 6/6, OLIVE BROWN, WEATHERED, FRACTURED	SHALE		4 2.0	
					NR	
	14.7	SANDSTONE: VERY HARD, VERY FINE GRAIN	SANDSTONE			
	15.2	SHALE: DARK GRAY, 2.5 YR 3/0, SANDY, VERY FINE QUARTZ	SHALE		NS	
					1	
					2	
					3	
	25	SANDSTONE: DARK GRAY 2.5 YR 3/0, QUARTZ, VERY FINE GRAIN	SANDSTONE		4	
					5	
					6	
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY, VERY FINE GRAIN QUARTZ SAND	SHALE		7	
	33.0	T.D. 33.0'				





▨ CME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
+ PENETROMETER (TONS/SQ. FT.)

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3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER ***SEQUOYAH/90067***

BORING NUMBER ***MW-14A (BH-17 & BH-17A)***

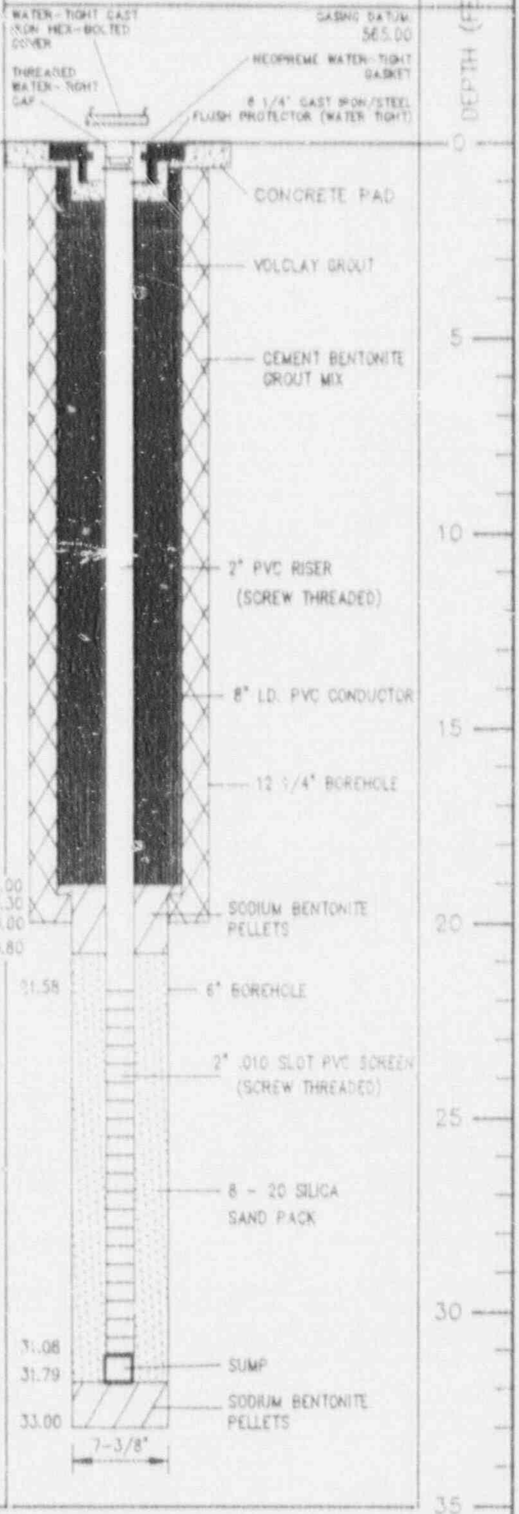
DATE DRILLED 10/10/90
DRILLING METHOD AIR ROTARY
DRILLED BY AWP
LOGGED BY MJ.
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 565.24

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	CONCRETE		NR	1.0	
	1.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, FRACTURED, SILTY, MOIST (SAND FILL 1.0-1.5')	SHALE	1 NR 2	2.0	1.5
9/30/90 ▽ 10.5'	6.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN, HIGHLY WEATHERED, FRACTURED, SLIGHLTY MOIST, SILTY, WET AT 10.5', OXIDATION ALONG BEDDING PLANES	SHALE	NR 3 NR 4 5	1.0 3.5	
	18.5	SANDSTONE: DARK GRAY 2.5 YR 3/0, QUARTZ, FINE GRAIN, MASSIVE	SANDSTONE	NS 1 2		
	22.0	SHALE: DARK GRAY, 2.5 YR 3/0, SANDY, VERY FINE QUARTZ SAND	SHALE	3 4 5		
	26.5	SANDSTONE: DARK GRAY, 2.5 YR 3/0, QUARTZ, VERY FINE GRAIN	SANDSTONE	6 7		
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY, VERY FINE QUARTZ	SHALE	8		
	33.0	T.D. 33.0'				

WELL COMPLETION DETAIL



▭ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

▭ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***MW-16A (BH-19 & BH-19A)***

DATE DRILLED 10/10/90

DRILLING METHOD AIR ROTARY

DRILLED BY AWP

LOGGED BY MJ.

CHECKED BY BJS

DRAWN BY: SAR PAGE 1 OF 1

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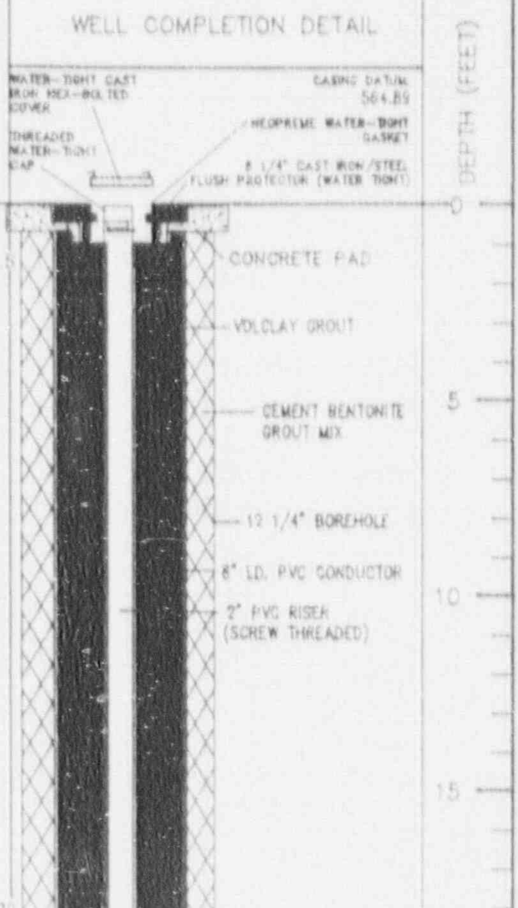
& ASSOCIATES, INC.

ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		GROUND SURFACE: 565.31				
	0	CONCRETE			NR 4.0	
9/30/90 9.0'	1.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/8, OLIVE YELLOW, OXIDIZED BEDDING PLANES, CLAY LENSES 10 YR 7/8, YELLOW AND 2.5 Y 7/0, LIGHT GRAY, AT 2.3-2.6' AND 3.5-3.9' LENSE 10 R 3/6, DARK RED, DUE TO PRECIPITATION OF FE (HEMATITE)	SHALE		1 2 3 2.0 NR 4 5.0 5 6 7 2.5 8	
	17.5	SANDSTONE: DARK GRAY, 2.5 YR 3/0, VERY FINE GRAIN, WELL CEMENTED	SANDSTONE		NS	
	19.0	SHALE: 2.5 YR 3/0 DARK GRAY, SANDY, VERY FINE GRAIN QUARTZ SAND	SHALE		1 2 3 4 5	
	27.0	SANDSTONE: 2.5 YR 3/0 DARK GRAY, VERY FINE GRAIN SAND, WELL CEMENTED	SANDSTONE		6 7	
	31.0	SHALE: VERY DARK GRAY, 2.5 YR 4/0, SANDY VERY FINE QUARTZ SAND	SHALE		8	
	34.0	T.D. 34.0'				



CME CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-17A (BH-20 & BH-20A)**

DATE DRILLED 10/10/90
DRILLING METHOD AIR ROTARY
DRILLED BY AWP
LOGGED BY MJL
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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WELL COMPLETION RECORD

GROUND SURFACE: 565.71

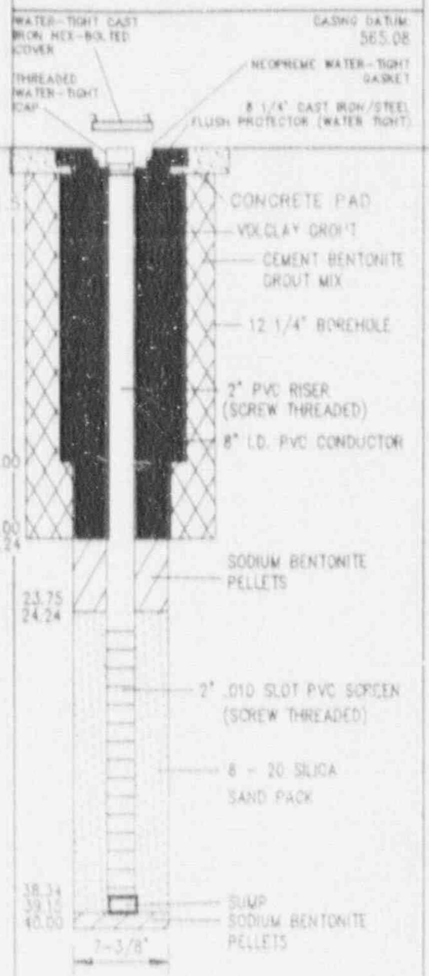
GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0 – 0.9	SILTY SANDY CLAY: BASE WITH ASPHALT PAVEMENT COVER	A/C
9/25/90 5.58'	0.9 – 7.0	SANDY SILTY CLAY: 10% SAND, 30% SILT, 60% CLAY, NO PLAST., 7.5 YR 5/6, STRONG BROWN, MINOR RNDED GRAVEL, SLIGHTLY MOIST, FIRM MINOR GRAVEL TO 1/2"	CL
9/24/90 8.1'	7.0 – 16.4	SILTY CLAY: 20% SILT, 80% CLAY, LOW PLAST., 10 YR 5/1, GRAY WITH 5 YR 5/6, YELLOWISH RED MOTTLING, SLIGHTLY MOIST, STIFF BETWEEN 8.1–8.9', ABUNDANT ANGULAR GRAVEL TO 1/2", SHALE, SATURATED, 10 YR 4/3, DARK BROWN TO BROWN AFTER 8.9', MOIST 10 YR 4/1 10.0–10.8', ABUNDANT ANGULAR SHALE GRAVEL TO 1", SATURATED BELOW 10.0' BELOW 10.8', 5 YR 5/4, REDDISH BROWN, SATURATED, STIFF, ABUNDANT ANGULAR GRAVEL TO 1"	CL
	16.4 – 21.0	SHALE: 20% SILT, 10 YR 5/2, GRAYISH BROWN TO 10 YR 2/1, BLACK, VERY MOIST, MOD. HARD, FISSILE, INTERBEDDED SHALE-SILTY SHALE OFTEN WEATHERED TO SILTY CLAY	SILTY-SHALE
	21.0 – 21.5	SANDSTONE: VERY HARD, VERY FINE GRAINS	SANDSTONE
	21.5 – 30	SHALE: DARK GRAY, 2.5 YR 4/0, SANDY, FINE GRAIN QUARTZ	SHALE
	30 – 38.0	SANDSTONE: DARK GRAY, 2.5 YR 4/0, VERY FINE GRAIN, VERY WELL CEMENTED	SANDSTONE
	38.0 – 40	SHALE: VERY DARK GRAY, 2.5 YR 3/0, SANDY VERY FINE GRAIN QUARTZ SAND	SHALE
	40	BORING TERMINATED AT 40.0'	

GRAPHIC LOG

SAMPLE	INTERVAL
1	1.2
NR	
2	5.0
3	
4	
5	1.4
NR	
6	5.0
7	
8	
9	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

"N" VALUE

WELL COMPLETION DETAIL



DEPTH (FEET): 0, 10, 20, 30, 40, 50, 60, 70

▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
	WATER TABLE (24 HOURS)
	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
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ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***MW-18A (BH-3 & BH-3A)***

DATE DRILLED 10/10/90
DRILLING METHOD AIR ROTARY
DRILLED BY AWP
LOGGED BY MJL
CHECKED BY BHS
DRAWN BY: SAR

PAGE 1 OF 2

WELL COMPLETION RECORD

GROUND SURFACE: 565.05

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	CONCRETE		NR	3.0	
	0.7	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 40% SILT	CL	1		
	2.2	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML	2 NR 3	 3.5	
	6.5	SILTY CLAY: 2.5 YR 4/8, RED, SLIGHTLY MOIST, MED. PLAST., SOFT, 60% CLAY, 40% SILT	CL	4		
	8.0	CLAYEY SANDY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, SLIGHTLY MOIST, ROOTLETS, PEBBLES, 45% SILT, 35% SAND, 20% CLAY	ML	NR 5	 4.0	
	10.5	SILTY CLAY: 7.5 YR 4/4, DARK BROWN, MOIST, GRAY LENSES, HIGH PLAST., SOFT, 70% CLAY, 30% SILT	CH			
	12.0	SILTY CLAY: 10 YR 5/4, YELLOWISH BROWN WITH 2.5 YR 4/8, RED NODULES, MED. PLAST., SLIGHTLY MOIST, FIRM	CL	6 7	 4.0	
	14.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW, VERY HIGHLY WEATHERED, GRAY CLAY LENSES, SILTY	SHALE			
10/1/90 17.0'	16.0	SHALE: 2.5 Y 3/2, DARK GRAYISH BROWN, AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SILTY	SHALE	8 NR 9 10		
	23.0	SANDSTONE: VERY FINE GRAIN, VERY HARD	SANDSTONE	NR		
		SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, SILTY, SANDY, OXIDIZED ZONES, THINKLY LAMINATED	SHALE	1 2		
	27.0	SANDSTONE: 2.5 Y 4/6, DARK GRAY, FINE TO MED. GRAIN, MOIST	SANDSTONE	3 4		
	32.0	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY (BLACK), SANDY, PEBBLES, HIGHLY ORGANIC, LAMINATED	SHALE	5		
	34.7	T.D. 34.7'				

WELL COMPLETION DETAIL

▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-19A (BH-21 & BH-21A)**

DATE DRILLED 10/10/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR

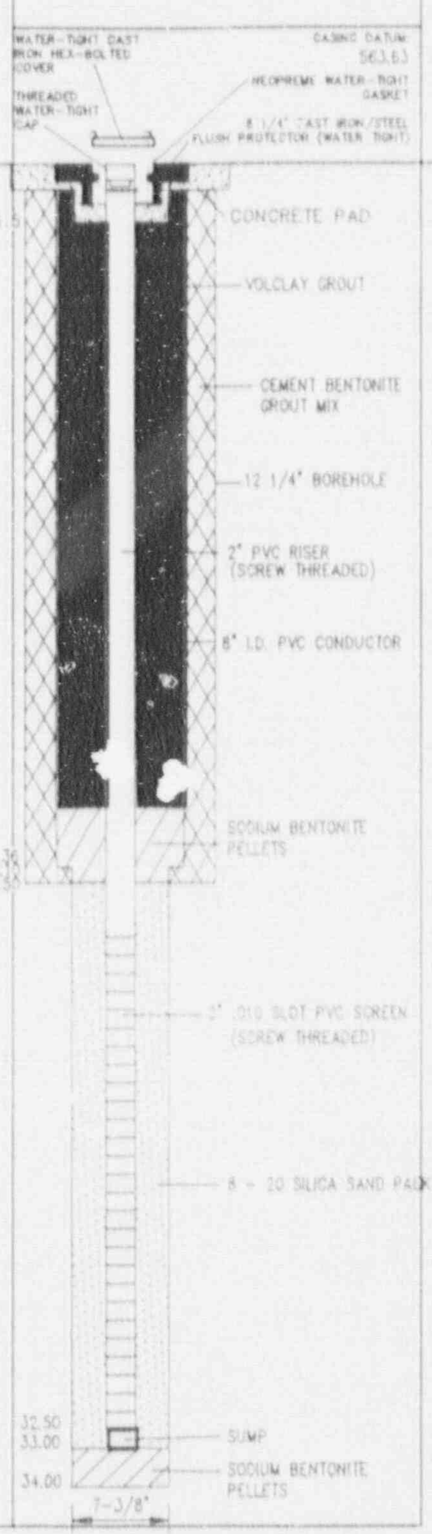
PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 563.85

10/2/90
▽ 8.0'

DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL
0	ASPHALT		NR 1	1.5
0.3	GRAVELLY SILTY CLAY: LOW TO MED. PLAST., SOFT TO FIRM, SILTY FROM 0.3-0.8' 7.5 YR 3/0, VERY DARK GRAY 0.3-0.8', 7.5 YR 5/6, STRONG BROWN, 0.8', 55% CLAY, 25% SILT, 20% GRAVEL	CL	NR 2	4.0
6.5	SILTY CLAY: 10 YR 6/8, BROWNISH YELLOW AND 7.5 YR 7/0, LIGHT GRAY, HIGH PLAST., SLIGHTLY MOIST, FIRM TO HARD, FRACTURE, PEBBLES IN GRAY ZONES, 70% CLAY, 30% SILT	CH	3	
8.5	SHALE: 2.5 Y 6/8, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY	SHALE	NR 4 5	3.5
13.5	SANDSTONE: 10 YR 5/3, BROWN, VERY FINE GRAIN, MINOR ANG. QRTZ.	SANDSTONE	1	
20	SANDY SHALE: VERY FINE GRAIN SAND, 30% SAND, 2.5 Y 4/0, DARK GRAY	SANDY SHALE	2 3	
23.0	SHALE: 2.5 Y 3/0, VERY DARK GRAY, HARD	SHALE	4	
25	SANDSTONE: VERY FINE GRAIN, 2.5 Y 3/0, VERY DARK GRAY, VERY HARD, SILICA CEMENT	SANDSTONE	5 6	
29.0	SANDY SHALE: VERY FINE GRAIN SAND, 2.5 Y 4/0, DARK GRAY, HARD	SANDY SHALE		
30	SANDSTONE: VERY FINE GRAIN SAND, 2.5 Y 4/0, DARK GRAY, VERY HARD	SANDSTONE	7	
31.5	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, HARD, FRACTURE AT ~ 31.5'	SHALE	8	
34.0	T.D. 34.0'			



▱	CME CONTINUOUS AUGER SAMPLER	▽	WATER TABLE (TIME OF BORING)
☒	STANDARD PENETRATION TEST	└	LABORATORY TEST LOCATION
☐	UNDISTURBED SAMPLE	+	PENETROMETER (TONS/SQ. FT.)
═	WATER TABLE (24 HOURS)		

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-20A (BH-13 & BH-13A)**

DATE DRILLED 10/6/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR

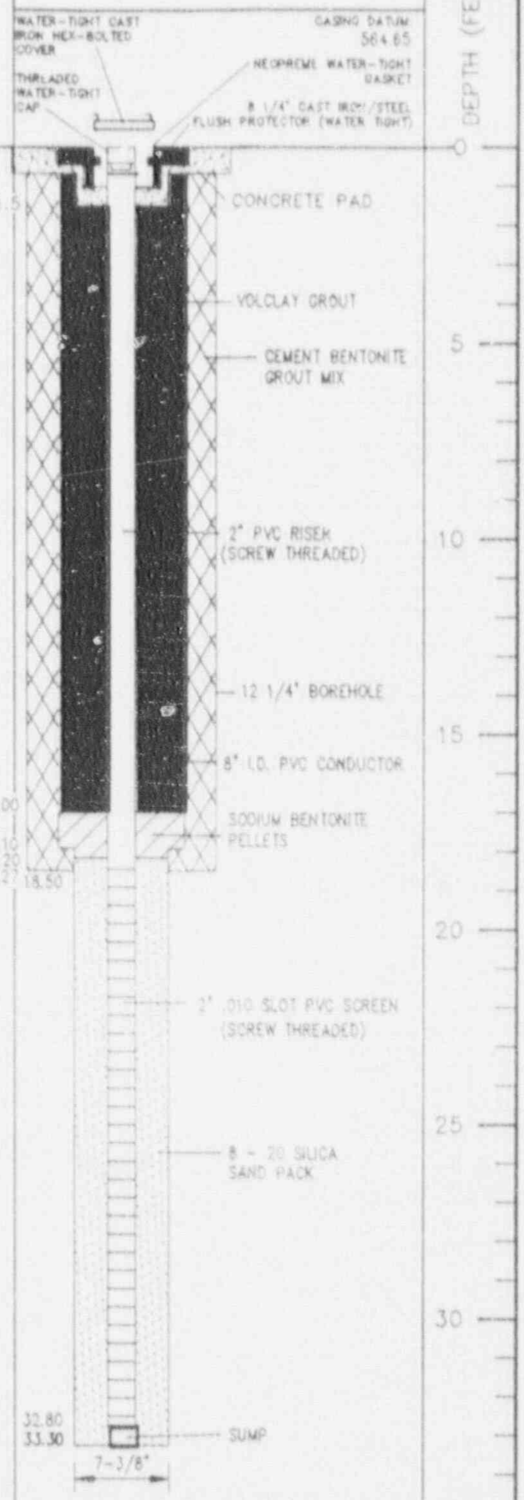
PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 564.93

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
	0	ASPHALT			NR 2.0	
	0.5	GRAVELLY SANDY CLAY: SLIGHTLY MOIST, FIRM, MED. PLAST., COLOR BLACK BY ASPHALT 0.5-0.7' 10 YR 5/6, YELLOWISH BROWN, 0.7-1.2', 7.5 YR 5/8, STRONG BROWN, 1.2-5.0', GRADATIONAL BOUNDARY	CL		1 NR	
	5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BRO[illegible]; CLAY LENSES 2.5 Y 7/0, LIGHT GRAY AT 5.0-7.0', VERY HIGHLY WEATHERED TO 7.0', FRACTURED, SILTY, OXIDIZED ZONES DARK GRAYISH BROWN BECOMES THE DOMINANT COLOR FROM 10.0-12.0'	SHALE		2 5.0 3 4 5 2.0	
10/7/90 ▽15.7'	12.0	SANDSTONE: VERY FINE GRAIN, 10 YR 3/4, YELLOWISH BROWN, HARD	SANDSTONE		NR 0.0 1	
	20	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 3/1, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE		2 3	
	23.5	SHALE: 10 YR 7/1, DARK GRAY, FISSILE, HARD	SHALE		4	
	25	SANDSTONE: VERY FINE GRAIN, 7.5 YR 3/0, VERY DARK GRAY, VERY HARD, SILICA CEMENT	SANDSTONE		5 6 7 NR	
	31.0	SANDY SHALE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY	SANDY SHALE		8	
	33.3	T.D. 33.3'				

WELL COMPLETION DETAIL



☐ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

+ PENETROMETER (TONS/SQ. FT.)

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NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***MW-21A (BH-15 & BH-15A)***

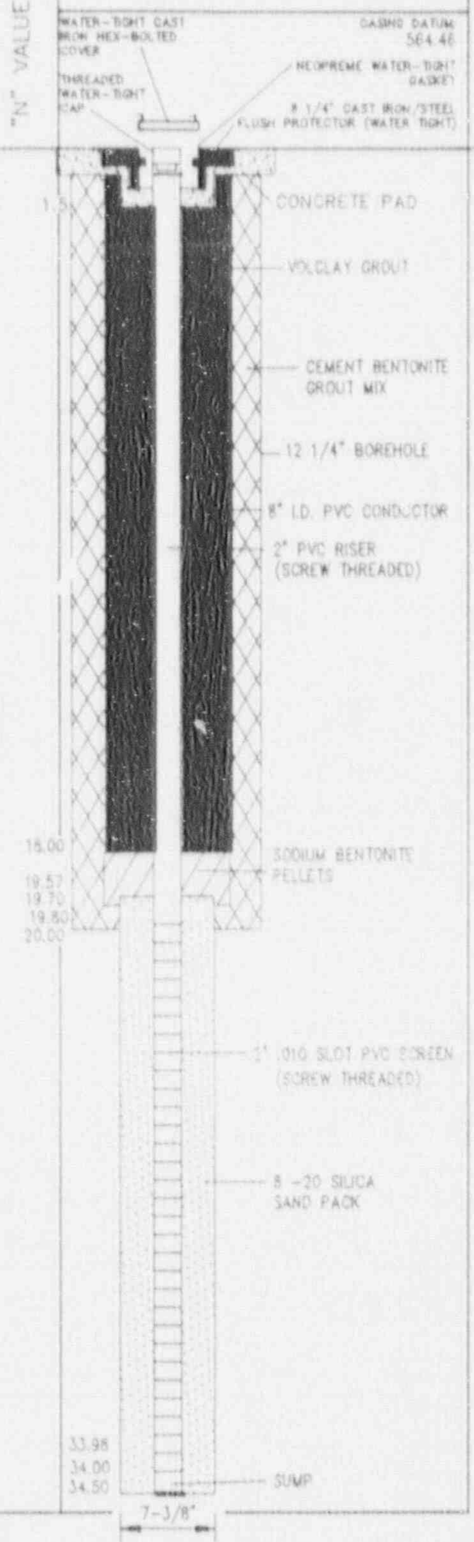
DATE DRILLED 10/7/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

WELL COMPLETION RECORD

GROUND SURFACE: 564.83

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE	INTERVAL	"N" VALUE
	0	CONCRETE			NR	0.5	
10/1/90 ▽ 6.0'	0.6	SILTY CLAY: 7.5 YR 4/6, STRONG BROWN, MED. PLAST., SOFT, SLIGHTLY MOIST, TRACE SAND AND GRAVEL, 55% CLAY, 45% SILT. 5 YR 5/8, YELLOWISH RED FROM 5.0-6.0'	CL		1 NR 2	5.0	
	6.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, VERY HIGHLY WEATHERED, CLAY LENSES 2.5 Y 7/0, LIGHT GRAY, WET, SILTY	SHALE		3		
	8.0	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 4/2, DARK GRAYISH BROWN, WEATHERED, FRACTURED, OXIDIZED BEDDING PLANES DUE TO GROUNDWATER MOVEMENT, FE ENRICHED LAYER AT 17.5-17.8', LIMONITE AT 18.0-18.1'	SHALE		4 5 6 7 8 9	5.0 3.3	
	18.3	SANDSTONE: VERY FINE GRAIN, 10 YR 4/2, DARK GRAYISH BROWN, HARD	SANDSTONE		NR 1 2 3	0.0	
	22.5	SANDY SHALE: VERY FINE SAND, 10 YR 3/1, VERY DARK GRAY, HARD	SANDY SHALE		NR 4		
	26.0	SHALE: 10 YR 3/1, BLACK, FISSILE, HARD	SHALE		5		
	27.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONG SILICA CEMENT, VERY HARD	SANDSTONE		6 NR 7 8		
	32.0	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 2/1, BLACK, FISSILE, HARD	SANDY SHALE		NR		
	34.0	T.D. 34.5'					

WELL COMPLETION DETAIL



▨ CME CONTINUOUS AUGER SAMPLER	WATER TABLE (TIME OF BORING)
☒ STANDARD PENETRATION TEST	LABORATORY TEST LOCATION
☐ UNDISTURBED SAMPLE	+ PENETROMETER (TONS/SQ. FT.)
WATER TABLE (24 HOURS)	

JOB NAME/NUMBER ***SEQUOYAH\ 90067***

BORING NUMBER ***MW-22A (BH-23 & BH-23A)***

DATE DRILLED 10/7/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY SAR PAGE 1 OF 1

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NORMAN, OKLAHOMA 73072
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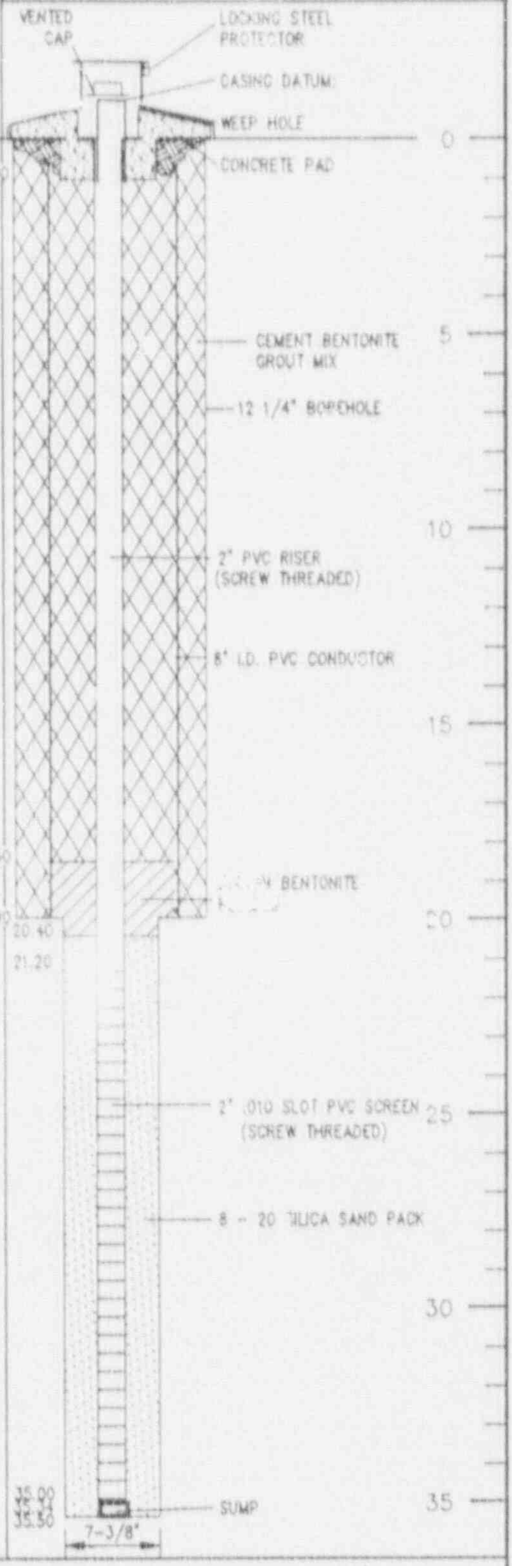
WELL COMPLETION RECORD

GROUND SURFACE: 565.70

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
	0	GRAVELLYB SANDY CLAY: 5 YR 5/8, YELLOWISH RED AND 2.5 YR 4/8, RED, SLIGHTLY MOIST, LOW PLAST., 40% CLAY, 30% SAND, 30% GRAVEL	CL	1 NR	2.0	
	5.2	SILTY CLAY: 5 Y 4/1, DARK GRAY GRADING TO 5 Y 7/1, LIGHT GRAY AT 5.4', HIGH PLAST., SLIGHTLY MOIST, HARD, 75% CLAY, 25% SILT	CH	2	2.0	
	6.7	SHALE: 5 Y 4/2, OLIVE GRAY AND 10 YR 5/8, YELLOWISH BROWN, FRACTURED, WEATHERED, THINNLY BEDDED, SILTY, DRY TO SLIGHTLY MOIST, SILTSTONE LENSE 10 YR 3/1, VERY DARK GRAY 10.0-10.2', SHALE BECOMES HARD AT 18.0' AND IS 2.5 Y 2/0, BLACK	SHALE	NR 3 4 5 6 7 NR	5.0 3.0	
	19.0	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE	NS		
11/7/90 22.0'	19.5	SHALE: 2.5 Y 4/4, OLIVE BROWN, HIGHLY WEATHERED, FRACTURED, OXIDIZED BEDDING PLANES	SHALE			
	24.0	SHALE: 2.5 Y 3/0, VERY DARK GRAY, FISSILE, WEATHERED	SHALE			
	25.0	SANDSTONE: 2.5 Y 5/0, GRAY, FINE GRAINED, FAIRLY HARD, SEM. CEMENTED	SANDSTONE			
	26.0	SHALE: 5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, FINELY BEDDED, OXIDIZED ZONES	SHALE	1 2 3 4		
	33.5	SHALE: 5 Y 2.5/1, BLACK, FISSILE, BEDDING, HIGHLY WEATHERED	SHALE			
	34.0	SANDSTONE: 10 YR 6/1, GRAY TO LIGHT GRAY VERY HIGHLY CEMENTED, VERY HARD, FINE GRAINED	SANDSTONE	5		

T.D. 35.5'

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
═	WATER TABLE (24 HOURS)
≡	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

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JOB NAME/NUMBER ***SEQUOYAH\ 90067***

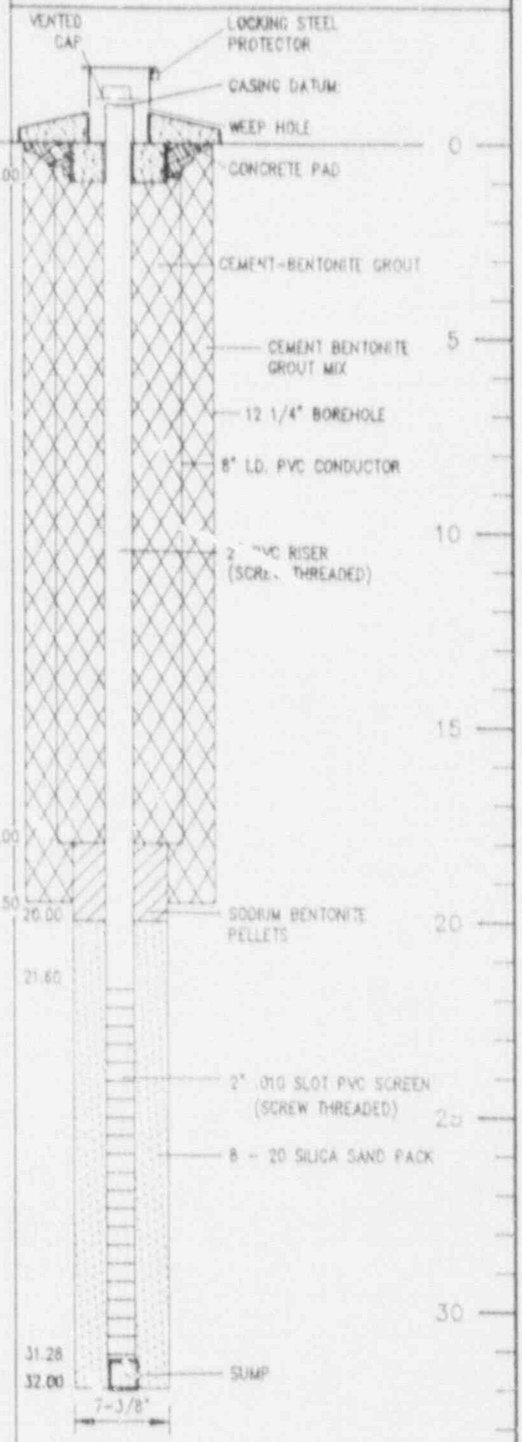
BORING NUMBER ***MW-24A(BH-26 & BH-26A)***

DATE DRILLED 11/7/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE INTERVAL	"N" VALUE
		GROUND SURFACE: 565.80			
	0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 Y 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3-5.6', 65% CLAY, 35% SILT	CH	1 1.0 NR	
	5.5	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 7/1, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 9.5'	SHALE	2 3.0	
10/3/90 13.0'	7.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES	SHALE	3 NR 4 2.0 NR 5 3.0 6	
	18.0	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE	NS	
	18.6	CONDUCTOR CASING			
	19.5	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATLEY HARD	SANDSTONE		
11/8/90 21.0'	20.2	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN, HIGHLY WEATHERED, OXIDIZED BEDDING PLANES, MOIST TO WET	SHALE	1 2 3	
	24.8	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE		
	25.5	SHALE: 2.5 Y 3/2, VERY DARK GRAYISH BROWN, WEATHERED, OXIDATION, FRACTURED, WET, SOFT	SHALE	4 5	
	29.0	SHALE: 2.5 Y 3/0, BLACK, FISSILE, SOFT, HIGHLY ORGANIC, WET	SHALE		
	30.5	SANDSTONE: 2.5 Y 2/0, BLACK AND 2.5 Y 6/1, GRAY, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAINED	SANDSTONE	6	
	32.0	T.D. 32.0' NOTE: 1) CONDUCTOR SET ACROSS SANDSTONE AT 18.0-18.6' 2) NS: NO SAMPLE COLLECTED FOR OVM ANALYSIS			
	35				

WELL COMPLETION DETAIL



▭ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

▭ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

└ LABORATORY TEST LOCATION

+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-25A (BH-27 & BH-27A)**

DATE DRILLED 11/8/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

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NORMAN, OKLAHOMA 73072
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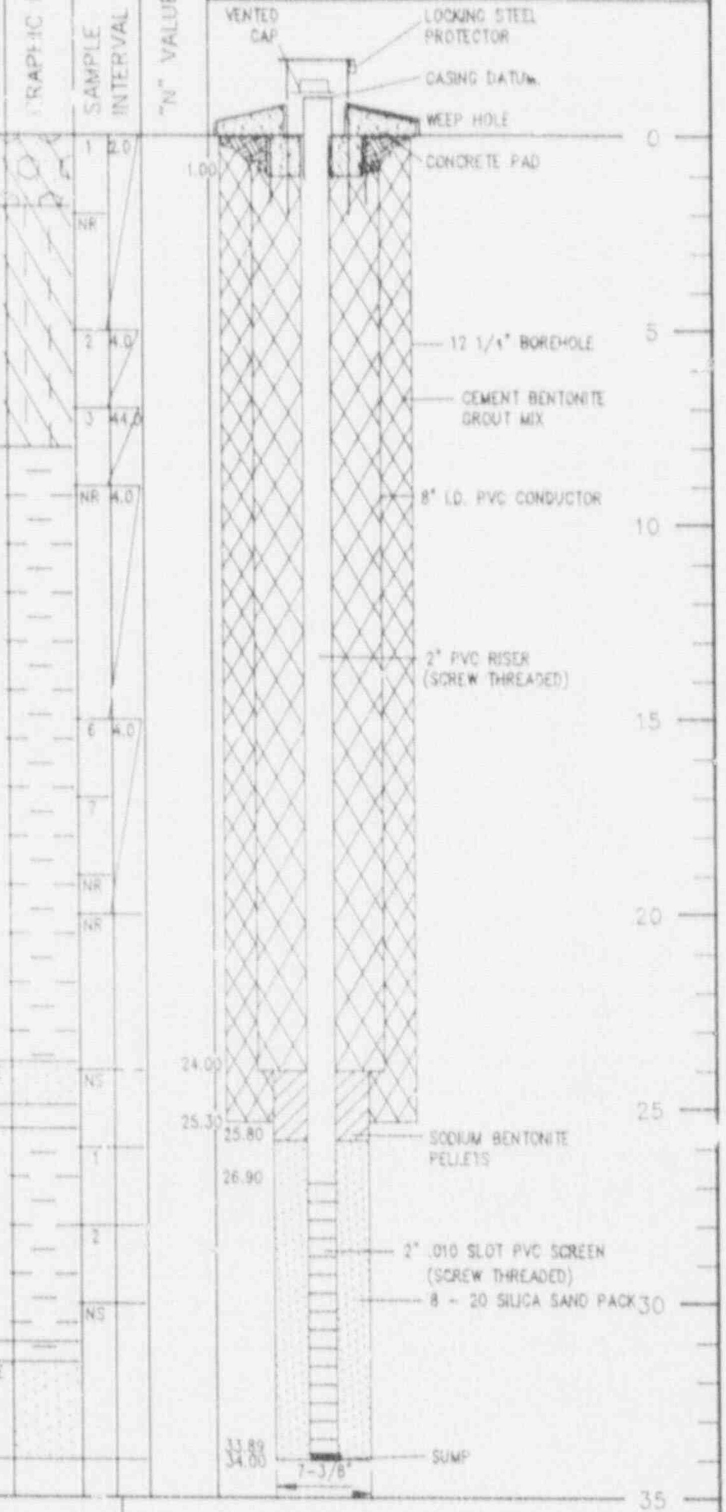
WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
		GROUND SURFACE: 565.80	
	0	GRAVELLY SANDY CLAY: 5 YR 5/8, YELLOWISH RED AND 2.5 YR 4/8, RED, LOW PLAST., DRY TO SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL
	1.8	SILTY CLAY: 2.5 6/6, OLIVE YELLOW, MOTTLED 2.5 Y 6/0, GRAY, HIGH PLAST., HARD, SLIGHTLY MOIST, 70% CLAY, 30% SILT	CL
	8.0	SHALE: 2.5 Y 4/2, DARK GRAYISH BROWN AND 2.5 Y 6/6, OLIVE YELLOW, WEATHERED, FRACTURED, SLIGHTLY MOIST, SILTY, FE STAINING AT 10.4', SHALE BECOMES HARD AT 19.5', 2.5 Y 2/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW, SILTY NOTE: 1) CONDUCTOR CASING SET ACROSS THE SANDSTONE AT 23.8' TO 24.9' 2) ND: NO SAMPLE COLLECTED FOR OVM ANALYSIS	SHALE
	23.8	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE
	24.9	CONDUCTOR CASING	
11/8/90 ∇ 26.0	25.5	SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, SANDY AT 26.0-28.0', VERY FINELY LAMINATED	SHALE
	31.0	SHALE: 2.5 Y 2/0, BLACK, FISSILE, HIGHLY ORGANIC, WET	SHALE
	31.5	SANDSTONE: 2.5 Y 8/1 AND 2.5 Y 2/0, GRAY AND BLACK, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAINED	SANDSTONE
	34.0	T.D. 34.0	



▨ GME CONTINUOUS AUGER SAMPLER
☒ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
WATER TABLE (24 HOURS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-26A (BH-28 & BH-28A)**

DATE DRILLED 11/8/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY JMB
CHECKED BY BJS
DRAWN BY: SAR
PAGE 1 OF 1

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NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		GROUND SURFACE: 565.20				
	0	GRAVELLY SILTY CLAY: 2.5 YR 4/6, RED, HIGH PLAST., SOFT, SLIGHTLY MOIST, 55% CLAY, 25% SILT, 20% GRAVEL, SILTY CLAY, 2.5 7/6, YELLOW AND 2.5 Y 8/1, WHITE FROM 0.3-5.0', 65% CLAY, 35% SILT	CH		1 1.0 NR	
	5	SHALE: 2.5 6/6, OLIVE YELLOW AND 2.5 Y 7/1, LIGHT GRAY, VERY HIGHLY WEATHERED, FRACTURED, CLAYEY, IRON BOXWORK AT 9.5' NOTE: 1) CONDUCTOR CASING SET ACROSS SANDSTONE AT 18.0' - 18.2, AND 19.0' - 19.4', AND 22.0' - 23.5' 2) SHALE, 2.5 Y 2/0, BLACK 29.3' - 30.0' 3) NS: NO SAMPLE COLLECTED FOR OVM ANALYSIS	SHALE		2 5.0 3 4 5 3.0 6 NR 7 5.0 8	
	18.0	SHALE: 5 Y 4/1, DARK GRAY AND 2.5 Y 6/6, OLIVE YELLOW, FRACTURED, WEATHERED, SILTY COLOR CHANGES TO 2.5 Y 3/0, BLACK AND 2.5 Y 6/6, OLIVE YELLOW AT 16.0', OXIDIZED BEDDING PLANES, MINOR SANDSTONE LENSES AT 18.0-18.2', 19.0-19.4', 22.0-23.5'	SHALE		9 10 2.0 NS	
11/8/90 23.5	23.5	CONDUCTOR CASING SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, FINELY LAMINATED	SHALE			
	25.0	SANDSTONE: 2.5 Y 7/1, LIGHT GRAY, FINE GRAINED, MODERATELY HARD	SANDSTONE		1	
	26.0	SHALE: 2.5 Y 3/1, VERY DARK GRAY, WEATHERED, WET, OXIDATION COMMON, FINELY LAMINATED	SHALE		2 3	
	30.0	SANDSTONE: 2.5 Y 2/0, AND 2.5 Y 6/1, BLACK AND GRAY, HIGHLY CEMENTED WITH SILICA, VERY HARD, FINE GRAIN	SANDSTONE		4	
	34.0	T.D. 34.''				
	35					

WELL COMPLETION DETAIL

CME CONTINUOUS AUGER SAMPLER

STANDARD PENETRATION TEST

UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER SEQUOYAH\ 90067

BORING NUMBER MW-27A (BH-29 & BH-29A)

DATE DRILLED 11/8/90

DRILLING METHOD AIR ROTARY

DRILLED BY

LOGGED BY JMB

CHECKED BY BJS

DRAWN BY SAR

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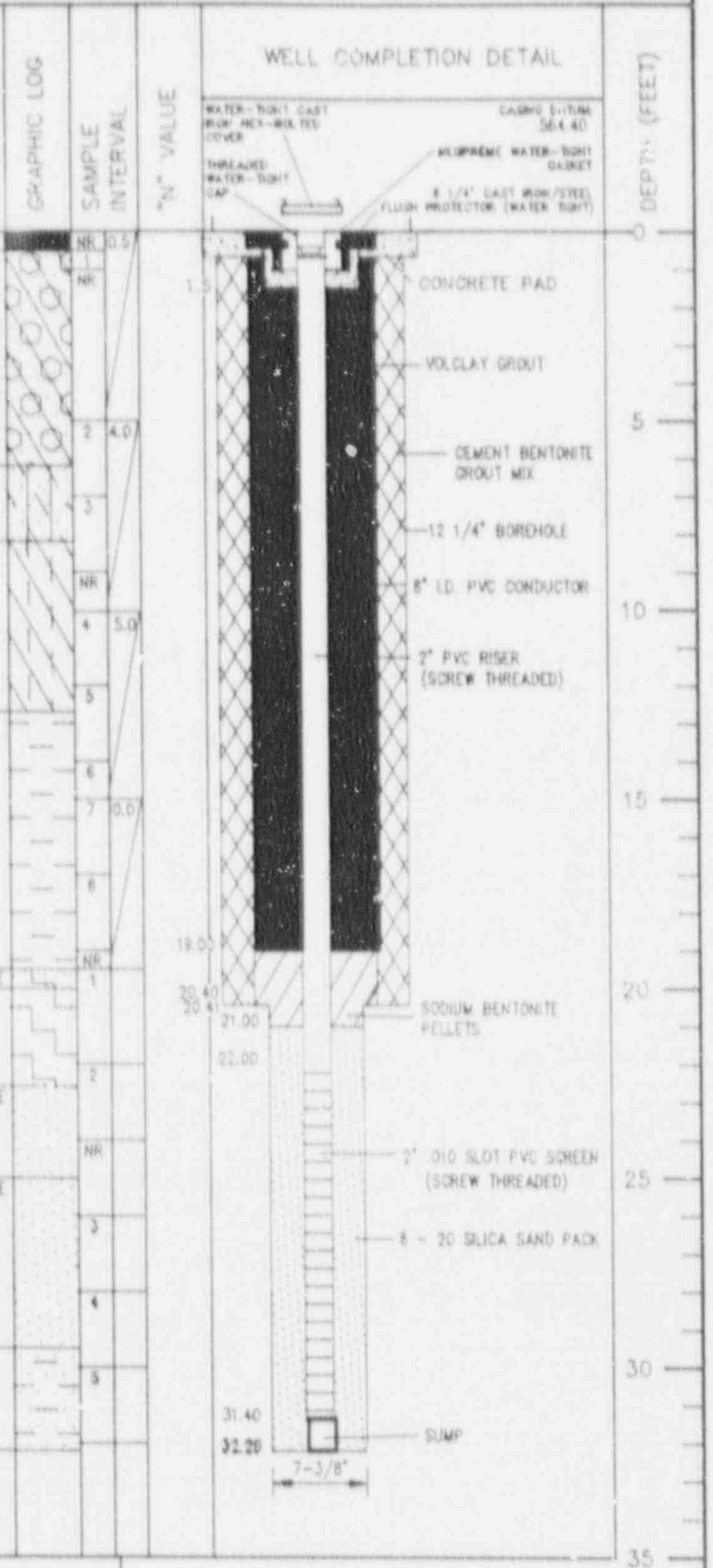
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GROUND SURFACE: 564.61

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION
	0	ASPHALT	
	0.5	GRAVELLY SANDY CLAY: 7.5 YR 5/6, STRONG BROWN, LOW PLAST., FIRM, DRY TO SLIGHTLY MOIST, 40% CLAY, 30% SAND, 30% GRAVEL	CL
	6.2	SANDY CLAYEY SILT: 2.5 Y 4/2, DARK GRAYISH BROWN, AND 2.5 Y 5/4, LIGHT OLIVE BROWN (6.4–6.6'), DRY TO SLIGHTLY MOIST, 50% SILT, 30% SAND, 20% CLAY	ML
	8.2	SILTY CLAY: 2.5 YR 4/8, RED, MOTTLED 2.5 Y 5/4, LIGHT OLIVE BROWN WITH LIGHT OLIVE COLOR BECOMING DOMINANT AT 10.5', HIGH PLAST., HARD, 70% CLAY, 30% SILT	CH
	12.7	SHALE: 2.5 Y 6/6, OLIVE YELLOW AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, WEATHERED, FRACTURED, SILTY, GRAY CLAY LENSE AT 15.5'	SHALE
	19.5	SANDSTONE: VERY FINE GRAIN, VERY HARD	SANDSTONE
		SILTY SHALE: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, WET, SOFT	SHALE
	22.6	SHALY SANDSTONE: 2.5 Y 5/4, LIGHT OLIVE BROWN, SILTY, WET, PEBBLES	SANDSTONE
	25	SANDSTONE: 2.5 Y 4/6, DARK GRAY, HARD, FINE-MED. GRAIN SAND	SANDSTONE
	29.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, PEBBLES, COMMON, HIGHLY ORGANIC	SHALE
	32.2	T.D. 32.2'	



▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER *SEQUOYAH\ 90067*

BORING NUMBER **MW-28A (BH-33 & BH-33A)**

DATE DRILLED 10/11/90
DRILLING METHOD AIR ROTARY
DRILLED BY
LOGGED BY JMB
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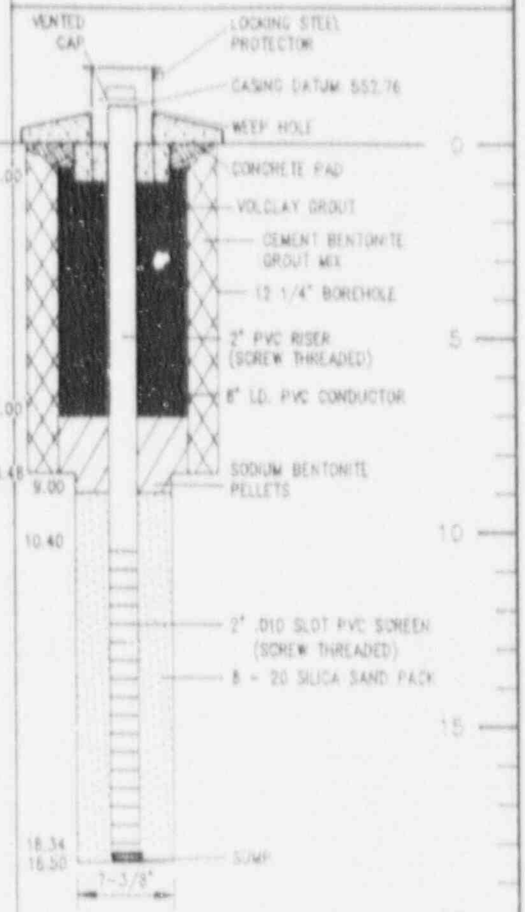
NORMAN, OKLAHOMA 73072
(405) 321-3885

WELL COMPLETION RECORD

GROUND SURFACE: 550.50

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL		"N" VALUE
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS, PEBBLES, 70% SILT, 30% CLAY	CL		1	2.0	
	1.0	SILTY CLAY: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOTTLED 5 YR 5/8, YELLOWISH RED, LOW TO MED. PLAST., MOIST, 55% CLAY, 45% SILT	CL		NR		
	2.5	SILTY CLAY: WEATHERED SHALE, 2.5 Y 5/4, LIGHT OLIVE BROWN, MOTTLED 2.5 Y 7/0, LIGHT GRAY, MOIST, PEBBLES, HIGH PLAST.	CH		2	0.0	
	5						
	7.0	SANDSTONE: VERY FINE GRAIN, VERY HARD	SANDSTONE		NS		
	7.5	SHALE: 2.5 Y 6/4, LIGHT YELLOWISH BROWN, SILTY, DRY, MINOR SAND	SHALE		1		
	10 10.2	SANDY SHALE: 2.5 Y 5/4, LIGHT YELLOWISH BROWN, GRADING INTO SANDSTONE, DRY	SHALE		2		
	12.5	SANDSTONE: 2.5 Y 4/6, DARK GRAY, MOIST TO WET, HARD	SANDSTONE		3 4		
	15						
	16.5	SANDY SHALE: 2.5 Y 3/0, VERY DARK GRAY, DRY, VERY THINNLY BEDDED, FISSILE	SHALE		5		
	18.5	T.D. 18.5'					
	20						
	25						
	30						
	35						

WELL COMPLETION DETAIL



25

30

35

▨ CME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

\+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\ 90067**

BORING NUMBER **MW-30A (BH-31 & BH-31A)**

DATE DRILLED

DRILLING METHOD AIR ROTARY

DRILLED BY

LOGGED BY JMB

CHECKED BY BJS

DRAWN BY: SAR

PAGE 1 OF 1

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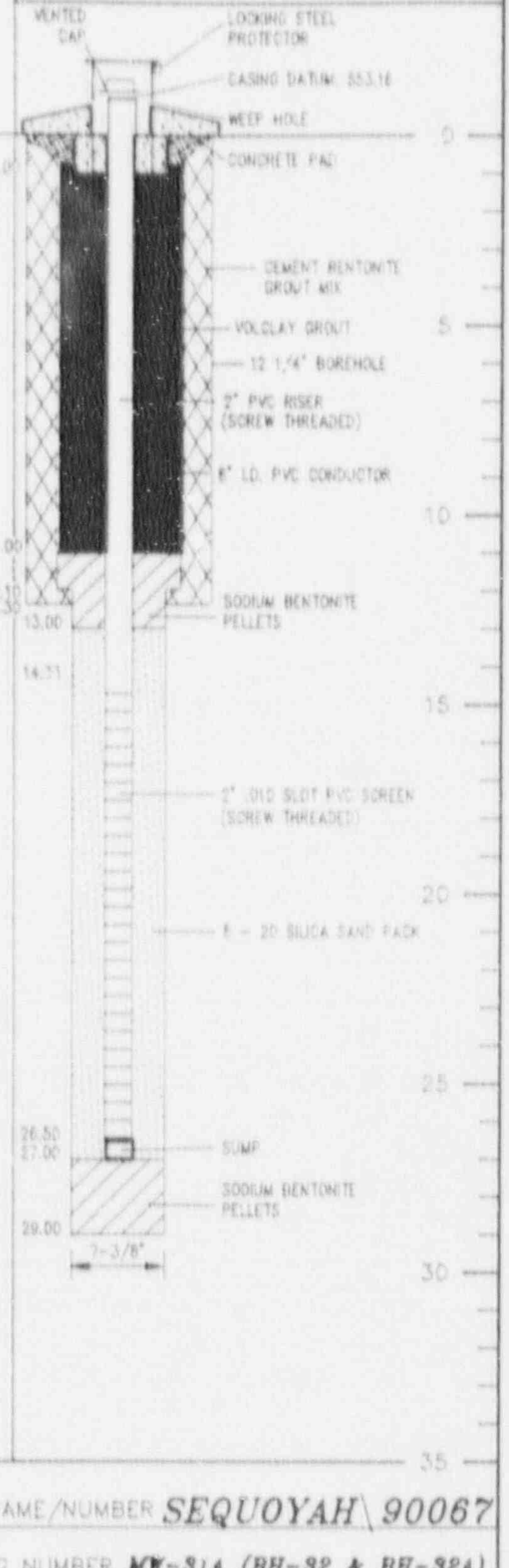
NORMAN, OKLAHOMA 73072
(405) 321-3895

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	SAMPLE	INTERVAL	"N" VALUE
		GROUND SURFACE: 551.10				
	0	CLAYEY SILT: 10 YR 3/2, VERY DARK GRAYISH BROWN, MOIST, ROOTLETS TO 2.0', 70% SILT, 30% CLAY	CL	1 NR	2.0'	
	5.5	GRAVELLY SILTY CLAY: 7.5 YR 5/6, STRONG BROWN, MOTTLED 7.5 YR 7/0, LIGHT GRAY, MOIST, MED. PLAST., FIRM, 50% CLAY, 30% SILT, 20% GRAVEL	CL	2 3	4.5' 4.5'	
	9.0	SHALE: 2.5 Y 5/6, LIGHT OLIVE BROWN AND 2.5 Y 3/2, VERY DARK GRAYISH BROWN, SILTY, WEATHERED, FRACTURED, GRAY CLAY LENSES AT 10.5'	SHALE	4 NR 5	4.5' .5'	
	11.5	SANDSTONE: VERY FINE GRAIN, 10 YR 6/4, LIGHT YELLOWISH BROWN, HARD	SANDSTONE	1 2	10.0'	
	16.0	SANDY SHALE: VERY FINE GRAIN SAND, 10 YR 5/1, GRAY, HARD, 30% SAND, 10 YR 3/1, AFTER 18.0', 10% SAND	SANDY SHALE	3 4		
	19.5	SHALE: 10 YR 3/1, BLACK, FISSILE	SHALE	5		
	21.0	SANDSTONE: VERY FINE GRAIN, 10 YR 4/1, DARK GRAY, STRONGLY CEMENTED WITH SILICA	SANDSTONE	6 7 8		
	25	SANDY SHALE: VERY FINE GRAIN SAND, 7.5 YR 3/0, VERY DARK GRAY, FISSILE, HARD	SANDY SHALE	9 10		
	29.0	T.D. 29.0'				

WELL COMPLETION DETAIL



▨	CME CONTINUOUS AUGER SAMPLER
☒	STANDARD PENETRATION TEST
☐	UNDISTURBED SAMPLE
—	WATER TABLE (24 HOURS)
—	WATER TABLE (TIME OF BORING)
└	LABORATORY TEST LOCATION
+	PENETROMETER (TONS/SQ. FT.)

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS
3700 W. ROBINSON
NORMAN, OKLAHOMA 73072
(405) 321-3895

JOB NAME/NUMBER **SEQUOYAH\ 90067**

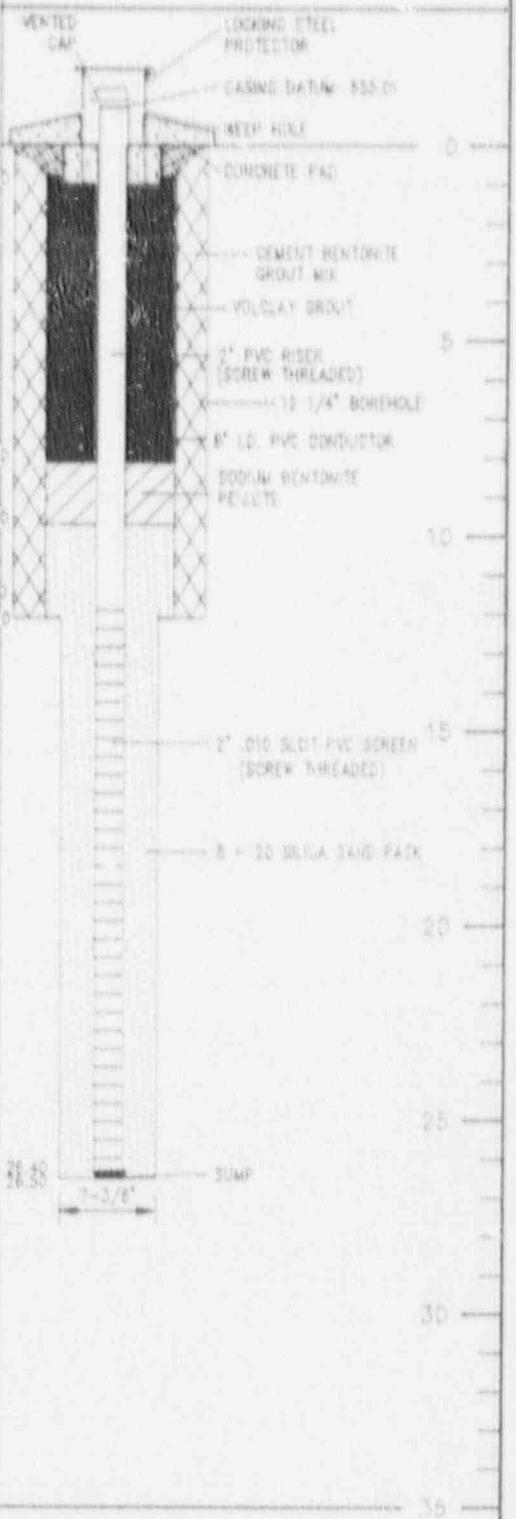
BORING NUMBER **MW-31A (BH-32 & BH-32A)**

DATE DRILLED 10/7/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY WEP
CHECKED BY BJS
DRAWN BY: SAR PAGE 1 OF 1

WELL COMPLETION RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	SAMPLE INTERVAL	"N" VALUE
		GROUND SURFACE: 552.70				
	0	CLAYEY SILT: 10 YR 4/4, DARK YELLOWISH BROWN, MOIST, ROOTLETS, 70% SILT, 30% CLAY	CL		1	2.0
	1.0	SILTY CLAY: 10 YR 3/1, VERY DARK GRAY, AND 5 YR 5/6, YELLOWISH RED, MED. PLAST., SLIGHTLY MOIST, TO MOIST, FIRM, 60% CLAY, 40% SILT	CL		NR	
	5.0	SHALE: 2.5 Y 5/4, LIGHT OLIVE BROWN, AND 2.5 Y 3/0, VERY DARK GRAY, BROWN DOMINANT FROM 6.5-8.5', GRAY IS DOMINAT FROM 5.0-6.5', SILTY, HIGHLY WEATHERED, FRACTURED	SHALE		2	3.5
					3	
	8.5	SANDSTONE: 10 YR 6/3, PALE BROWN, SOFT TO HARD, VERY FINE GRAIN QUARTZ SAND, LIMONITE STAINING, IRON OXIDE CONCRETIONS, MOIST	SANDSTONE		NS	0.0
					1	
					2	
	13.0	SHALE: 7.5 YR 3/0, VERY DARK GRAY, MOIST, HARD, FISSILE, THIN LAMINATIONS, VERY SANDY, 40% FINE GRAINED SAND, LIMONITE STAINING LOCALLY	SHALE		3	
					4	
	18.0	SHALE: 7.5 YR N2/0, BLACK, HARD, PETROLIFEROUS, FISSILE, THIN BEDDED	SHALE		5	
	19.0	SANDSTONE: 7.5 YR 6/0, LIGHT GRAY, VERY HARD, VERY FINE GRAIN QUARTZ SAND, SLIGHTLY MOIST	SANDSTONE		6	
					7	
					8	
	24.5	SHALE: 7.5 YR N2/0, BLACK, DRY, SOFT, PETROLIFEROUS, FISSILE	SHALE			
	26.5	T.D. 26.5				

WELL COMPLETION DETAIL



▨ OME CONTINUOUS AUGER SAMPLER

☒ STANDARD PENETRATION TEST

☐ UNDISTURBED SAMPLE

WATER TABLE (24 HOURS)

WATER TABLE (TIME OF BORING)

LABORATORY TEST LOCATION

+ PENETROMETER (TONS/SQ. FT.)

JOB NAME/NUMBER **SEQUOYAH\90067**

BORING NUMBER **MW-32A (BH-30 & BH-30A)**

DATE DRILLED 10/11/90
DRILLING METHOD AIR ROTARY
DRILLED BY POOL
LOGGED BY MT
CHECKED BY BJS
DRAWN BY: SAR

PAGE 1 OF 1

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ENVIRONMENTAL CONSULTANTS
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APPENDIX G

SLUG TEST DATA

SUMMARY OF SLUG TEST DATA

SHALLOW WELLS

WELL #	TEST TYPE	W.L.(G.L.)	WELL T.D.(G.L.)	Lw WTR COLMN	TOP OF SCREEN	BOTTOM OF SCREEN	Le SCR LENGTH	COEFFICIENT C
1	SLUG	5.31	17.23	11.92	7.08	16.60	9.52	2.1
2	SLUG	5.59	14.50	8.91	4.36	13.82	9.46	2.0
5	SLUG	0.80	10.90	10.10	3.69	10.74	7.05	1.8
6	SLUG	8.13	14.95	6.82	4.96	14.44	9.48	2.1
8	SLUG	7.52	17.39	9.87	7.55	17.05	9.50	2.1
11	SLUG	4.87	18.81	13.94	8.83	18.31	9.48	2.1
12	SLUG (2)	8.90	19.15	10.25	9.02	18.50	9.48	2.1
13	SLUG	10.39	20.88	10.49	10.73	20.25	9.52	2.1
14	SLUG (2)	4.70	14.03	9.33	4.05	13.55	9.50	2.1
15	SLUG	8.25	12.14	3.89	4.48	11.98	7.50	1.8
16	SLUG (1)	8.03	16.68	8.65	6.50	15.98	9.48	2.1
16	SLUG (2)	8.03	16.68	8.65	6.50	15.98	9.48	2.1
17	SLUG (1)	6.67	16.39	9.72	6.21	15.69	9.48	2.1
17	SLUG (2)	6.67	16.39	9.72	6.21	15.69	9.48	2.1
18	SLUG	5.81	19.40	13.59	9.25	18.70	9.45	2.1
19	SLUG (1)	4.55	20.93	16.38	10.75	20.23	9.48	2.1
19	SLUG (2)	4.48	20.93	16.45	10.75	20.23	9.48	2.1
30	SLUG	1.84	6.80	4.96	2.85	5.97	3.12	1.3

DEEP WELLS

WELL #	TEST TYPE	W.L.(G.L.)	WELL T.D.(G.L.)	Lw WTR COLMN	TOP OF SCREEN	BOTTOM OF SCREEN	Le SCR LENGTH	COEFFICIENT C
2A	FALL	6.09	31.28	25.19	18.13	30.53	12.40	2.5
2A	RISE	6.09	31.28	25.19	18.13	30.53	12.40	2.5
3A	FALL	6.11	34.00	27.89	16.80	33.90	17.10	2.9
3A	RISE	6.11	34.00	27.89	16.80	33.90	17.10	2.9
4A	FALL	4.68	31.60	26.92	17.39	31.42	14.03	2.6
4A	RISE	4.68	31.60	26.92	17.39	31.42	14.03	2.6
5A	FALL	5.41	32.10	26.69	16.79	31.60	14.81	2.7
5A	RISE	5.41	32.10	26.69	16.79	31.60	14.81	2.7
6A	FALL	8.68	35.00	26.32	20.28	34.84	14.56	2.7
6A	RISE	8.68	35.00	26.32	20.28	34.84	14.56	2.7
8A	FALL	6.79	31.00	24.21	19.10	30.50	11.40	2.3
8A	RISE	6.79	31.00	24.21	19.10	30.50	11.40	2.3
9A	FALL	7.24	31.80	24.56	20.30	31.63	11.33	2.3
9A	RISE	7.24	31.80	24.56	20.30	31.63	11.33	2.3
10A	FALL	7.19	35.00	27.81	21.19	34.50	13.31	2.5
10A	RISE	7.19	35.00	27.81	21.19	34.50	13.31	2.5
11A	RISE	10.44	37.00	26.56	21.47	36.23	14.76	2.7
12A	FALL	9.39	38.00	28.61	22.75	37.17	14.42	1.8
12A	RISE	9.39	38.00	28.61	22.75	37.17	14.42	1.8

SUMMARY OF SLUG TEST DATA

DEEP WELLS CONTINUED

WELL #	TEST TYPE	W.L.(G.L.)	WELL T.D.(G.L.)	Lw WTR COLMN	TOP OF SCREEN	BOTTOM OF SCREEN	Le SCR LENGTH	COEFFICIENT C
13A	FALL	9.99	30.90	20.91	23.40	30.74	7.34	1.8
14A	FALL	7.30	32.29	24.99	22.08	31.54	9.46	2.0
14A	RISE	7.30	32.29	24.99	22.08	31.54	9.46	2.0
17A	FALL	7.27	31.90	24.63	21.65	31.12	9.47	2.1
17A	RISE (1)	7.27	31.90	24.63	21.65	31.12	9.47	2.1
17A	FALL (2)	7.75	31.90	24.63	21.65	31.12	9.47	2.1
20A	FALL	6.65	33.00	26.35	19.80	32.50	12.70	2.4
20A	RISE	6.65	33.00	26.35	19.80	32.50	12.70	2.4
21A	FALL	7.35	33.30	25.95	18.50	32.80	14.30	2.6
21A	RISE	7.35	33.30	25.95	18.50	32.80	14.30	2.6
22A	FALL	9.03	34.00	24.97	20.00	33.98	13.98	2.6
22A	RISE	9.03	34.00	24.97	20.00	33.98	13.98	2.6
24A	FALL	11.69	35.34	23.65	21.20	35.00	13.80	2.6
28A	FALL	9.17	31.40	22.23	22.00	31.40	9.40	2.0
30A	RISE (1)	0.00	18.50	18.50	10.40	18.34	7.94	1.9
30A	RISE (2)	0.00	18.50	18.50	10.40	18.34	7.94	1.9
31A	RISE	-0.99	27.00	27.99	14.33	26.50	12.17	2.4
32A	RISE	-1.29	26.50	27.79	12.10	26.40	14.30	2.6

SLUG TEST DATA

SHALLOW SHALE WELLS

```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                               SLUG  TEST
                    ----------------------------------

MONITORING WELL NUMBER:      MW-1
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         FALLING  HEAD
STATIC WATER LEVEL (G.L.):            5.31      FT
WELL TOTAL DEPTH (G.L.):             17.23      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   11.92   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   11.92   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.52   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
    1.35   FT = yo = y AT TIME ZERO
    1.21   FT = yt = y AT TIME t
    34.0    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                1
SOLVING FOR:   ln Re/rw  =  -------------------------------------------------
                                  1.1                        C
                            --------------------------- + ---------------
                                 ln  (Lw/rw)                  Le/rw

                                                1
                         =  -------------------------------------------------
                                  1.1                       2.1
                            --------------------------- + ---------------
                            ln (    11.92 /  0.307    )      9.52 / 0.307

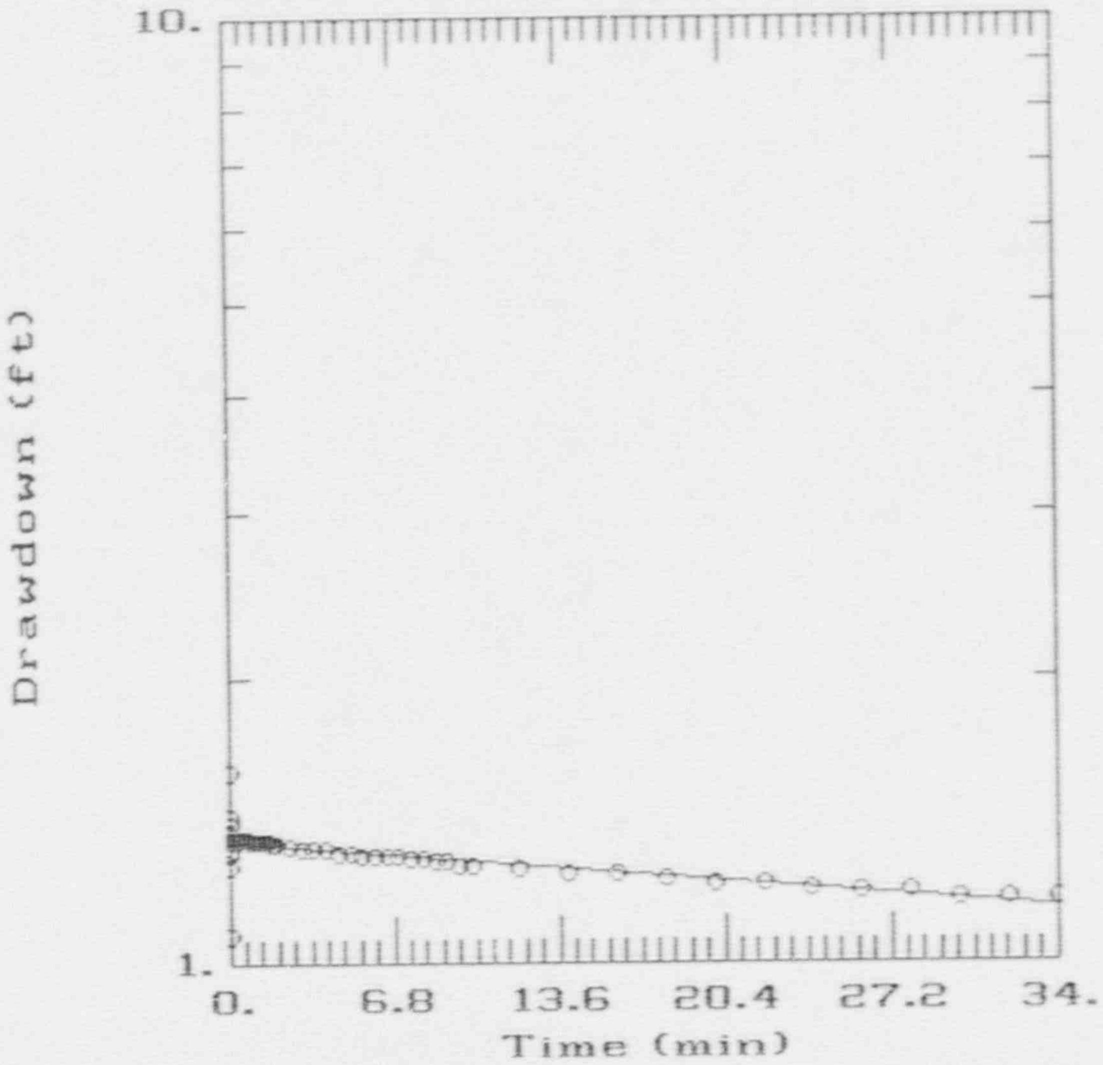
                                                1
                         =  -------------------------------------------------
                                  1.1                       2.1
                            --------------------------- + ---------------
                                 3.66                      31.01

                         =  2.71
                            =====
                                  2
                                rc    ln(Re/rw)      1             yo
SOLVING FOR:        K    =  -------------------------  ----      ln  -------
                              2 Le                     t              yt
                                   2
                           0.0833 (   2.71 )         1             1.35
                         =  -------------------------  ----      ln  -------
                              (2)        9.52          34            1.205

                          0.01884
                         =  ---------------- 0.029   ( 0.1 )
                            19.04

                         =       3.31E-06    FT/MIN
                            ======================
                                                          2
EQUIVALENT  K  VALUES    =              0.04    GAL/DAY/FT
                                        0.00    FT/DAY
                                    1.68E-06    CM/SEC
```

MW-1 FALLING HEAD TEST



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                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

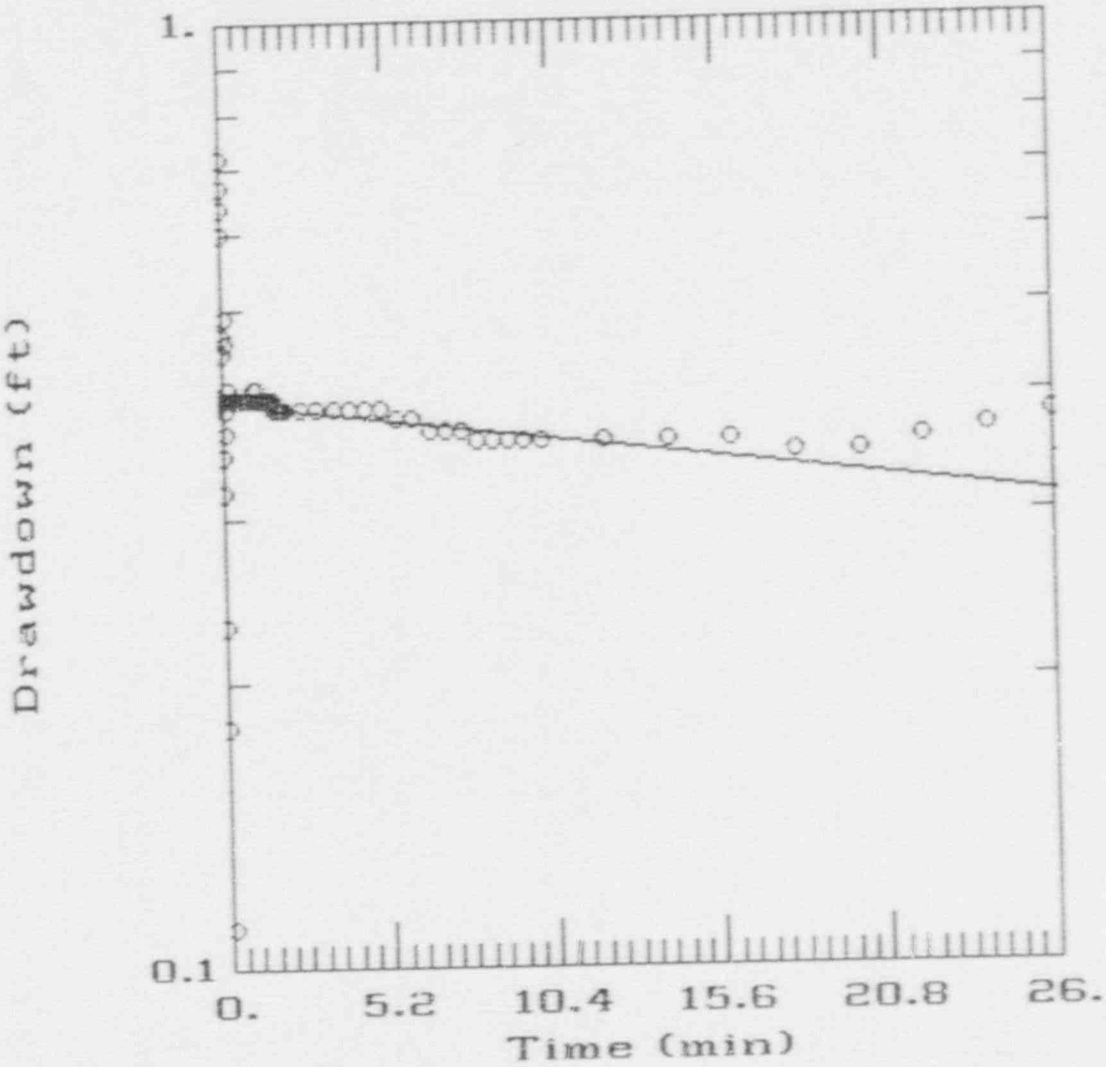
MONITORING WELL NUMBER:      MW-2
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):            5.59      FT
WELL TOTAL DEPTH (G.L.):             14.50      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    8.91    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    8.91    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.46    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
  0.3992    FT = yo = y AT TIME ZERO
    0.32    FT = yt = y AT TIME t
    26.0    t  = TIME SINCE yo  (MINUTES)
     2.0    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                          2           2   0.5
 CALCULATING FOR      rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                  2                    2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                        1
  SOLVING FOR:   ln Re/rw  =  -----------------------------------------------
                                     1.1                            C
                              --------------------------  +  ----------------
                                  ln  (Lw/rw)                      Le/rw
                                                        1
                           =  -----------------------------------------------
                                     1.1                            2
                              --------------------------  +  ----------------
                              ln (     8.91 /  0.307    )      9.46 / 0.307
                                                        1
                           =  -----------------------------------------------
                                     1.1                            2
                              --------------------------  +  ----------------
                                    3.37                         30.81
                           =  2.55
                              =====
                                      2
                                     rc    ln(Re/rw)      1            yo
  SOLVING FOR:         K   =  ------------------------  -----    ln  -------
                                    2 Le                  t            yt
                                        2
                               0.182022 (   2.55 )       1            0.3992
                           =  ------------------------  -----    ln  -------
                                    (2)        9.46      26             0.32

                               0.08463
                           =  --------------- 0.038   (  0.2 )
                                18.92
                           =       3.80E-05     FT/MIN
                              ======================

  EQUIVALENT  K  VALUES    =             0.41    GAL/DAY/FT
                                         0.05    FT/DAY
                                     1.93E-05    CM/SEC
```

MW-2 FALLING HEAD TEST



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                      HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                 SLUG  TEST
                      --------------------- ----------

MONITORING WELL NUMBER:      MW-5
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):              0.80      FT
WELL TOTAL DEPTH (G.L.):               10.90      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
    10.1   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    10.1   FT = H  = SATURATED THICKNESS OF AQUIFER
    7.05   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.134   FT = yo = y AT TIME ZERO
    0.04   FT = yt = y AT TIME t
   140.0   t  = TIME SINCE yo  (MINUTES)
     1.8   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                               1
 SOLVING FOR:   ln Re/rw  =  --------------------------------------------
                                     1.1                     C
                             ----------------------- +  ------------
                                 ln  (Lw/rw)              Le/rw

                                               1
                          =  --------------------------------------------
                                     1.1                    1.8
                             ----------------------- +  ------------
                             ln (    10.1 /  0.307    )     7.05 / 0.307

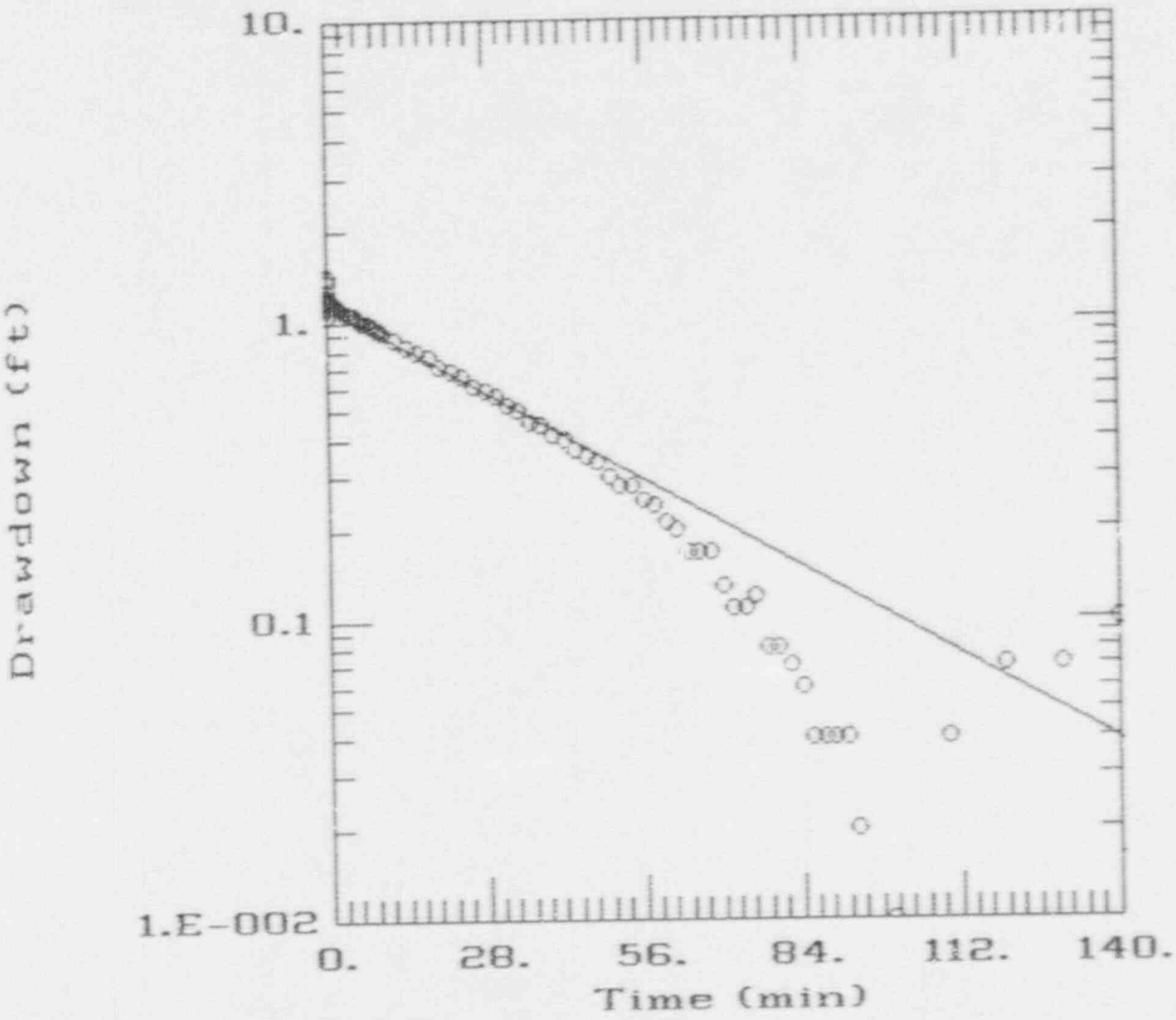
                                               1
                          =  --------------------------------------------
                                     1.1                    1.8
                             ----------------------- +  ------------
                                    3.49                   22.96

                          =  2.54
                             =====
                                    2
                                   rc    ln(Re/rw)     1            yo
 SOLVING FOR:       K     =  ----------------------  ----     ln  -------
                                   2 Le                 t             yt
                                     2
                                0.0833 (   2.54 )      1            1.134
                          =  ----------------------  ----     ln  -------
                                  (2)       7.05      140            0.04

                                0.01764
                          =  -------------- 0.007   ( 3.3 )
                                 14.10

                          =       2.99E-05   FT/MIN
                             =====================
                                                                2
 EQUIVALENT  K  VALUES    =              0.32   GAL/DAY/FT
                                         0.04   FT/DAY
                                     1.52E-05   CM/SEC
```

MW-5 FALLING HEAD TEST



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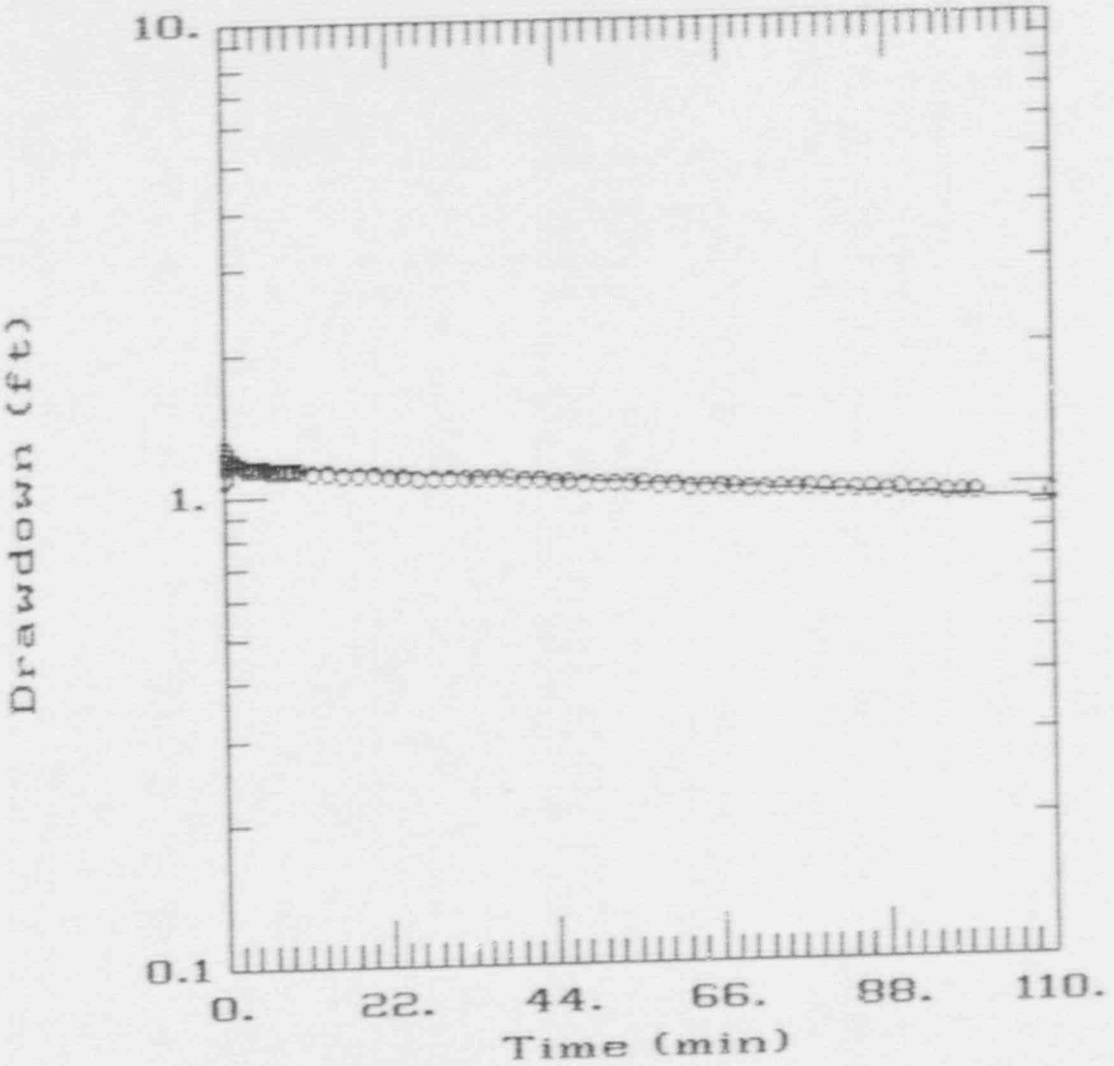
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:      MW-B
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           7.52     FT
WELL TOTAL DEPTH (G.L.):            17.39     FT
    0.307  FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    9.87   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    9.87   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.50   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
    1.169  FT = yo = y AT TIME ZERO
     0.90  FT = yt = y AT TIME t
    110.0   t  = TIME SINCE yo  (MINUTES)
      2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                        2          2  0.5
 CALCULATING FOR     rc    =  [((1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                   2                    2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                     1
 SOLVING FOR:   ln Re/rw   = -------------------------------------------------
                                    1.1                           C
                             --------------------------  +  -----------------
                                   ln  (Lw/rw)                  Le/rw
                                                     1
                           = -------------------------------------------------
                                    1.1                          2.1
                             --------------------------  +  -----------------
                             ln (     9.87 /  0.307    )        9.5 / 0.307
                                                     1
                           = -------------------------------------------------
                                    1.1                          2.1
                             --------------------------  +  -----------------
                                    3.47                       30.94
                           =  2.60
                              =====
                                    2
                                   rc    ln(Re/rw)      1               yo
 SOLVING FOR         K     =  -------------------------  -----     ln  -------
                                   2 Le                  t               yt
                                     2
                               0.182022 (   2.60 )      1              1.169
                           =  -------------------------  -----     ln  -------
                                   (2)        9.50      110               0.9

                                 0.08610
                           =  ---------------- 0.009   (  0.3 )
                                   19.00
                           =       1.08E-05   FT/MIN
                              ======================
 EQUIVALENT  K  VALUES     =            0.12   GAL/DAY/FT
                                        0.02   FT/DAY
                                    5.47E-06   CM/SEC
```



MW-8 FALLING HEAD TEST

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                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-11
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             4.87      FT
WELL TOTAL DEPTH (G.L.):              18.81      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   13.94   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   13.94   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.5481   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     2.8   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                  1.1                          C
                            --------------------------- +  ----------------
                               ln  (Lw/rw)                    Le/rw

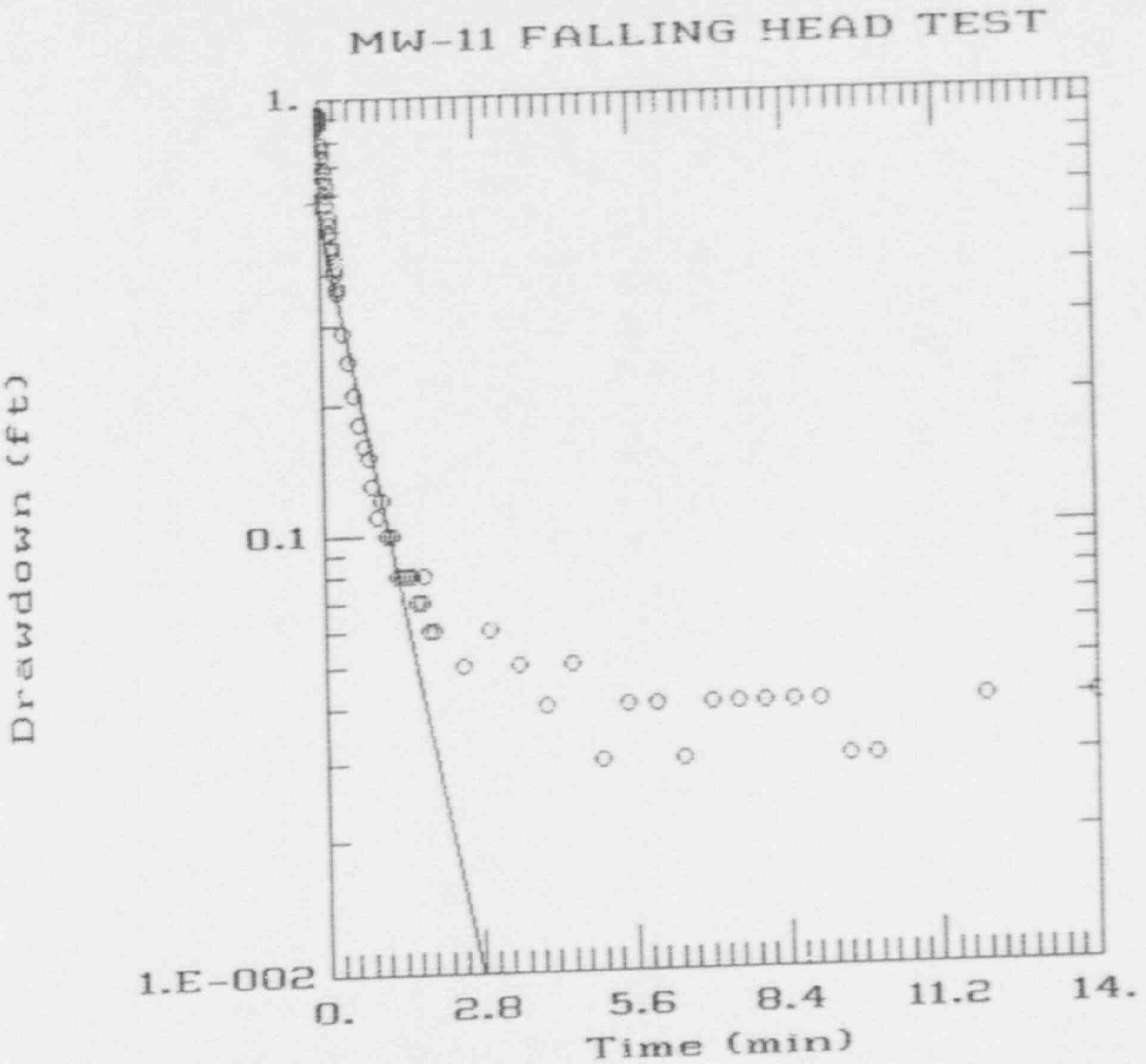
                                                  1
                         =  ------------------------------------------------
                                  1.1                          2.1
                            --------------------------- +  ----------------
                            ln (    13.94 /  0.307   )       9.48 / 0.307

                                                  1
                         =  ------------------------------------------------
                                  1.1                          2.1
                            --------------------------- +  ----------------
                                  3.82                        30.88

                         =  2.81
                            =====
                                  2
                                rc    ln(Re/rw)      1             yo
SOLVING FOR:        K    =  -------------------------  ----      ln  -------
                               2 Le                    t              yt
                                  2
                             0.0833 (   2.81 )       1            0.5481
                         =  -------------------------  ----      ln  ------
                               (2)       9.48      2.8              0.01

                             0.01948
                         =  ---------------- 0.357   ( 4.0 )
                              18.96

                         =       1.47E-03   FT/MIN
                            ========================
                                                   2
EQUIVALENT  K  VALUES    =          15.82   GAL/DAY/FT
                                     2.12   FT/DAY
                                 7.46E-04   CM/SEC
```


MW-11 FALLING HEAD TEST
Drawdown (ft)
1.
0.1
1.E-002
0.
2.8
5.6
8.4
11.2
14.
Time (min)

```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                               SLUG  TEST
                    ---------------------------------

MONITORING WELL NUMBER:      MW-12
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             8.90      FT
WELL TOTAL DEPTH (G.L.):              19.15      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   10.25   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   10.25   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.018   FT = yo = y AT TIME ZERO
    0.97   FT = yt = y AT TIME t
    12.0   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVeD FROM Le/rw GRAPH

                                                         1
SOLVING FOR:   ln Re/rw  =  -------------------------------------------------
                                   1.1                             C
                            ---------------------------  +  ----------------
                                 ln  (Lw/rw)                     Le/rw

                                                         1
                         =  -------------------------------------------------
                                   1.1                            2.1
                            ---------------------------  +  ----------------
                            ln (    10.25 /  0.307    )        9.48 / 0.307

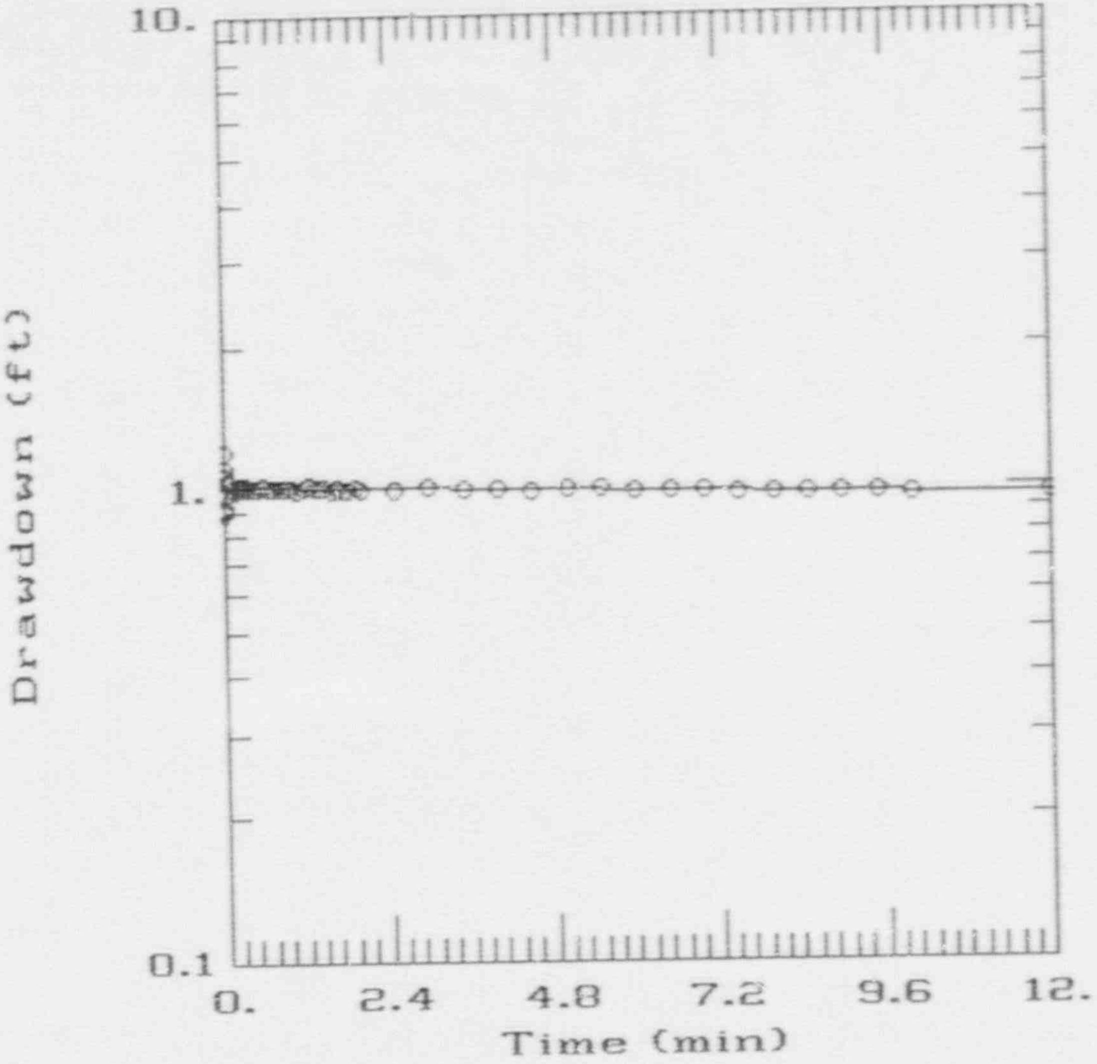
                                                         1
                         =  -------------------------------------------------
                                   1.1                            2.1
                            ---------------------------  +  ----------------
                                  3.51                          30.88

                         =  2.62
                            =====
                                  2
                                 rc    ln(Re/rw)      1              yo
SOLVING FOR:        K    =  -------------------------  ----      ln  -------
                                2 Le                  t               yt
                                   2
                               0.0333 (   2.62 )      1             1.018
                         =  -------------------------  ----      ln  -------
                                (2)        9.48       12              0.97

                              0.01819
                         =  ---------------- 0.083   ( 0.0 )
                                18.96

                         =       3.86E-06    FT/MIN
                            ======================
                                                        2
EQUIVALENT  K  VALUES    =             0.04    GAL/DAY/FT
                                       0.01    FT/DAY
                                   1.96E-06    CM/SEC
```

MW-12 FALLING HEAD TEST



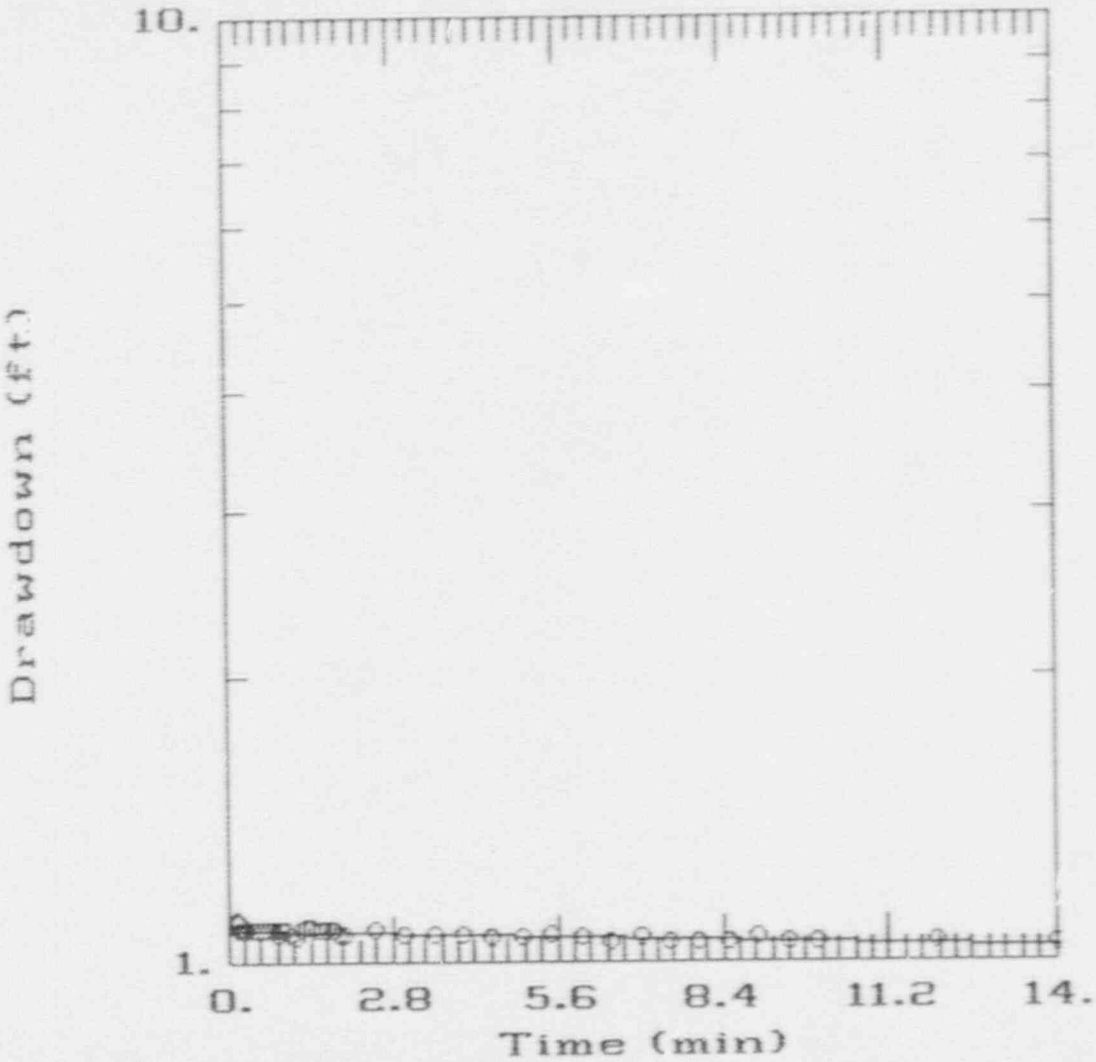
```
                          HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                     SLUG  TEST
                          ------------------------------------

MONITORING WELL NUMBER:      MW-13
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         FALLING  HEAD
STATIC WATER LEVEL (G.L.):           10.39     FT
WELL TOTAL DEPTH (G.L.):             20.88     FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
   10.49    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   10.49    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.52    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.084    FT = yo = y AT TIME ZERO
    1.06    FT = yt = y AT TIME t
    14.0    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                               2          2  0.5
 CALCULATING FOR      rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                    2                      2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                         1
 SOLVING FOR:   ln Re/rw  =  ---------------------------------------------------
                                      1.1                               C
                             ---------------------------  +  ----------------
                                   ln  (Lw/rw)                        Le/rw
                                                         1
                          =  ---------------------------------------------------
                                      1.1                              2.1
                             ---------------------------  +  ----------------
                             ln (    10.49 /  0.307    )           9.52 / 0.307
                                                         1
                          =  ------------------ ---------------------------------
                                      1.1                              2.1
                             ---------------------------  +  ----------------
                                     3.53                            31.01
                          =  2.64
                             =====
                                     2
                                   rc    ln(Re/rw)      1               yo
  SOLVING FOR:       K     =  -------------------------  -----       ln  -------
                                  2 Le                   t                yt
                                     2
                             0.182022 (   2.64 )      1                1.084
                          =  -------------------------  -----       ln  -------
                                   (2)         9.52      14               1.059

                                 0.08737
                          =  ------------------ 0.071   ( 0.0 )
                                  19.04
                          =      7.65E-06   FT/MIN
                             ========================
  EQUIVALENT  K  VALUES    =            0.08   GAL/DAY/FT
                                        0.01   FT/DAY
                                    3.89E-06   CM/SEC
```

MW-13 FALLING HEAD TEST



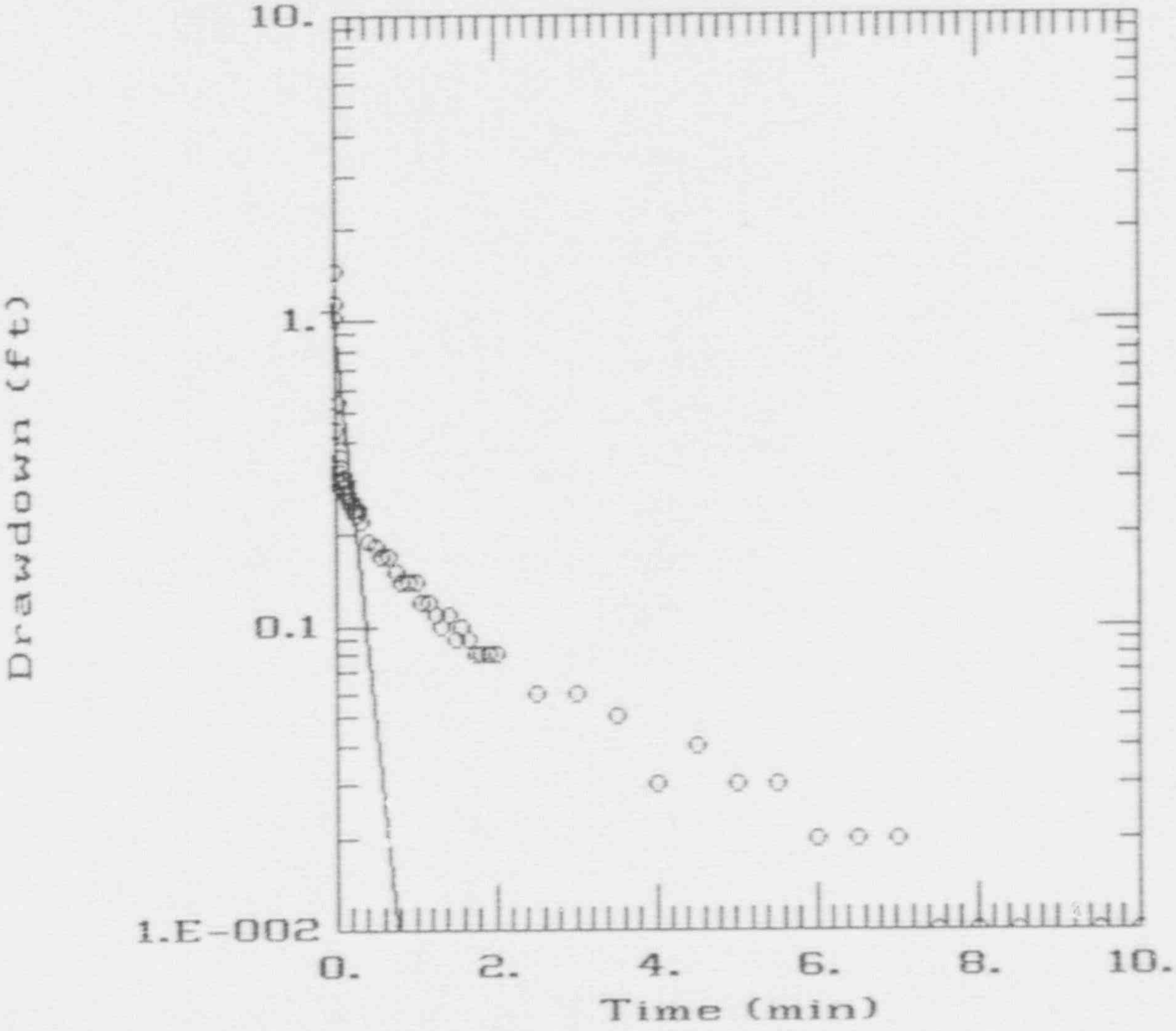
```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                        ---------------------------------

MONITORIwG WELL NUMBER:     MW-14
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):          4.70     FT
WELL TOTAL DEPTH (G.L.):           14.03     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    9.33   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    9.33   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.50   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.8981   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     0.8   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                         2          2  0.5
 CALCULATING FOR     rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                   2                    2  0.5
                          =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                          =  0.18
                             =====
                                                        1
 SOLVING FOR:   ln Re/rw  =  -------------------------------------------------
                                      1.1                          C
                             ---------------------------  +  -----------------
                                  ln  (Lw/rw)                    Le/rw
                                                        1
                          =  -------------------------------------------------
                                      1.1                         2.1
                             ---------------------------  +  -----------------
                             ln (     9.33 /  0.307    )       9.5 / 0.307
                                                        1
                          =  -------------------------------------------------
                                      1.1                         2.1
                             ---------------------------  +  -----------------
                                      3.41                      30.94
                          =  2.56
                             =====
                                      2
                                    rc    ln(Re/rw)      1            yo
  SOLVING FOR:        K   =  ------------------------  -----     ln  -------
                                   2 Le                  t            yt
                                         2
                              0.182022 (   2.56 )      1           0.8981
                          =  ------------------------  -----     ln  -------
                                    (2)       9.50      0.8            0.01

                                0.08494
                          =  ---------------- 1.250   (  4.5 )
                                    19.00
                          =      2.51E-02   FT/MIN
                             ======================
  EQUIVALENT  K  VALUES   =          270.73   GAL/DAY/FT
                                      36.19   FT/DAY
                                   1.28E-02   CM/SEC
```

MW-14 FALLING HEAD TEST

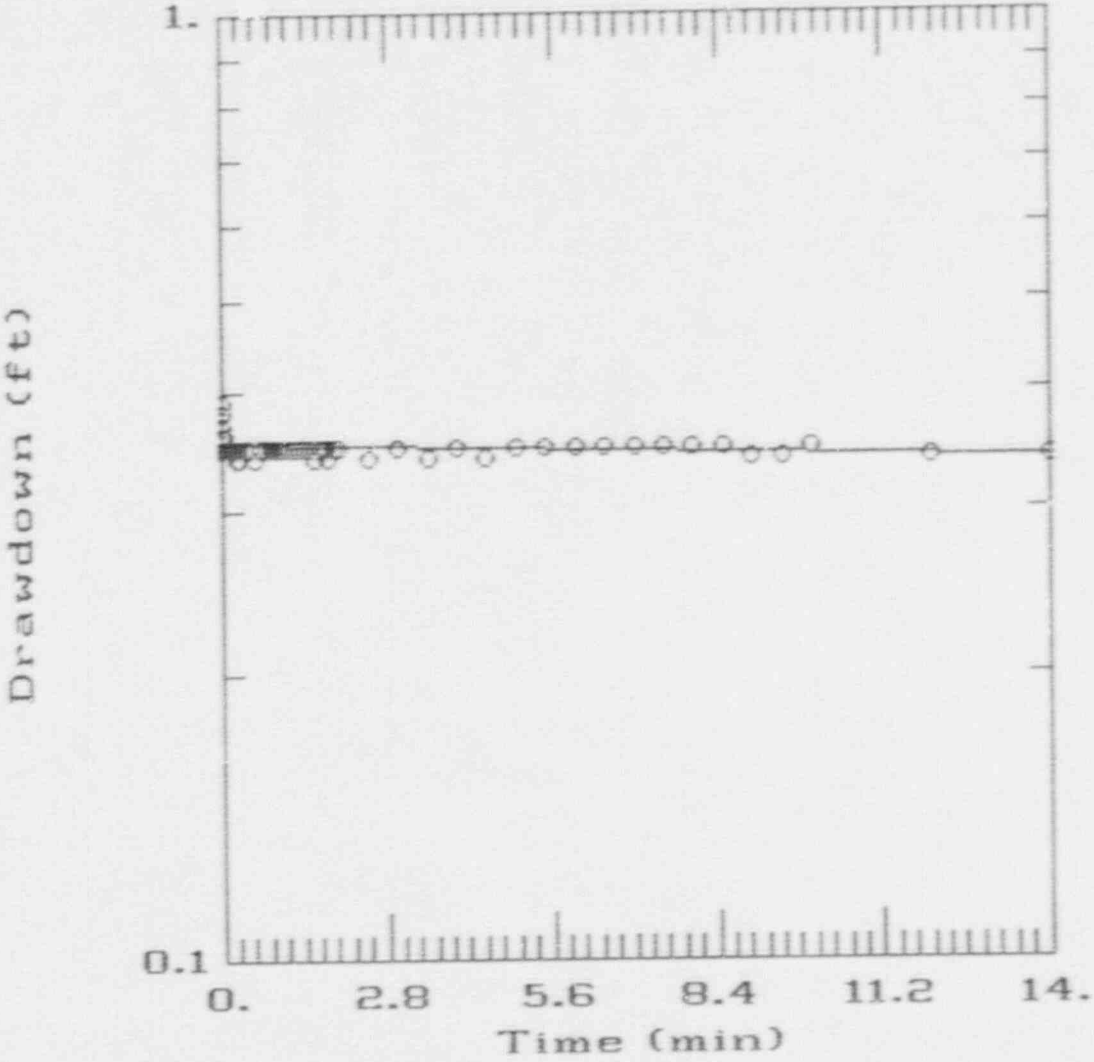


```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------
MONITORING WELL NUMBER:     MW-15
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           8.25     FT
WELL TOTAL DEPTH (G.L.):            12.14     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    3.89   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    3.89   FT = H  = SATURATED THICKNESS OF AQUIFER
    7.50   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.3527   FT = yo = y AT TIME ZERO
    0.34   FT = yt = y AT TIME t
    14.0   t  = TIME SINCE yo  (MINUTES)
     1.8   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                        2           2  0.5
CALCULATiNG FOR      rc    =  [(1 - n) rc    +  (n) rw  ]
EQUIVALENT rc:                                     2                 2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                       1
SOLVING FOR:   ln Re/rw    =  --------------------------------------------------
                                       1.1                            C
                              ----------------------------   +  -----------------
                                    ln  (Lw/rw)                      Le/rw
                                                       1
                           =  --------------------------------------------------
                                       1.1                         1.8
                              ----------------------------   +  -----------------
                              ln (    3.89 /  0.307   )            7.5 / 0.307
                                                       1
                           =  --------------------------------------------------
                                       1.1                         1.8
                              ----------------------------   +  -----------------
                                      2.54                       24.43
                           =  1.97
                              =====
                                        2
                                      rc    ln(Re/rw)      1              yo
SOLVING FOR:         K     =  --------------------------  -----      ln  -------
                                     2 Le                  t               yt
                                          2
                                   0.182022 (   1.97 )     1            0.3527
                           =  --------------------------  -----      ln  -------
                                      (2)       7.50       14            0.342

                                    0.06537
                           =  ---------------- 0.071   (  0.0 )
                                      15.00
                           =        9.59E-06   FT/MIN
                              ========================
EQUIVALENT  K  VALUES      =             0.10   GAL/DAY/FT
                                         0.01   FT/DAY
                                     4.87E-06   CM/SEC
```

MW-15 FALLING HEAD TEST



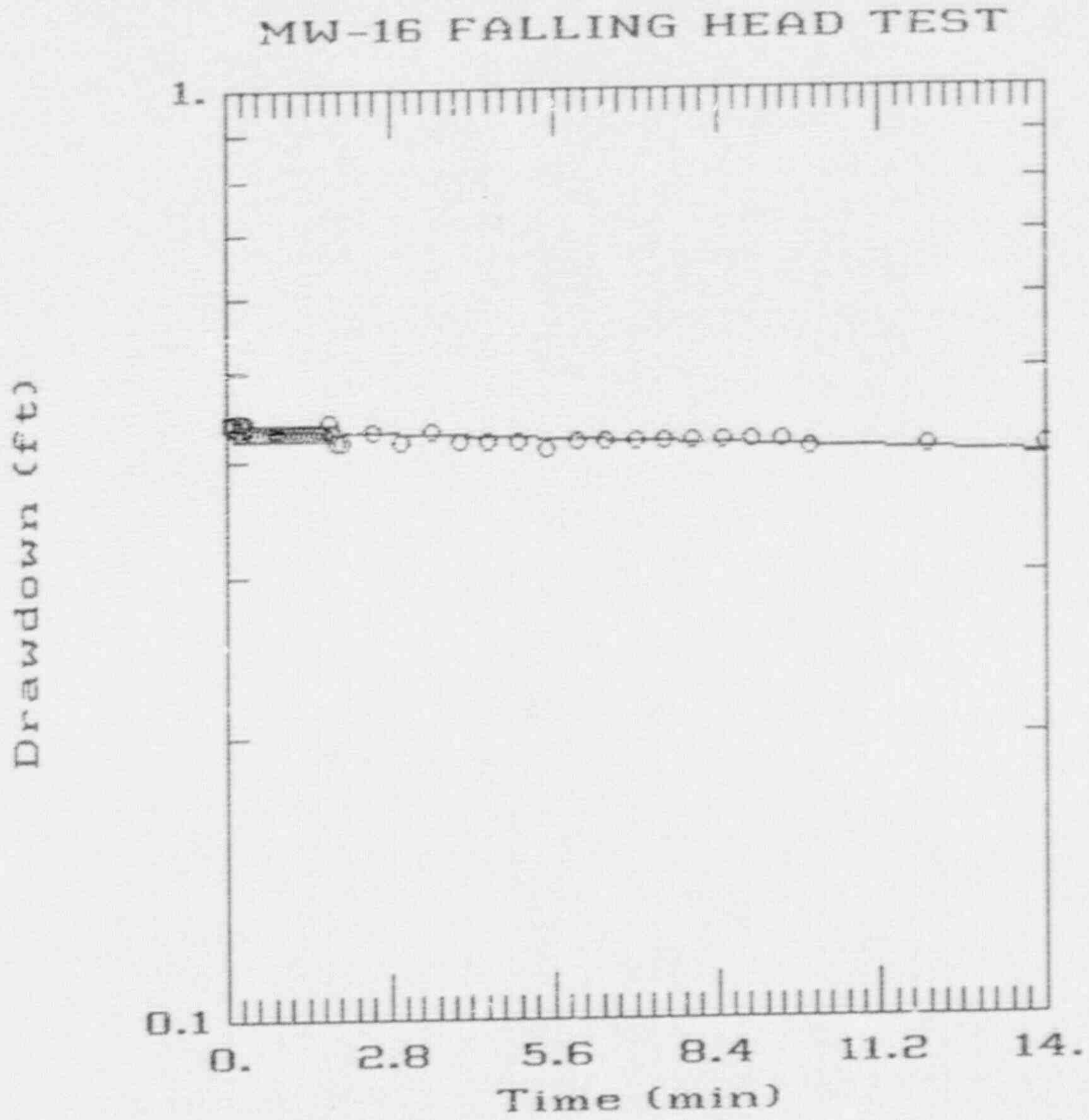
```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-16
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):            8.03     FT
WELL TOTAL DEPTH (G.L.):             16.68     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    8.65   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    8.65   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.4352   FT = yo = y AT TIME ZERO
    0.40   FT = yt = y AT TIME t
    14.0   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                         2           2  0.5
 CALCULATING FOR     rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                    2                    2  0.5
                          = [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                          =  0.18
                             =====
                                                       1
  SOLVING FOR:   ln Ro/rw  =  ------------------------------------------------
                                          1.1                         C
                              ---------------------------  +  ----------------
                                    ln  (Lw/rw)                     Le/rw
                                                       1
                           =  ------------------------------------------------
                                          1.1                       2.1
                              ---------------------------  +  ----------------
                              ln (     8.65 /  0.307    )          9.48 / 0.307
                                                       1
                           =  ------------------------------------------------
                                          1.1                       2.1
                              ---------------------------  +  ----------------
                                         3.34                      30.88
                           =  2.52
                              =====
                                         2
                                       rc    ln(Re/rw)       1             yo
   SOLVING FOR:       K     =  --------------------------  -----      ln  -------
                                      2 Le                   t              yt
                                           2
                                    0.182022 (    2.52 )     1            0.4352
                            =  --------------------------  -----      ln  -------
                                       (2)        9.48      14               0.4

                                    0.08335
                            =  -----------------  0.071   (  0.1 )
                                      18.96
                            =       2.65E-05    FT/MIN
                                =======================

   EQUIVALENT  K  VALUES    =             0.29    GAL/DAY/FT
                                          0.04    FT/DAY
                                      1.35E-05    CM/SEC
```

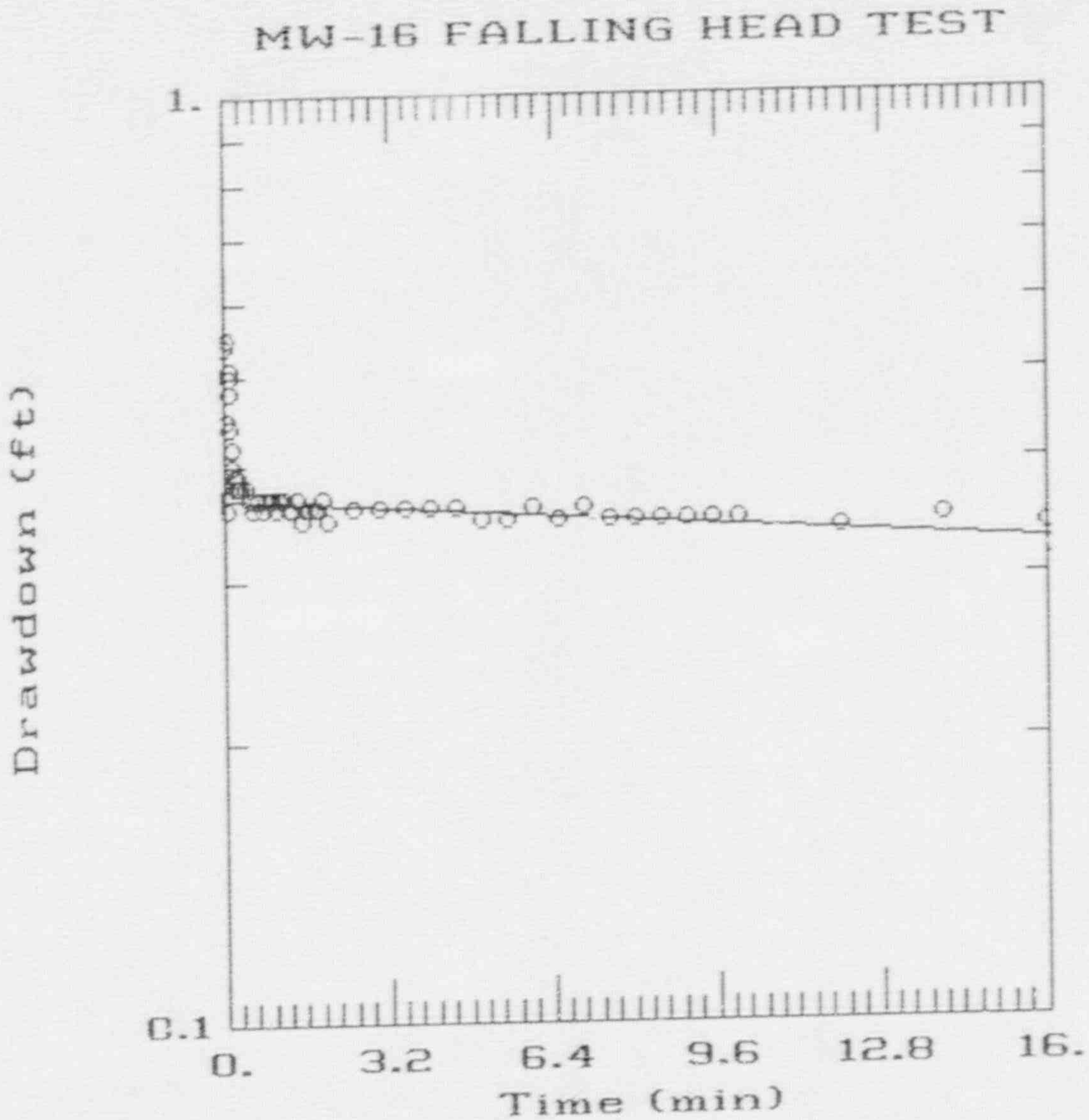

MW-16 FALLING HEAD TEST
1.
0.1
Drawdown (ft)
0.
2.8
5.6
8.4
11.2
14.
Time (min)

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                 SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:     MW-16  RERUN
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           8.03     FT
WELL TOTAL DEPTH (G.L.):            16.68     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
     8.65   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
     8.65   FT = H  = SATURATED THICKNESS OF AQUIFER
     9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED. OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   0.3703   FT = yo = y AT TIME ZERO
     0.33   FT = yt = y AT TIME t
     16.0   t  = TIME SINCE yo  (MINUTES)
      2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                        2           2   0.5
 CALCULATING FOR     rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                   2                    2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                      1
  SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                          1.1                          C
                              ------------------------  +  ----------------
                                    ln  (Lw/rw)                     Le/rw
                                                      1
                           =  ------------------------------------------------
                                          1.1                         2.1
                              ------------------------  +  ----------------
                              ln (    8.65 /  0.307    )          9.48 / 0.307
                                                      1
                           =  ------------------------------------------------
                                          1.1                         2.1
                              ------------------------  +  ----------------
                                         3.34                       30.88
                           =  2.52
                              =====
                                       2
                                     rc    ln(Re/rw)      1               yo
  SOLVING FOR:         K   =  -------------------------  -----      ln  -------
                                    2 Le                  t                yt
                                          2
                                   0.182022 (   2.52 )    1             0.3703
                           =  -------------------------  -----      ln  -------
                                     (2)       9.48      16              0.328

                                    0.08335
                           =  ---------------- 0.063    (  0.1 )
                                      18.96
                           =       3.33E-05   FT/MIN
                              =======================
   EQUIVALENT  K  VALUES   =            0.36   GAL/DAY/FT
                                        0.05   FT/DAY
                                    1.69E-05   CM/SEC
```

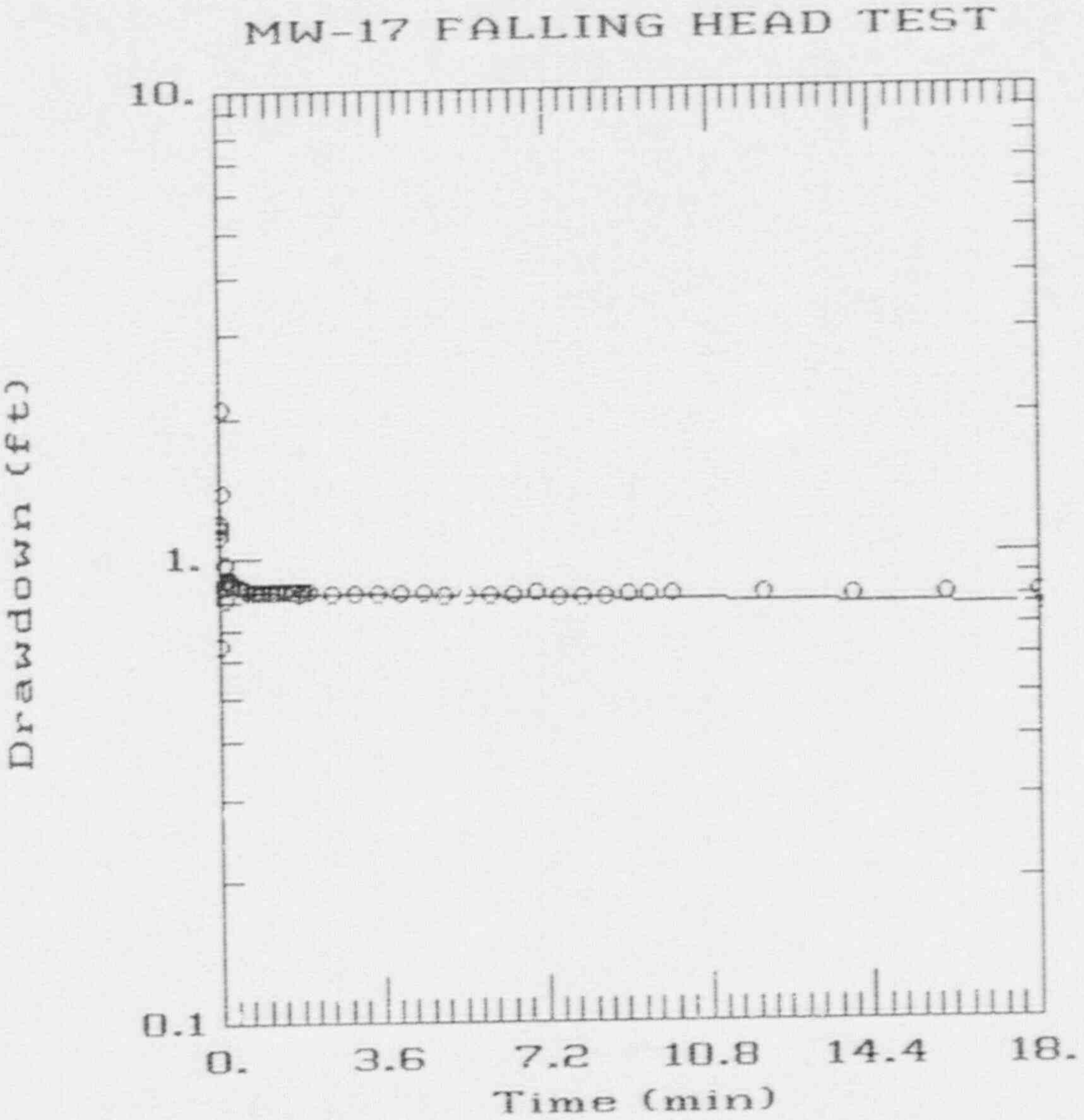

MW-16 FALLING HEAD TEST
Drawdown (ft)
1.
0.1
0.
3.2
6.4
9.6
12.8
16.
Time (min)

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:    MW-17
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           6.67     FT
WELL TOTAL DEPTH (G.L.):            16.39     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    9.72   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    9.72   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
    0.85   FT = yo = y AT TIME ZERO
    0.78   FT = yt = y AT TIME t
    18.0   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                       2          2  0.5
CALCULATING FOR     rc   =  [(1 - n) rc   +  (n) rw  ]
EQUIVALENT rc:                                   2                    2  0.5
                         =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                         =  0.18
                            =====
                                                     1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                      1.1                            C
                            --------------------------  +  -----------------
                                  ln  (Lw/rw)                      Le/rw
                                                     1
                         =  ------------------------------------------------
                                      1.1                           2.1
                            --------------------------  +  -----------------
                            ln (     9.72 /  0.307    )        9.48 / 0.307
                                                     1
                         =  ------------------------------------------------
                                      1.1                           2.1
                            --------------------------  +  -----------------
                                     3.46                         30.88
                         =  2.59
                            =====
                                      2
                                    rc    ln(Re/rw)       1               yo
SOLVING FOR:        K    =  -------------------------   -----      ln  -------
                                   2 Le                   t               yt
                                         2
                                  0.182022 (   2.59 )     1               0.85
                         =  -------------------------   -----      ln  -------
                                    (2)     9.48         18               0.78

                                   0.08575
                         =  ---------------- 0.056   (  0.1 )
                                    18.96
                         =        2.16E-05   FT/MIN
                             ======================
 EQUIVALENT  K  VALUES   =           0.23   GAL/DAY/FT
                                     0.03   FT/DAY
                                 1.10E-05   CM/SEC
```


MW-17 FALLING HEAD TEST
10.
1.
0.1
Drawdown (ft)
0.
3.6
7.2
10.8
14.4
18.
Time (min)

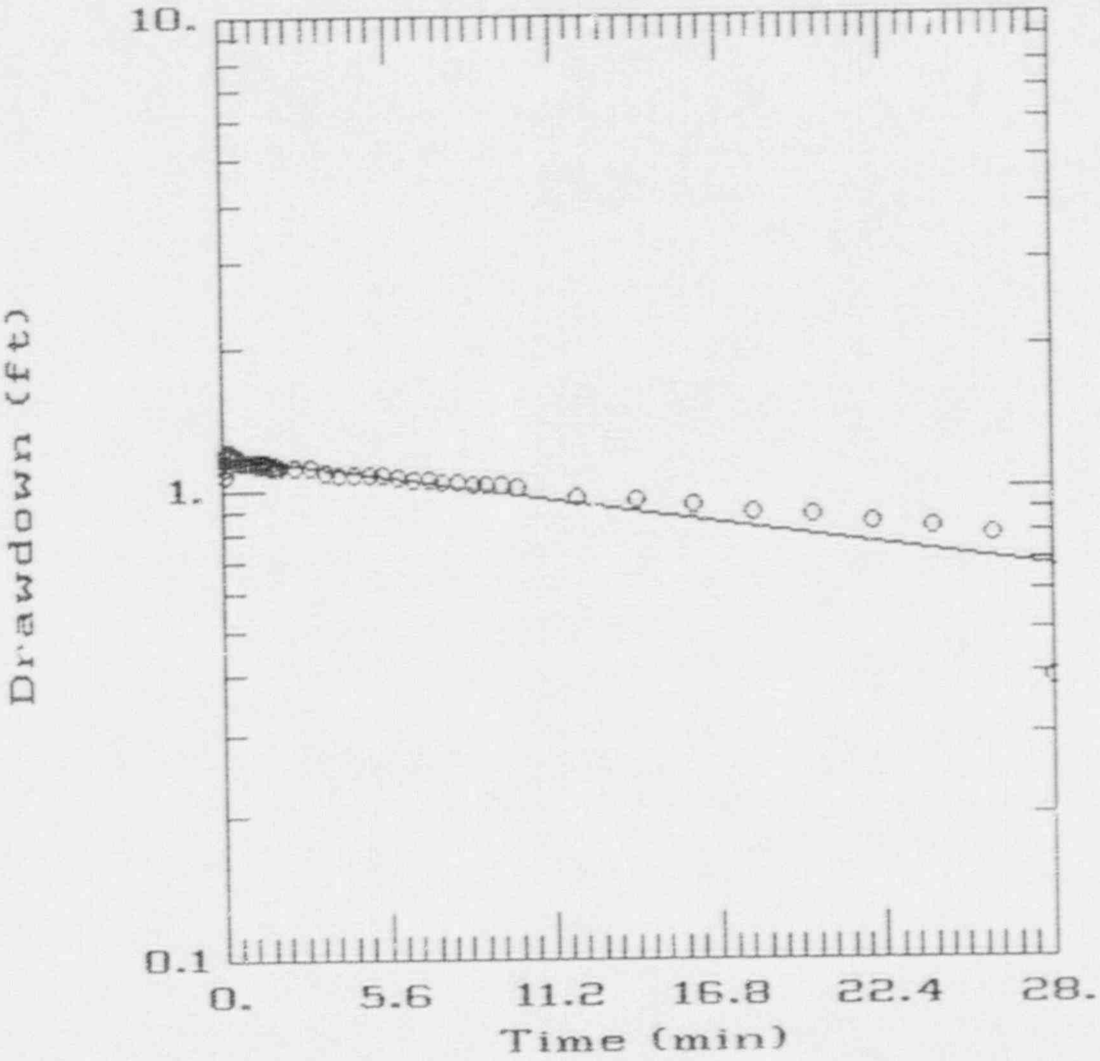
```
                          HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                          ---------------------------------

MONITORING WELL NUMBER:      MW-17  RERUN
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):              6.67      FT
WELL TOTAL DEPTH (G.L.):               16.39      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (USE EQUIVALENT rc BELOW SCREEN)
    9.72    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    9.72    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.184    FT = yo = y AT TIME ZERO
    0.69    FT = yt = y AT TIME t
    28.0    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH
                                         2            2   0.5
 CALCULATING FOR      rc   =  [(1 - n) rc   +  (n) rw  ]
 EQUIVALENT rc:                                    2                 2  0.5
                           =  [( 1  -  0.3 ) (0.0833 ) + 0.3 (   0.307 ) ]

                           =  0.18
                              =====
                                                     1
 SOLVING FOR:   ln Re/rw   =  ----------------------------------------------
                                      1.1                          C
                              ---------------------------  +  ----------------
                                  ln  (Lw/rw)                     Le/rw
                                                     1
                           =  ----------------------------------------------
                                      1.1                         2.1
                              ---------------------------  +  ----------------
                              ln (     9.72 /  0.307    )       9.48 / 0.307
                                                     1
                           =  ----------------------------------------------
                                      1.1                         2.1
                              ---------------------------  +  ----------------
                                      3.46                       30.88
                           =  2.59
                              =====
                                      2
                                     rc    ln(Re/rw)      1              yo
 SOLVING FOR:        K     =  -------------------------  -----      ln  -------
                                    2 Le                  t              yt
                                        2
                                0.182022 (   2.59 )       1             1.184
                           =  -------------------------  -----      ln  -------
                                   (2)       9.48         28             0.69

                                 0.08575
                           =  ---------------- 0.036    (  0.5 )
                                  18.96
                           =        8.72E-05    FT/MIN
                               ======================
 EQUIVALENT  K  VALUES     =            0.94    GAL/DAY/FT
                                        0.13    FT/DAY
                                    4.43E-05    CM/SEC
```

MW-17 FALLING HEAD TEST



```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                    ...............................

MONITORING WELL NUMBER:      MW-18
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):              5.81      FT
WELL TOTAL DEPTH (G.L.):               19.40      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   13.59    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   13.59    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.45    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
  0.8835    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     1.5    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                            1
SOLVING FOR:   ln Re/rw  =  ...............................................
                                   1.1                           C
                             ........................  +  ...............
                                ln  (Lw/rw)                    Le/rw

                                                            1
                         =  ...............................................
                                   1.1                          2.1
                             ........................  +  ...............
                             ln (    13.59 /  0.307   )      9.45 / 0.307

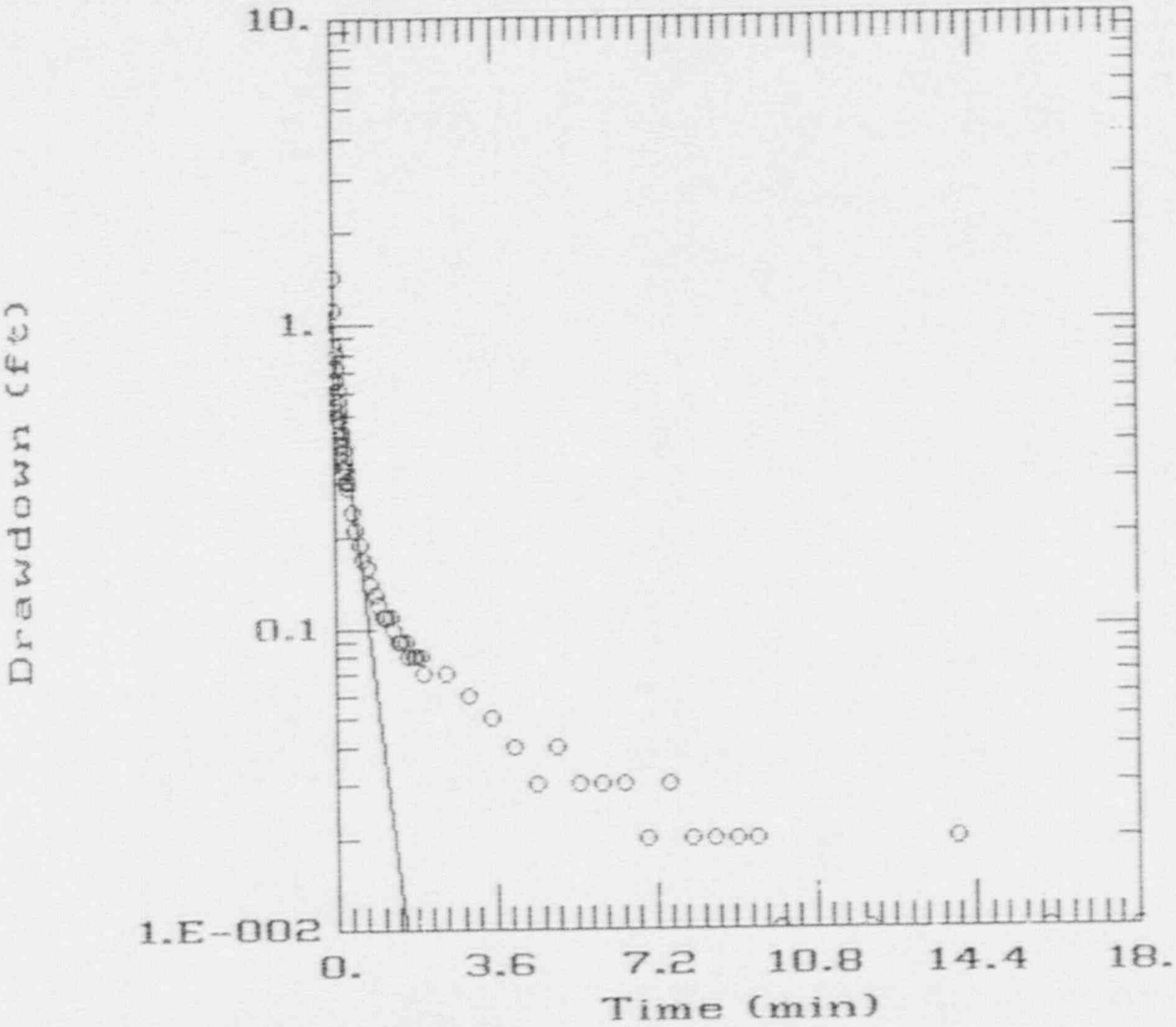
                                                            1
                         =  ...............................................
                                   1.1                          2.1
                             ........................  +  ...............
                                   3.79                        30.78

                         =  2.79
                            =====
                                  2
                                rc    ln(Re/rw)     1             yo
SOLVING FOR:        K    =  ........................  ....     ln  .......
                               2 Le                  t             yt
                                   2
                              0.0833 (   2.79 )     1            0.8835
                         =  ........................  ....     ln  .......
                               (2)       9.45      1.5             0.01

                              0.01936
                         =  ............... 0.667   ( 4.5 )
                               18.90

                         =      3.06E-03    FT/MIN
                            ======================
                                                          2
EQUIVALENT  K  VALUES    =         32.96    GAL/DAY/FT
                                    4.41    FT/DAY
                                1.55E-03    CM/SEC
```

MW-18 FALLING HEAD TEST



```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:     MW-19
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           4.55     FT
WELL TOTAL DEPTH (G.L.):            20.93     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   16.38   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   16.38   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.213   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
    96.0   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                     1
 SOLVING FOR:   ln Re/rw  =  -----------------------------------------------
                                       1.1                          C
                             --------------------------  +  ----------------
                                   ln  (Lw/rw)                    Le/rw

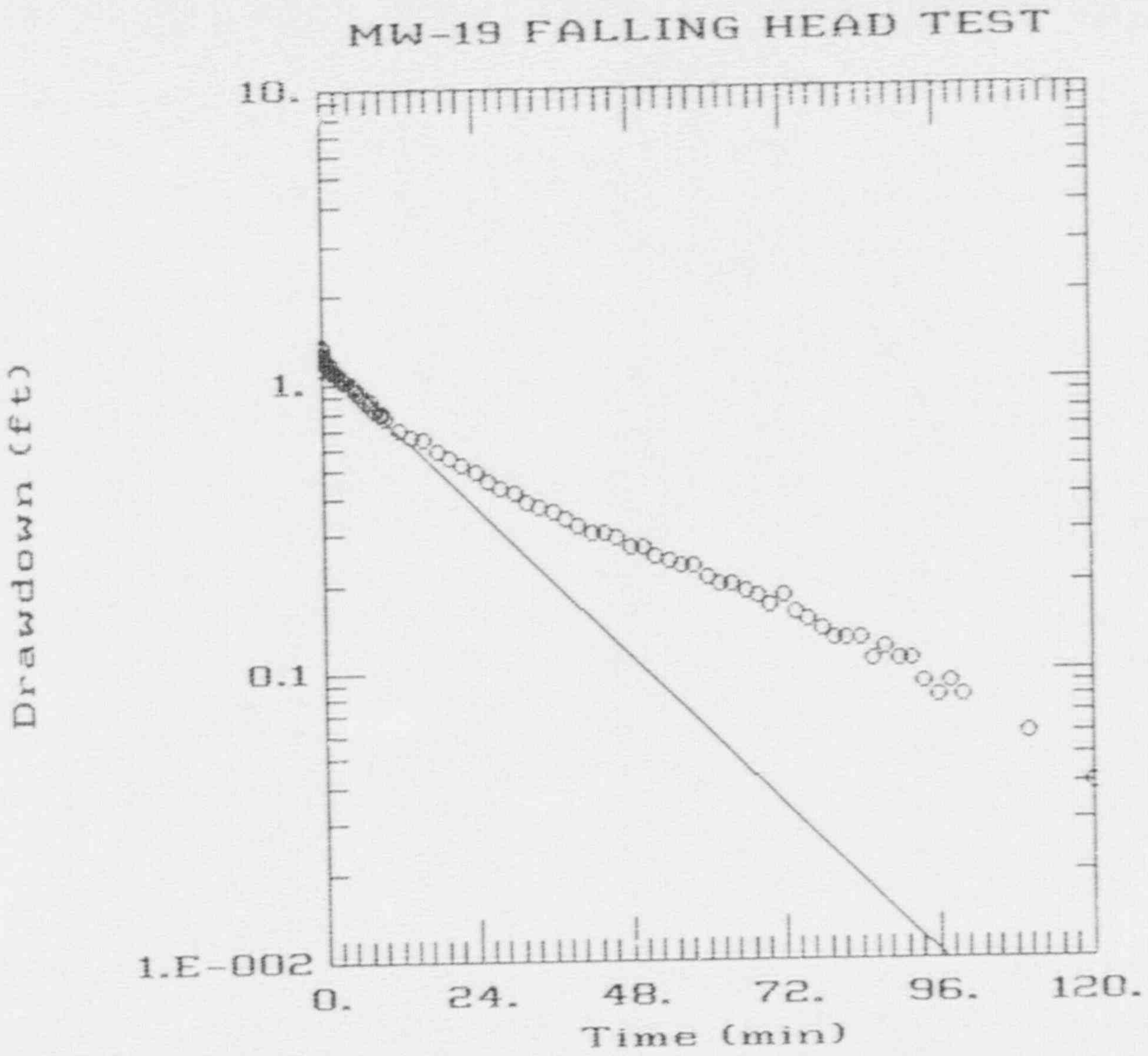
                                                     1
                          =  -----------------------------------------------
                                       1.1                        2.1
                             --------------------------  +  ----------------
                             ln (    16.38 / 0.307    )         9.48 / 0.307

                                                     1
                          =  -----------------------------------------------
                                       1.1                        2.1
                             --------------------------  +  ----------------
                                      3.98                       30.88

                          =  2.90
                             =====
                                          2
                                     rc    ln(Re/rw)       1            yo
  SOLVING FOR:        K   =   ------------------------   ----       ln  -------
                                    2 Le                   t            yt
                                          2
                                    0.0833 (   2.90 )      1           1.213
                          =   ------------------------   ----       ln  -------
                                     (2)       9.48       96            0.01

                                   0.02014
                          =   ---------------- 0.010   ( 4.8 )
                                     18.96

                          =      5.31E-05   FT/MIN
                              =======================
                                                          2
  EQUIVALENT  K  VALUES   =            0.57   GAL/DAY/FT
                                       0.08   FT/DAY
                                   2.70E-05   CM/SEC
```


MW-19 FALLING HEAD TEST
Drawdown (ft)
10.
1.
0.1
1.E-002
0.
24.
48.
72.
96.
120.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                         ------------------------------

MONITORING WELL NUMBER:      MW-19  RERUN
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             4.48      FT
WELL TOTAL DEPTH (G.L.):              20.93      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   16.45    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   16.45    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.48    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.152    FT = yo = y AT TIME ZERO
    0.10    FT = yt = y AT TIME t
    72.6    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
 SOLVING FOR:   ln Re/rw  =  --------------------------------------------
                                   1.1                         C
                             ----------------------- +  ---------------
                                 ln  (Lw/rw)                 Le/rw

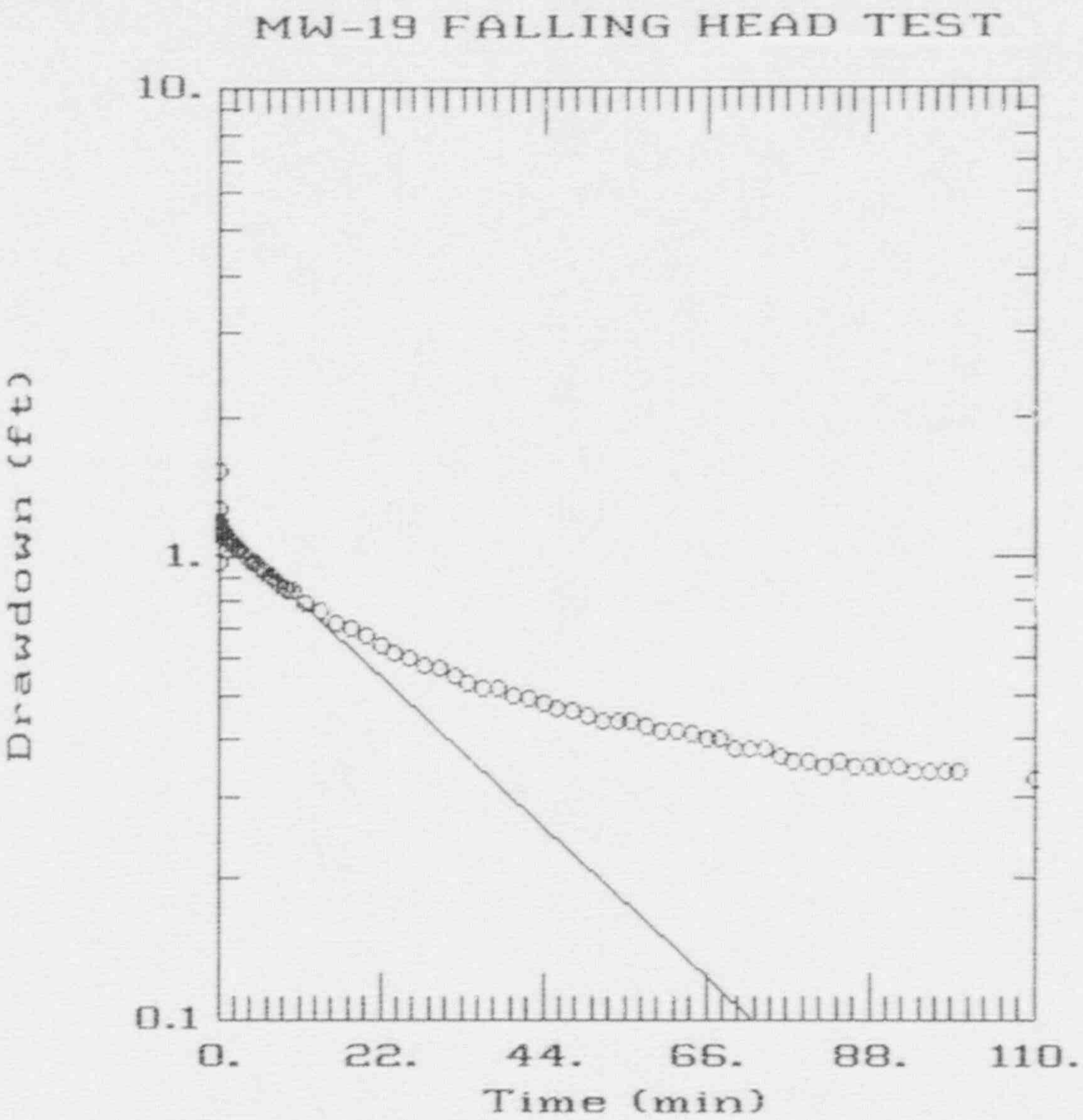
                                                   1
                          =  --------------------------------------------
                                   1.1                        2.1
                             ----------------------- +  ---------------
                             ln (    16.45 /  0.307    )    9.48 / 0.307

                                                   1
                          =  --------------------------------------------
                                   1.1                        2.1
                             ----------------------- +  ---------------
                                   3.98                      30.88

                          =  2.90
                             =====
                                 2
                               rc     ln(Re/rw)     1            yo
  SOLVING FOR:        K    =  ----------------------  ----    ln  -------
                                2 Le                    t            yt
                                  2
                             0.0833 (   2.90 )      1           1.152
                           =  ----------------------  ----    ln  -------
                               (2)        9.48       73             0.1

                             0.02015
                           =  --------------- 0.014    ( 2.4 )
                              18.96

                           =       3.58E-05     FT/MIN
                              ======================
                                                           2
  EQUIVALENT  K  VALUES    =          0.39     GAL/DAY/FT
                                      0.05     FT/DAY
                                  1.82E-05     CM/SEC
```


MW-19 FALLING HEAD TEST
10.
1.
0.1
Drawdown (ft)
0.
22.
44.
66.
88.
110.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                         --------------------------------

MONITORING WELL NUMBER:      MW-30
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             1.84      FT
WELL TOTAL DEPTH (G.L.):               6.80      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
    4.96   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    4.96   FT = H  = SATURATED THICKNESS OF AQUIFER
    3.12   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.154   FT = yo = y AT TIME ZERO
    1.12   FT = yt = y AT TIME t
   170.0   t  = TIME SINCE yo  (MINUTES)
     1.3   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
SOLVING FOR:   ln Re/rw  =  --------------------------------------------------
                                  1.1                         C
                            --------------------------- + ----------------
                                 ln  (Lw/rw)                   Le/rw

                                                   1
                         =  --------------------------------------------------
                                  1.1                         1.3
                            --------------------------- + ----------------
                            ln (    4.96 /  0.307    )        3.12 / 0.307

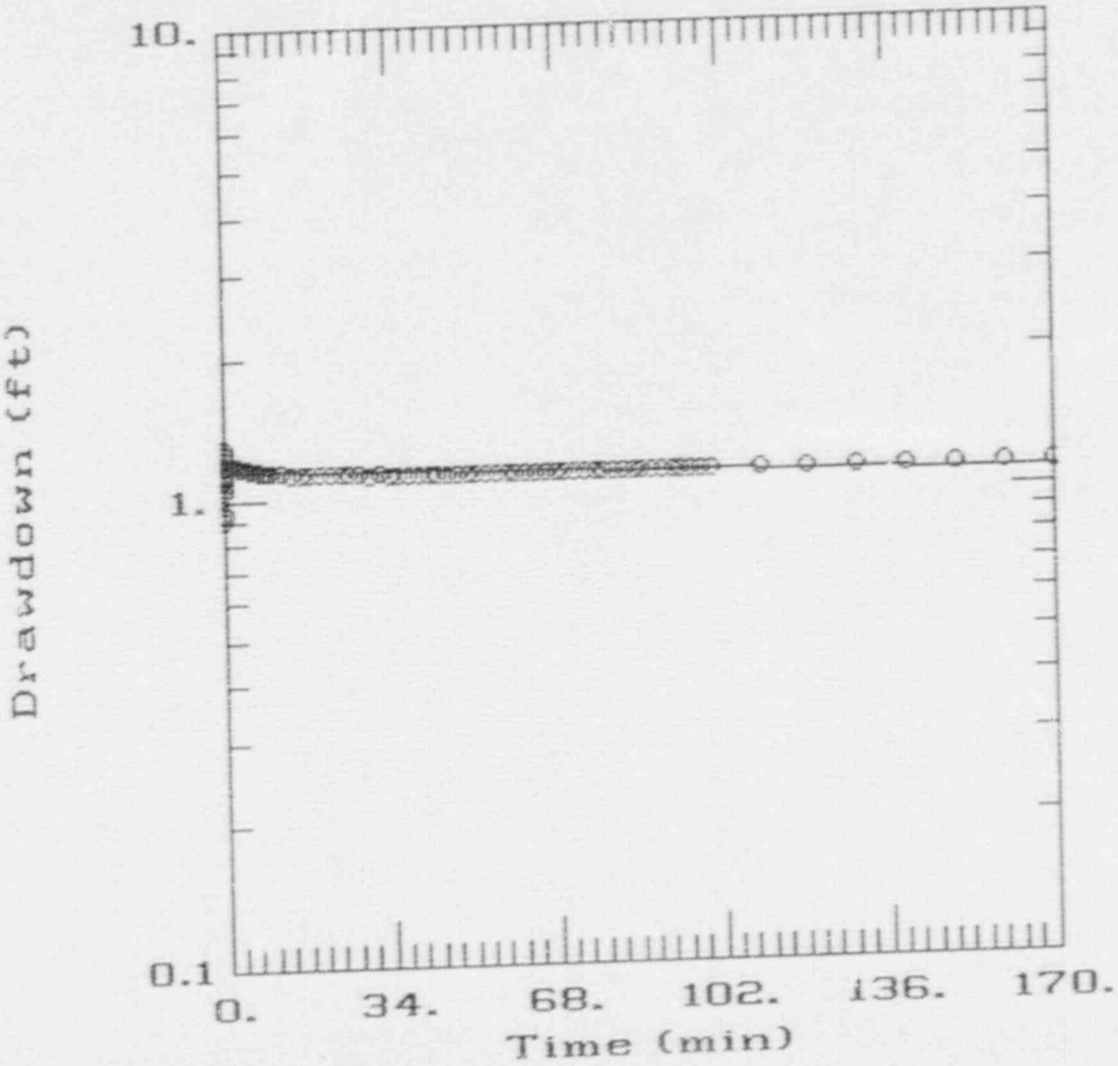
                                                   1
                         =  --------------------------------------------------
                                  1.1                         1.3
                            --------------------------- + ----------------
                                  2.78                       10.16

                         =  1.91
                            =====
                                  2
                                 rc    ln(Re/rw)      1             yo
SOLVING FOR:        K    =  -------------------------  ----     ln  -------
                                 2 Le                  t             yt
                                    2
                              0.0833 (   1.91 )       1            1.154
                         =  -------------------------  ----     ln  -------
                                (2)       3.12       170           1.117

                             0.01326
                         =  --------------- 0.006    ( 0.0 )
                               6.24

                         =       4.07E-07   FT/MIN
                            ========================
                                                             2
EQUIVALENT  K  VALUES    =           0.0044   GAL/DAY/FT
                                     0.0006   FT/DAY
                                   2.07E-07   CM/SEC
```

MW-30 FALLING HEAD TEST



SLUG TEST DATA

DEEP SANDSTONE WELLS

```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                    ---------------  ----------------

MONITORING WELL NUMBER:      MW-2A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):              6.09      FT
WELL TOTAL DEPTH (G.L.):               31.78      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   25.19   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   25.19   FT = H  = SATURATED THICKNESS OF AQUIFER
    12.4   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.351   FT = yo = y AT TIME ZERO
    0.05   FT = yt = y AT TIME t
      48   t  = TIME SINCE yo  (MINUTES)
     2.5   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                     1
SOLVING FOR:  ln Re/rw  =  ---------------------------------------------------
                                    1.1                          C
                            -------------------------- + ----------------
                                 ln  (Lw/rw)                   Le/rw

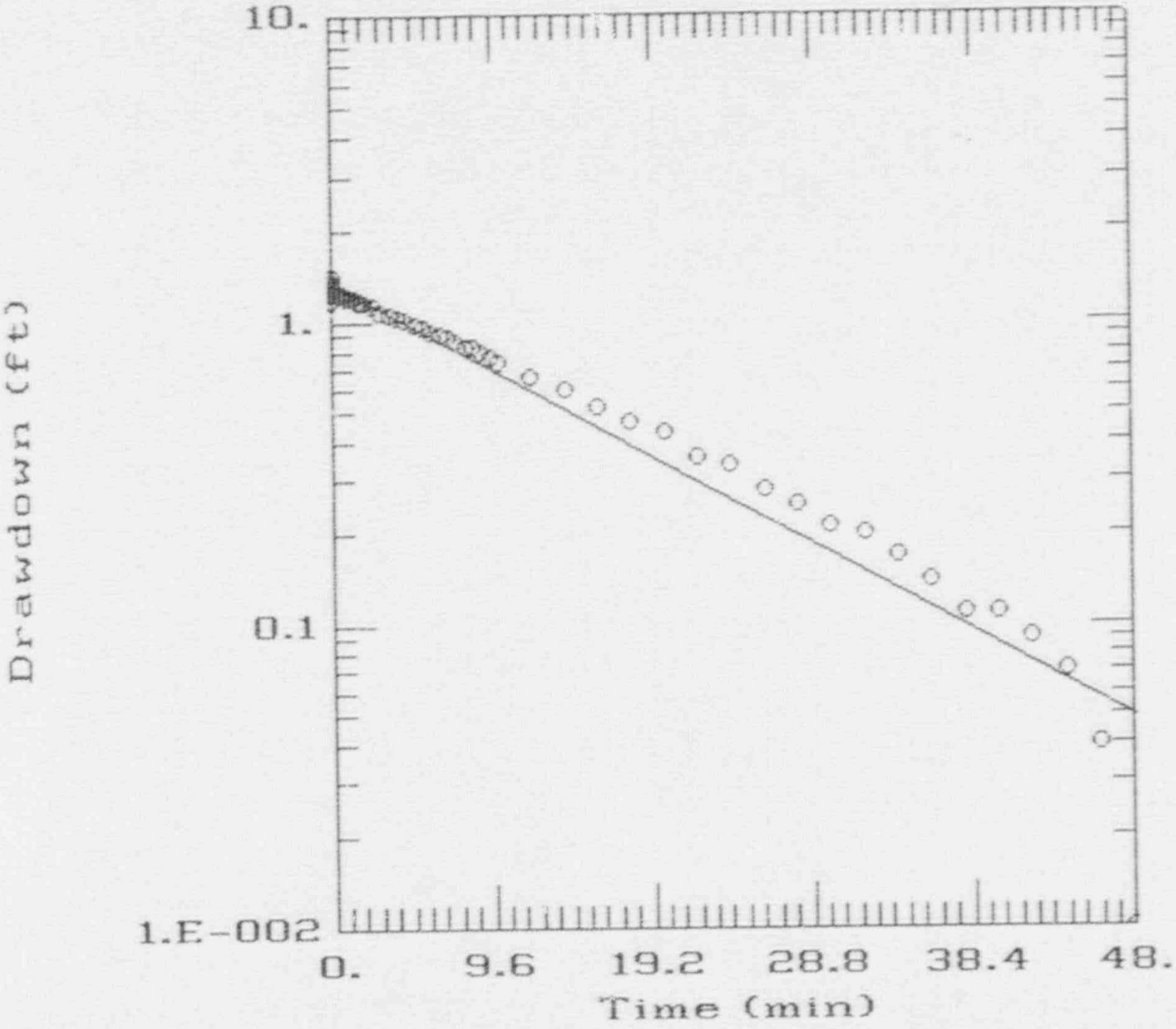
                                                     1
                        =  ---------------------------------------------------
                                    1.1                         2.5
                            -------------------------- + ----------------
                            ln (    25.19 /  0.307    )      12.4 / 0.307

                                                     1
                        =  ---------------------------------------------------
                                    1.1                         2.5
                            -------------------------- + ----------------
                                    4.41                       40.39

                        =  3.21
                           =====
                                       2
                                     rc    ln(Re/rw)      1           yo
 SOLVING FOR:        K  =  --------------------------   ----     ln  -------
                                    2 Le                   t           yt
                                        2
                                  0.0833 (   3.21 )      1          1.351
                        =  --------------------------   ----     ln  -------
                                    (2)      12.40       48           0.05

                                  0.02228
                        =  ---------------- 0.021   ( 3.3 )
                                   24.80

                        =        6.17E-05    FT/MIN
                           ======================
                                                                  2
 EQUIVALENT  K  VALUES   =              0.66    GAL/DAY/FT
                                        0.09    FT/DAY
                                    3.13E-05    CM/SEC
```


MW-2A FALLING HEAD TEST

```
                     HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                      -------------------------------

MONITORING WELL NUMBER:   MW-2A
PROJECT NAME/NUMBER:    SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:       RISING   HEAD
STATIC WATER LEVEL (G.L.):         6.09     FT
WELL TOTAL DEPTH (G.L.):          31.28     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   25.19   FT = Lw = DEPTH OF BASE OF WELL BELOW STATIC WATER LEVEL
   25.19   FT = H  = SATURATED THICKNESS OF AQUIFER
    12.4   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.307   FT = yo = y AT TIME ZERO
    0.16   FT = yt = y AT TIME t
      86   t  = TIME SINCE yo  (MINUTES)
     2.5   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
 SOLVING FOR:  ln Re/rw  =  ---------------------------------------------
                                     1.1                       C
                            ------------------------- +  ----------------
                                 ln  (Lw/rw)                 Le/rw

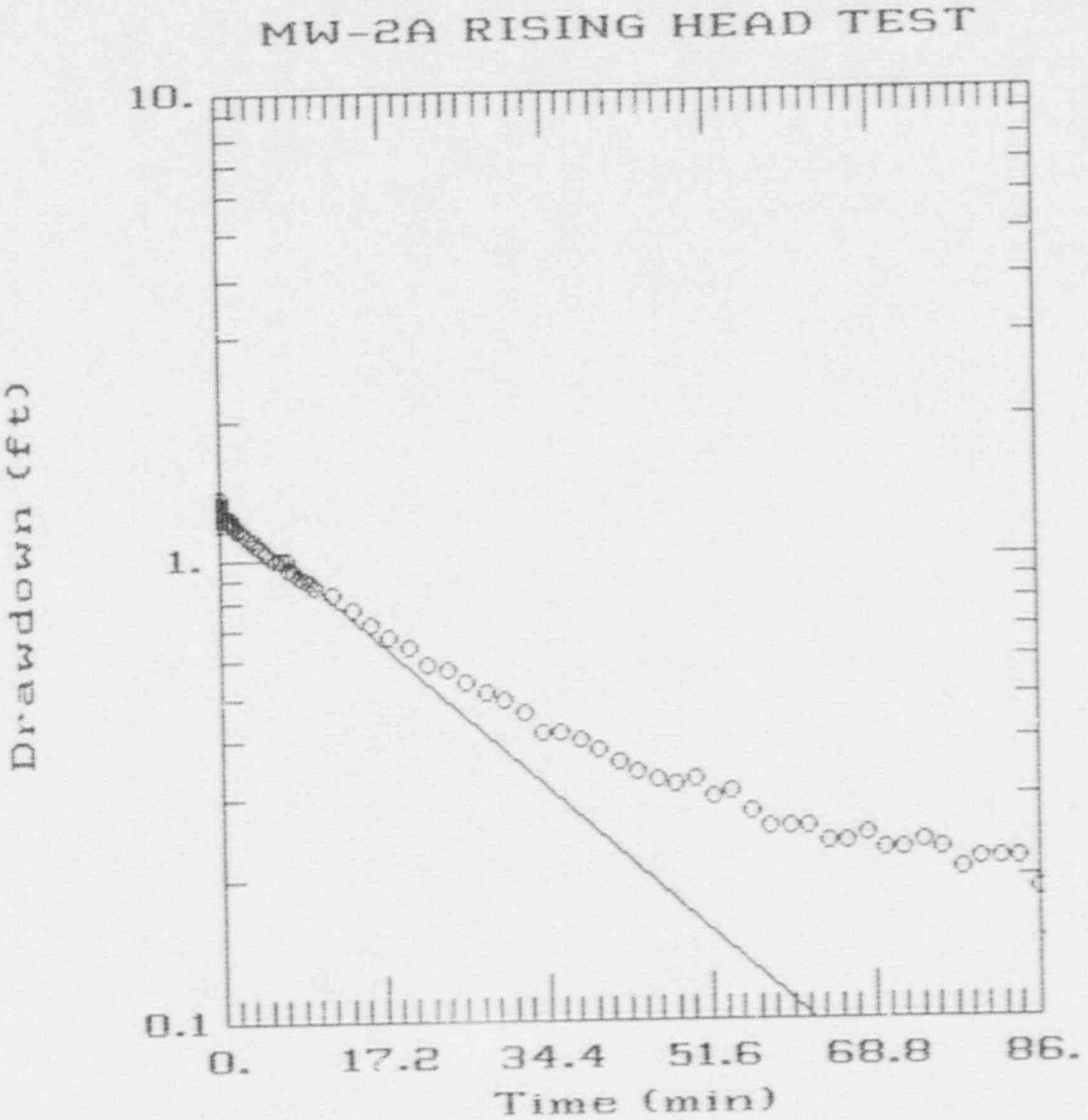
                                                    1
                         =  ----------------------------------------------
                                     1.1                      2.5
                            ------------------------- +  ----------------
                            ln (   25.19 /  0.307    )      12.4 / 0.307

                                                    1
                         =  ----------------------------------------------
                                      1.1                     2.5
                            ------------------------- +  ----------------
                                    4.41                    40.39

                         =  3.21
                            =====
                                          2
                                    rc    ln(Re/rw)     1            yo
  SOLVING FOR:        K   =  ------------------------  ----      ln  -------
                                   2 Le                 t            yt
                                            2
                                   0.0833 (   3.21 )    1           1.307
                          =  ------------------------  ----      ln  -------
                                    (2)      12.40      86            0.16

                                  0.02228
                          =  --------------- 0.012    ( 2.1 )
                                    24.80

                          =       2.19E-05   FT/MIN
                             ======================
                                                       2
  EQUIVALENT  K  VALUES   =             0.24   GAL/DAY/FT
                                        0.03   FT/DAY
                                    1.11E-05   CM/SEC
```


MW-2A RISING HEAD TEST
Drawdown (ft)
10.
1.
0.1
0.
17.2
34.4
51.6
68.8
86.
Time (min)

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:     MW-3A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           6.11     FT
WELL TOTAL DEPTH (G.L.):            34.00     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.89   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.89   FT = H  = SATURATED THICKNESS OF AQUIFER
    17.1   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.9101   FT = yo = y AT TIME ZERO
    0.05   FT = yt = y AT TIME t
      42   t  = TIME SINCE yo  (MINUTES)
     2.9   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                       1.1                         C
                             -------------------------- +  ----------------
                                  ln  (Lw/rw)                    Le/rw

                                                      1
                          =  ------------------------------------------------
                                       1.1                        2.9
                             -------------------------- +  ----------------
                             ln (   27.89 /  0.307   )       17.1 / 0.307

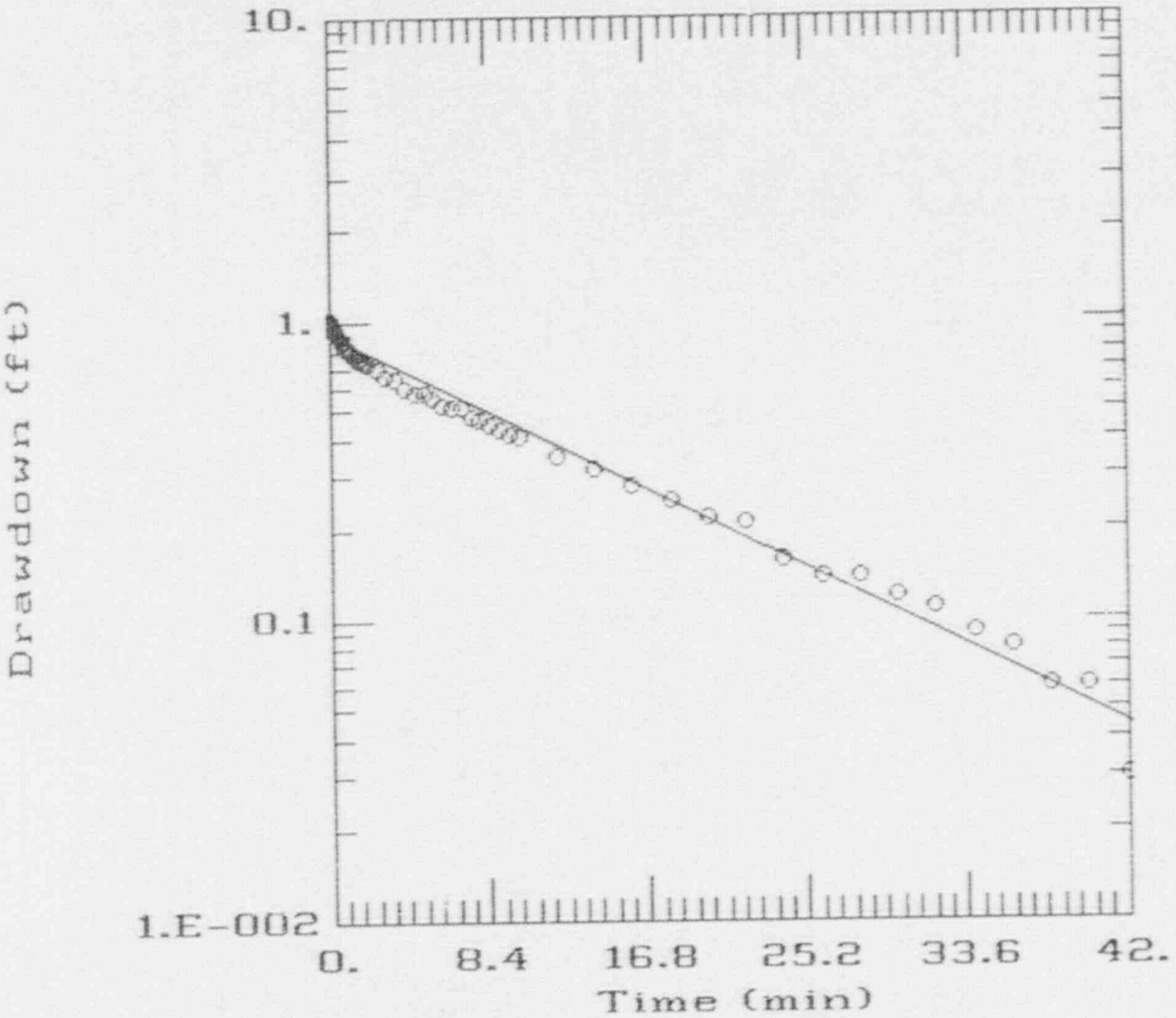
                                                      1
                          =  ------------------------------------------------
                                       1.1                        2.9
                             -------------------------- +  ----------------
                                       4.51                      55.70

                          =  3.38
                              =====
                                        2
                                      rc    ln(Re/rw)      1            yo
  SOLVING FOR:        K   =   ------------------------   ----       ln  -------
                                     2 Le                  t            yt
                                          2
                                     0.0833 (   3.38 )     1          0.9101
                          =   ------------------------   ----       ln  ------
                                      (2)      17.10      42          0.045

                                    0.02344
                          =   ---------------- 0.024   ( 3.0 )
                                      34.20

                          =       4.91E-05    FT/MIN
                              =======================
                                                         2
   EQUIVALENT  K  VALUES  =            0.53   GAL/DAY/FT
                                       0.07   FT/DAY
                                   2.49E-05   CM/SEC
```

MW-3A FALLING HEAD TEST



```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:       MW-3A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):               6.11      FT
WELL TOTAL DEPTH (G.L.):                34.00      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.89    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.89    FT = H  = SATURATED THICKNESS OF AQUIFER
    17.1    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
  0.8091    FT = yo = y AT TIME ZERO
    0.10    FT = yt = y AT TIME t
    46.8    t  = TIME SINCE yo  (MINUTES)
     2.9    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                    1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                    1.1                             C
                            -------------------------- +  ----------------
                                 ln  (Lw/rw)                      Le/rw

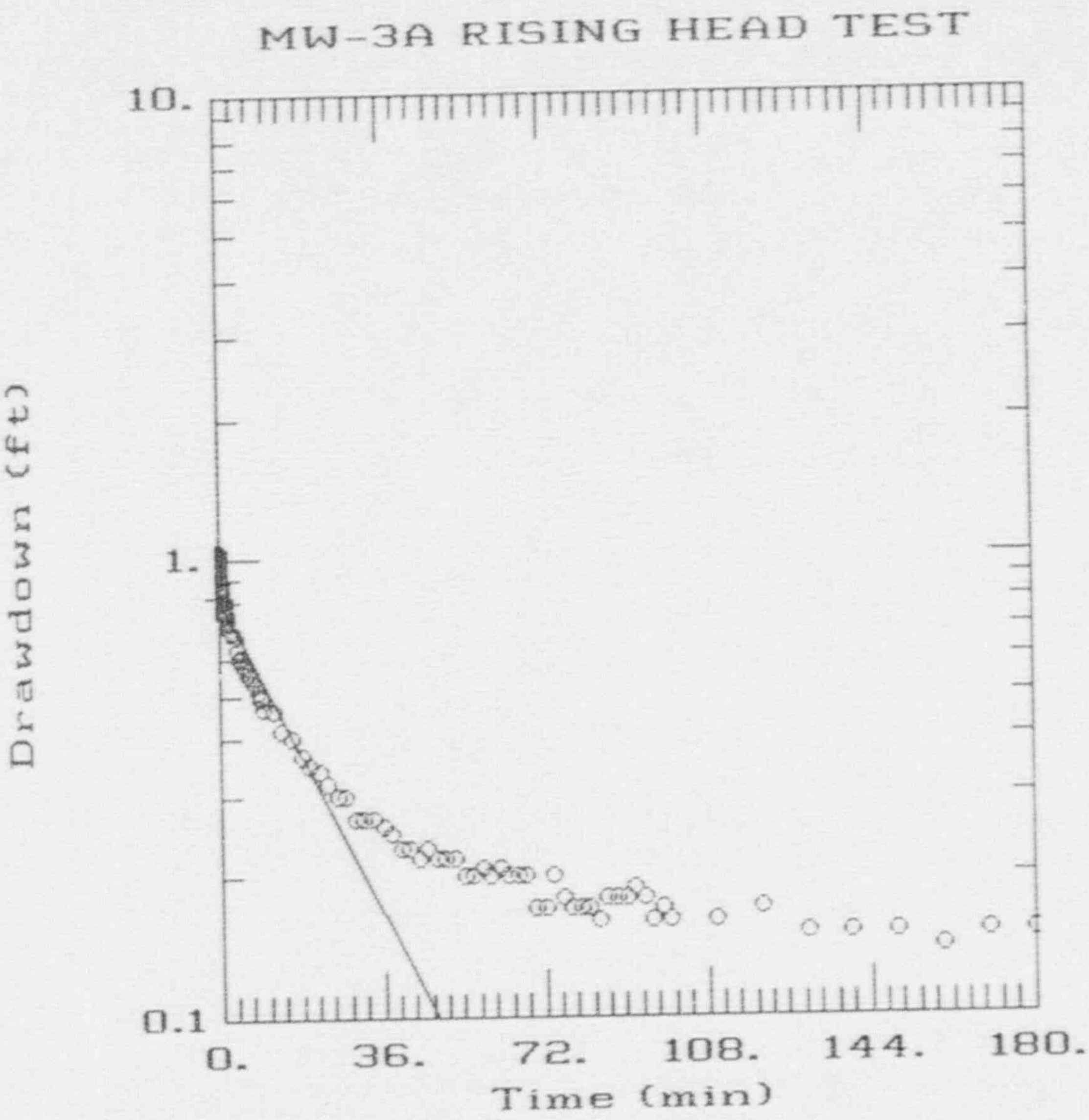
                                                    1
                         =  ------------------------------------------------
                                    1.1                            2.9
                            ---------------------- --- +  ----------------
                            ln (    27.89 /  0.307    )        17.1 / 0.307

                                                    1
                         =  ------------------------------------------------
                                    1.1                            2.9
                            -------------------------- +  ----------------
                                   4.51                          55.70

                         =  3.38
                            =====
                                    2
                                  rc     ln(Re/rw)      1               yo
SOLVING FOR:          K    =  -------------------------   ----     ln   -------
                                 2 Le                    t               yt
                                     2
                               0.0833 (    3.38 )      1             0.8091
                         =  -------------------------  ----     ln   -------
                                  (2)        17.10      47                0.1

                               0.02344
                         =  ---------------- 0.021    ( 2.1 )
                                 34.20

                         =        3.06E-05    FT/MIN
                              ======================
                                                                   2
EQUIVALENT  K  VALUES    =             0.33    GAL/DAY/FT
                                       0.04    FT/DAY
                                   1.56E-05    CM/SEC
```


MW-3A RISING HEAD TEST
Drawdown (ft)
10.
1.
0.1
0.
36.
72.
108.
144.
180.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-4A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             4.68      FT
WELL TOTAL DEPTH (G.L.):              31.60      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.92    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.92    FT = H  = SATURATED THICKNESS OF AQUIFER
   14.03    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.077    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
    15.6    t  = TIME SINCE yo  (MINUTES)
     2.6    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                     1.1                        C
                              --------------------------- +  ---------------
                                  ln  (Lw/rw)                   Le/rw

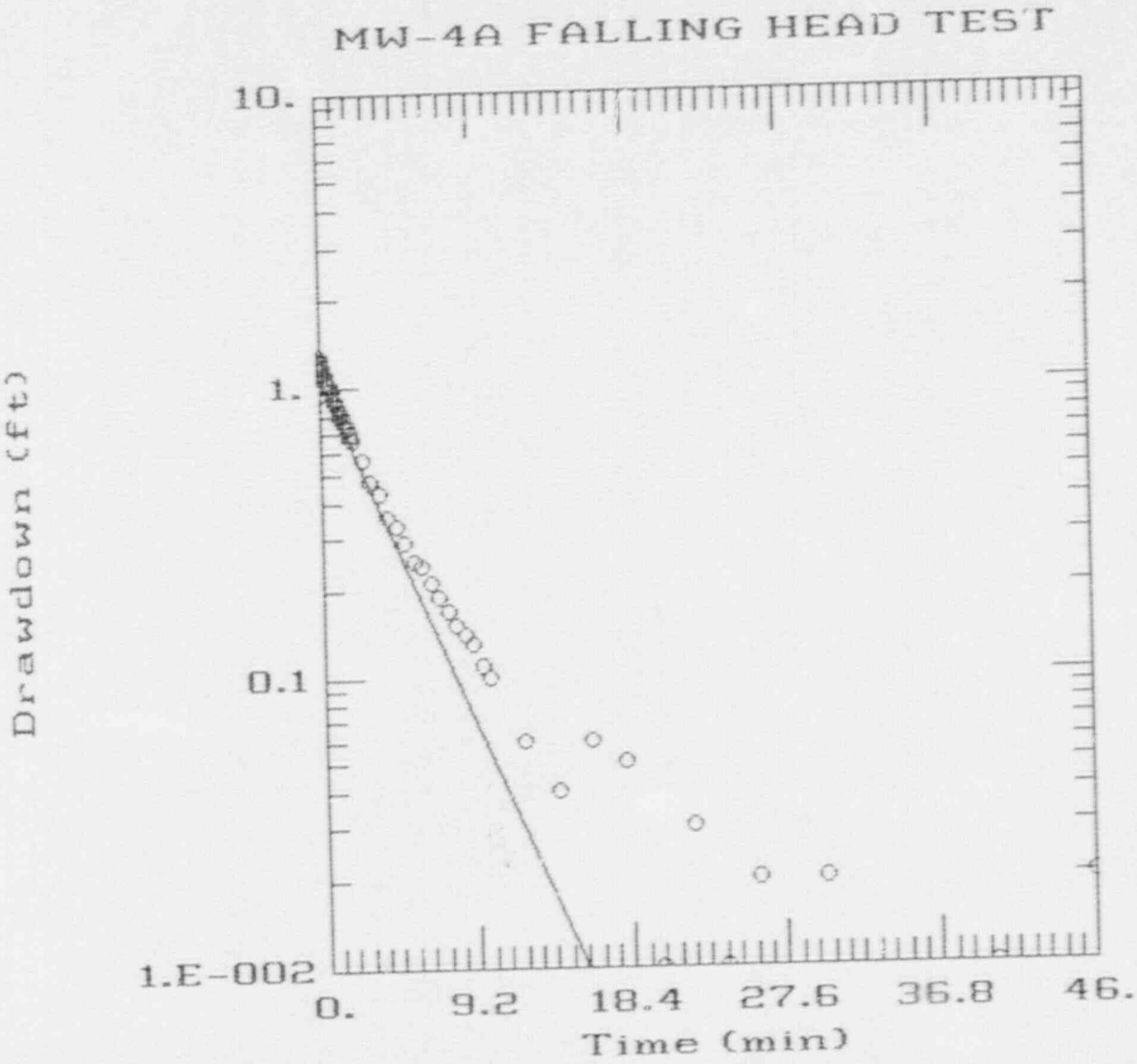
                                                   1
                         =  ------------------------------------------------
                                     1.1                       2.6
                              --------------------------- +  ---------------
                              ln (    26.92 /  0.307    )      14.03 / 0.307

                                                   1
                         =  ------------------------------------------------
                                     1.1                       2.6
                              --------------------------- +  ---------------
                                    4.47                       45.70

                         =  3.30
                            =====
                                   2
                                 rc    ln(Re/rw)      1             yo
 SOLVING FOR:        K       =  ------------------------  ----      ln  -------
                                2 Le                     t              yt
                                   2
                               0.0833 (   3.30 )        1             1.077
                             =  ------------------------  ----      ln  -------
                                (2)       14.03         16             0.01

                               0.02292
                             =  ---------------- 0.064    ( 4.7 )
                                 28.06

                             =      2.45E-04    FT/MIN
                                ========================
                                                                  2
  EQUIVALENT  K  VALUES      =            2.64    GAL/DAY/FT
                                          0.35    FT/DAY
                                      1.24E-04    CM/SEC
```


MW-4A FALLING HEAD TEST
Drawdown (ft)
10.
1.
0.1
1.E-002
0.
9.2
18.4
27.6
36.8
46.
Time (min)

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-4A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        RISING   HEAD
STATIC WATER LEVEL (G.L.):          4.68      FT
WELL TOTAL DEPTH (G.L.):           31.60      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.92   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.92   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.03   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.033   FT = yo = y AT TIME ZERO
     0.01  FT = yt = y AT TIME t
   14.96   t  = TIME SINCE yo  (MINUTES)
      2.6  C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                      1.1                          C
                             ---------------------------- +  -----------------
                                   ln  (Lw/rw)                    Le/rw

                                                      1
                          =  ------------------------------------------------
                                      1.1                        2.6
                             ---------------------------- +  -----------------
                             ln (    26.92 /  0.307   )        14.03 / 0.307

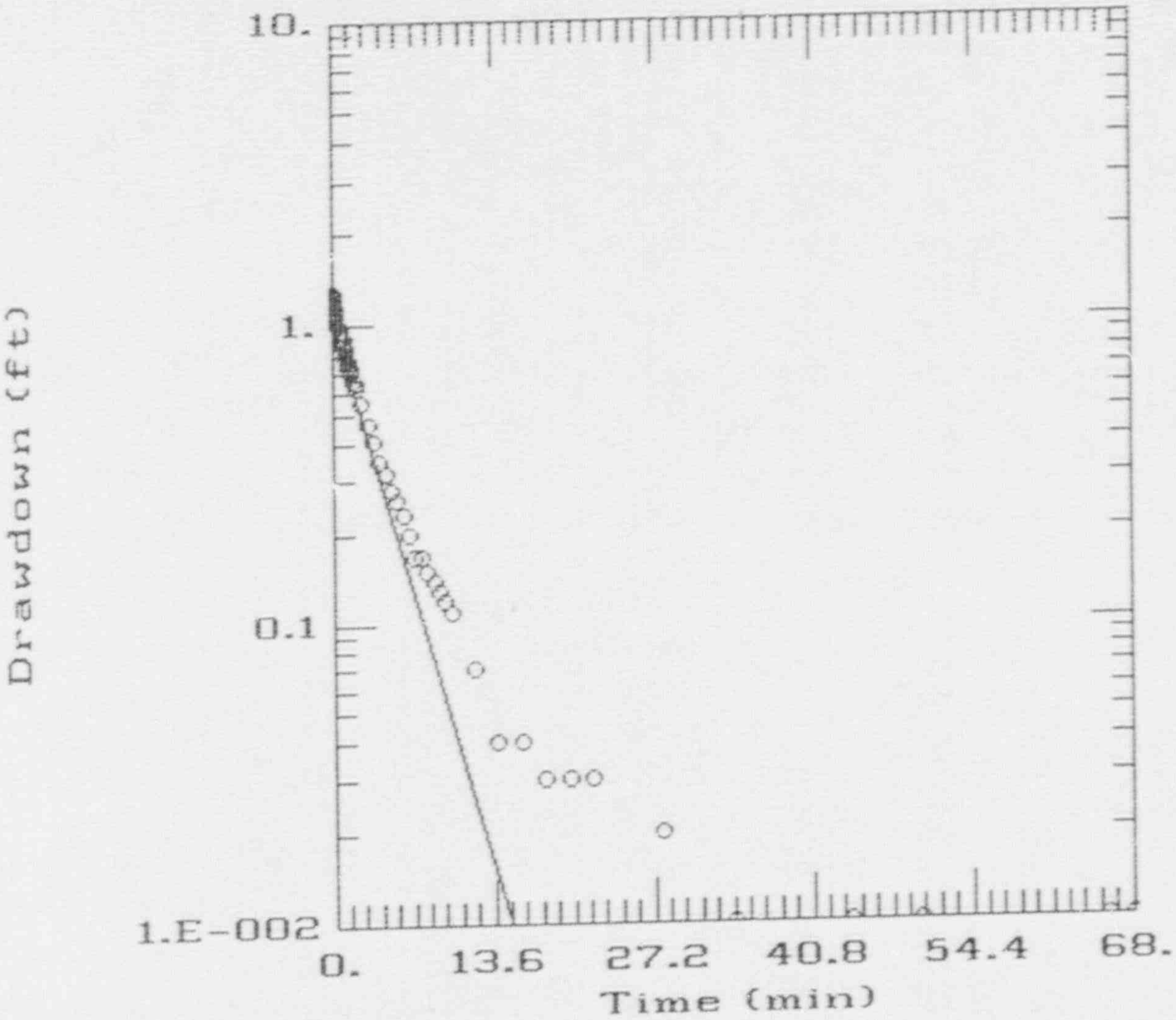
                                                      1
                          =  ------------------------------------------------
                                      1.1                        2.6
                             ---------------------------- +  -----------------
                                      4.47                     45.70

                           =  3.30
                              =====
                                        2
                                      rc   ln(Re/rw)     1             yo
  SOLVING FOR:       K     =  -------------------------  ----      ln  -------
                                     2 Le                t             yt
                                         2
                                     0.0833 (  3.30 )    1            1.033
                           =  -------------------------  ----      ln  -------
                                      (2)      14.03    15             0.01

                                    0.02292
                           =  ---------------- 0.067   ( 4.6 )
                                      28.06

                           =        2.53E-04   FT/MIN
                               =======================
                                                         2
  EQUIVALENT  K  VALUES    =            2.73   GAL/DAY/FT
                                        0.36   FT/DAY
                                    1.29E-04   CM/SEC
```

MW-4A RISING HEAD TEST



```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                    ---------------------------------

MONITORING WELL NUMBER:     MW-5A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         FALLING  HEAD
STATIC WATER LEVEL (G.L.):           5.41     FT
WELL TOTAL DEPTH (G.L.):            32.10     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.69   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.69   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.81   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.9762   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
    14.0    t  = TIME SINCE yo  (MINUTES)
     2.7    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                    1
SOLVING FOR:   ln ke/rw  =  ---------------------------------------------------
                                     1.1                          C
                            ---------------------------  +  ---------------
                                 ln  (Lw/rw)                     Le/rw

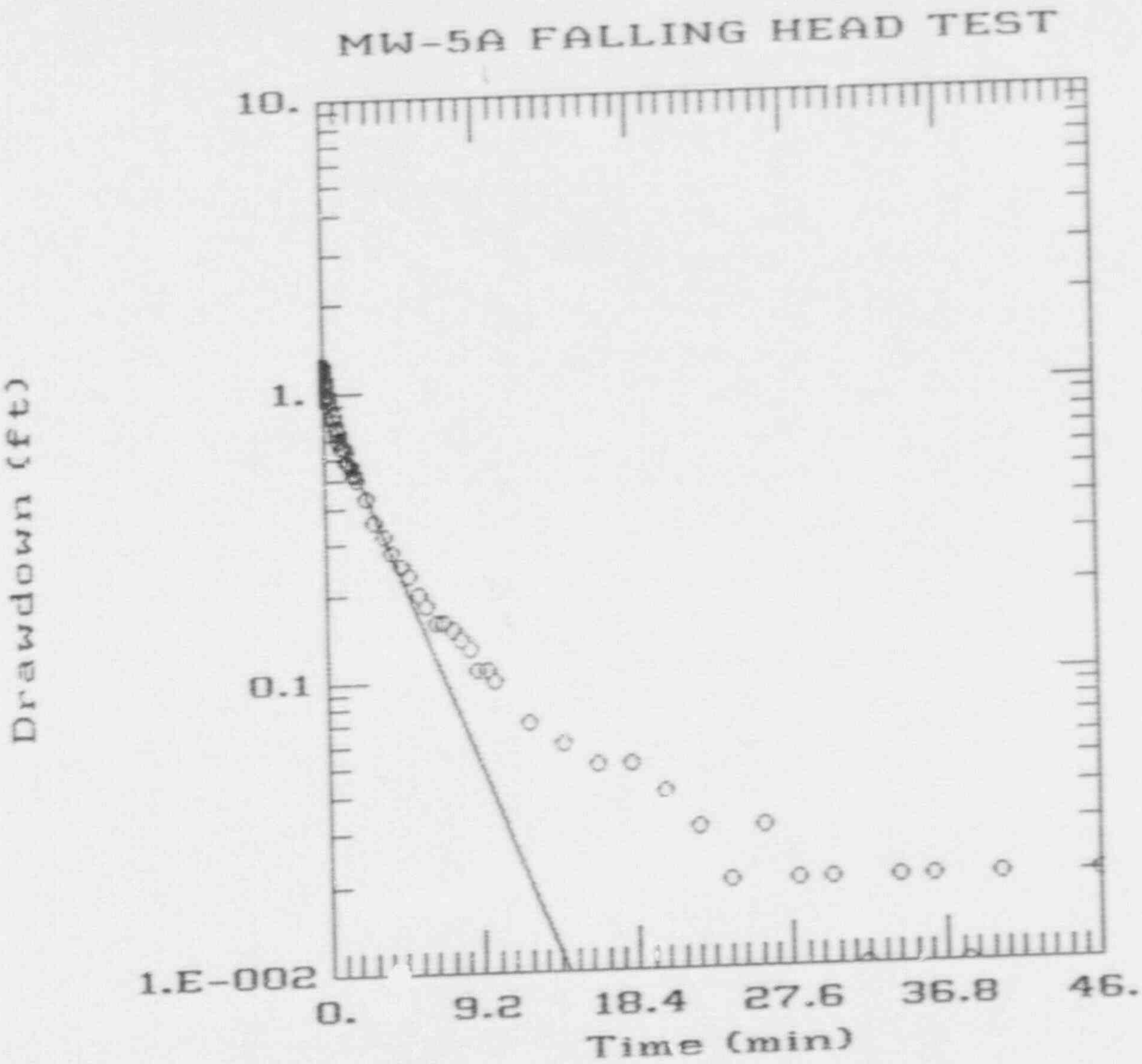
                                                    1
                         =  ---------------------------------------------------
                                     1.1                         2.7
                            ---------------------------  +  --------------
                            ln (    26.69 /  0.307    )      14.81 / 0.307

                                                    1
                         =  ---------------------------------------------------
                                     1.1                         2.7
                            ---------------------------  +  ---------------
                                    4.47                        48.24

                         =  3.31
                            =====
                                 2
                               rc    ln(Re/rw)     1            yo
SOLVING FOR:        K      =  -----------------------  ----    ln  -------
                                2 Le                   t             yt
                                 2
                           0.0833 (   3.31 )       1           0.9762
                        =  -----------------------  ----    ln  -------
                              (2)       14.81       14            0.01

                           0.02295
                        =  ---------------- 0.071   ( 4.6 )
                            29.62

                        =      2.54E-04    FT/MIN
                           =======================
                                                              2
EQUIVALENT  K  VALUES    =            2.73    GAL/DAY/FT
                                      0.37    FT/DAY
                                  1.29E-04    CM/SEC
```


MW-5A FALLING HEAD TEST
Drawdown (ft)
10.
1.
0.1
1.E-002
0.
9.2
18.4
27.6
36.8
46.
Time (min)

```
                    HYDRAULIC  CONDUCTIVITY  ANALYSIS
                               SLUG  TEST
                    ---------------------------------


MONITORING WELL NUMBER:     MW-5A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):            5.41     FT
WELL TOTAL DEPTH (G.L.):             32.10     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.69   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.69   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.81   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHLRWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.157   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     9.7   t  = TIME SINCE yo  (MINUTES)
     2.7   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                  1.1                            C
                            --------------------------- +  ----------------
                                 ln  (Lw/rw)                   Le/rw

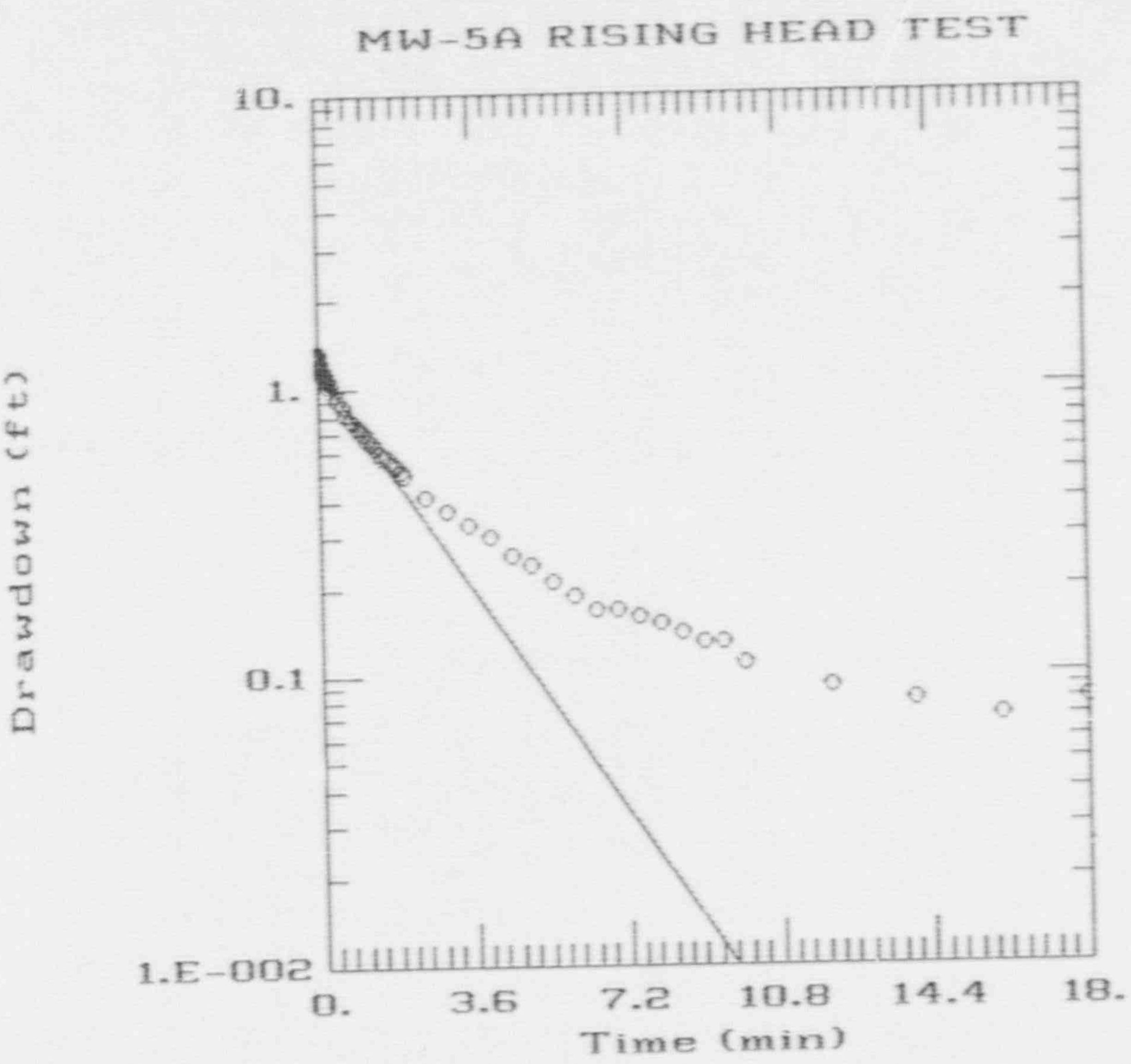
                                                  1
                         =  ------------------------------------------------
                                  1.1                           2.7
                            --------------------------- +  ----------------
                            ln (    26.69 /  0.307    )      14.81 / 0.307

                                                  1
                         =  ------------------------------------------------
                                  1.1                           2.7
                            --------------------------- +  ----------------
                                  4.47                         48.24

                         =  3.31
                            =====
                                   2
                                 rc    ln(Re/rw)    1          yo
 SOLVING FOR:      K     =  ------------------------  ----    ln  -------
                                2 Le                  t             yt
                                   2
                               0.0833 (   3.31 )    1            1.157
                         =  ------------------------  ----    ln  -------
                                (2)      14.81     9.7             0.01

                               0.02295
                         =  ---------------- 0.103   ( 4.8 )
                                29.62

                         =       3.79E-04   FT/MIN
                            ======================
                                                      2
 EQUIVALENT  K  VALUES   =             4.08   GAL/DAY/FT
                                       0.55   FT/DAY
                                   1.92E-04   CM/SEC
```


MW-5A RISING HEAD TEST
Drawdown (ft)
10.
1.
0.1
1.E-002
0.
3.6
7.2
10.8
14.4
18.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-6A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):            8.68      FT
WELL TOTAL DEPTH (G.L.):             35.00      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.32    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.32    FT = H  = SATURATED THICKNESS OF AQUIFER
   14.56    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.093    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     9.7    t  = TIME SINCE yo  (MINUTES)
     2.7    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                   1.1                          C
                            ------------------------- +  ----------------
                                ln  (Lw/rw)                   Le/rw

                                                   1
                         =  ------------------------------------------------
                                   1.1                         2.7
                            ------------------------- +  ----------------
                            ln (    26.32 /  0.307    )    14.56 / 0.307

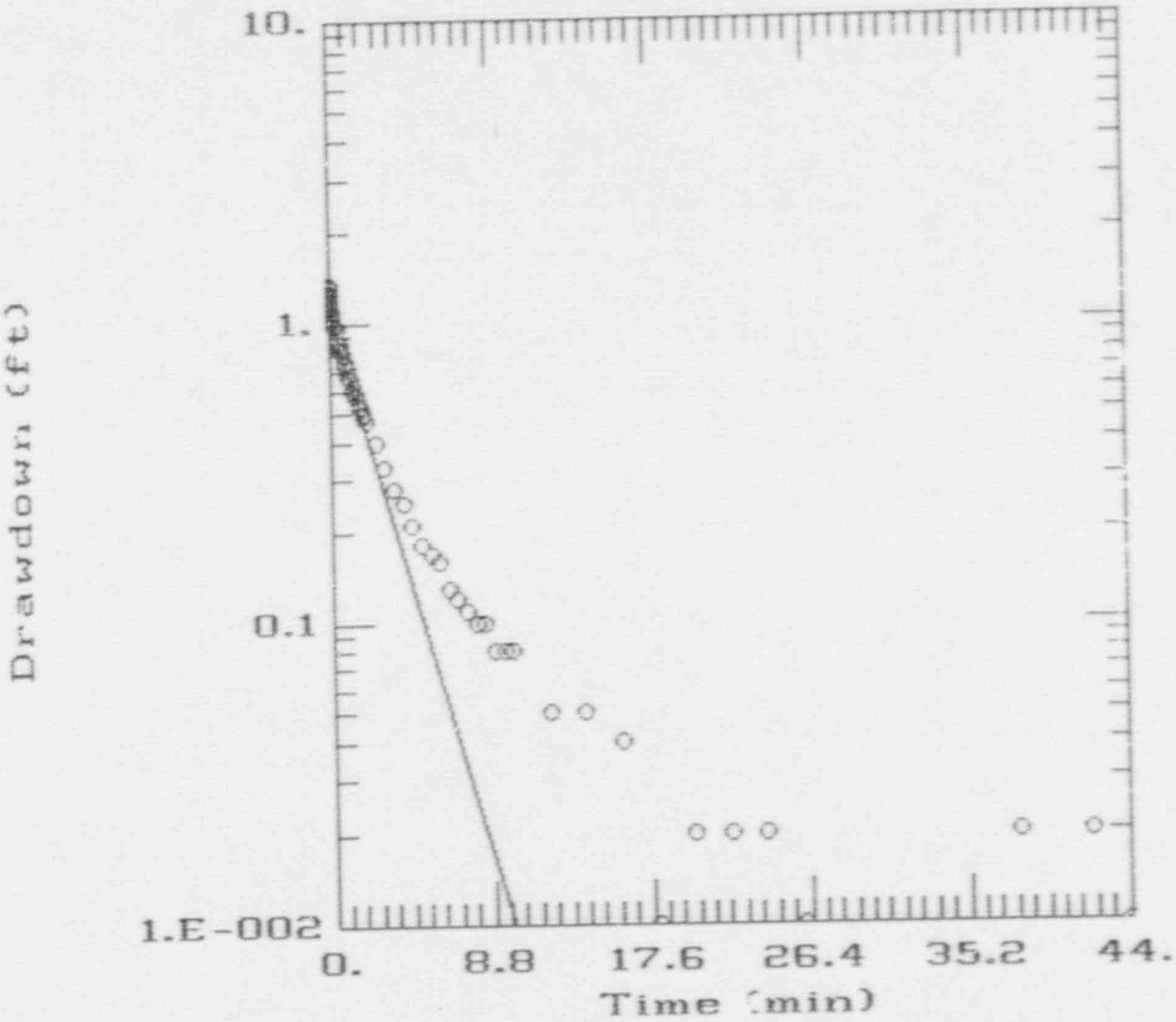
                                                   1
                         =  ------------------------------------------------
                                   1.1                         2.7
                            ------------------------- +  ----------------
                                   4.45                       47.43

                         =  3.29
                            =====
                                   2
                                 rc    ln(Re/rw)      1           yo
  SOLVING FOR:       K      =  -----------------------  ----    ln  -------
                                2 Le                     t            yt
                                    2
                             0.0833 (   3.29 )        1          1.093
                         =  -----------------------  ----    ln  -------
                               (2)       14.56       9.7          0.01

                              0.02282
                         =  --------------- 0.103   ( 4.7 )
                               29.12

                         =       3.80E-04   FT/MIN
                            ======================
                                                            2
  EQUIVALENT  K  VALUES     =            4.09    GAL/DAY/FT
                                         0.55    FT/DAY
                                     1.93E-04    CM/SEC
```

MW-6A FALLING HEAD TEST



```
                      HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                 SLUG  TEST
                      ................................

MONITORING WELL NUMBER:      MW-6A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:           RISING   HEAD
STATIC WATER LEVEL (G.L.):            8.68     FT
WELL TOTAL DEPTH (G.L.):             35.00     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.32   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.32   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.56   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.118   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     8.8   t  = TIME SINCE yo  (MINUTES)
     2.7   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
SOLVING FOR:   ln Re/rw  =  ----------------------------------------------
                                     1.1                        C
                            ------------------------ +   ----------------
                               ln  (Lw/rw)                    Le/rw

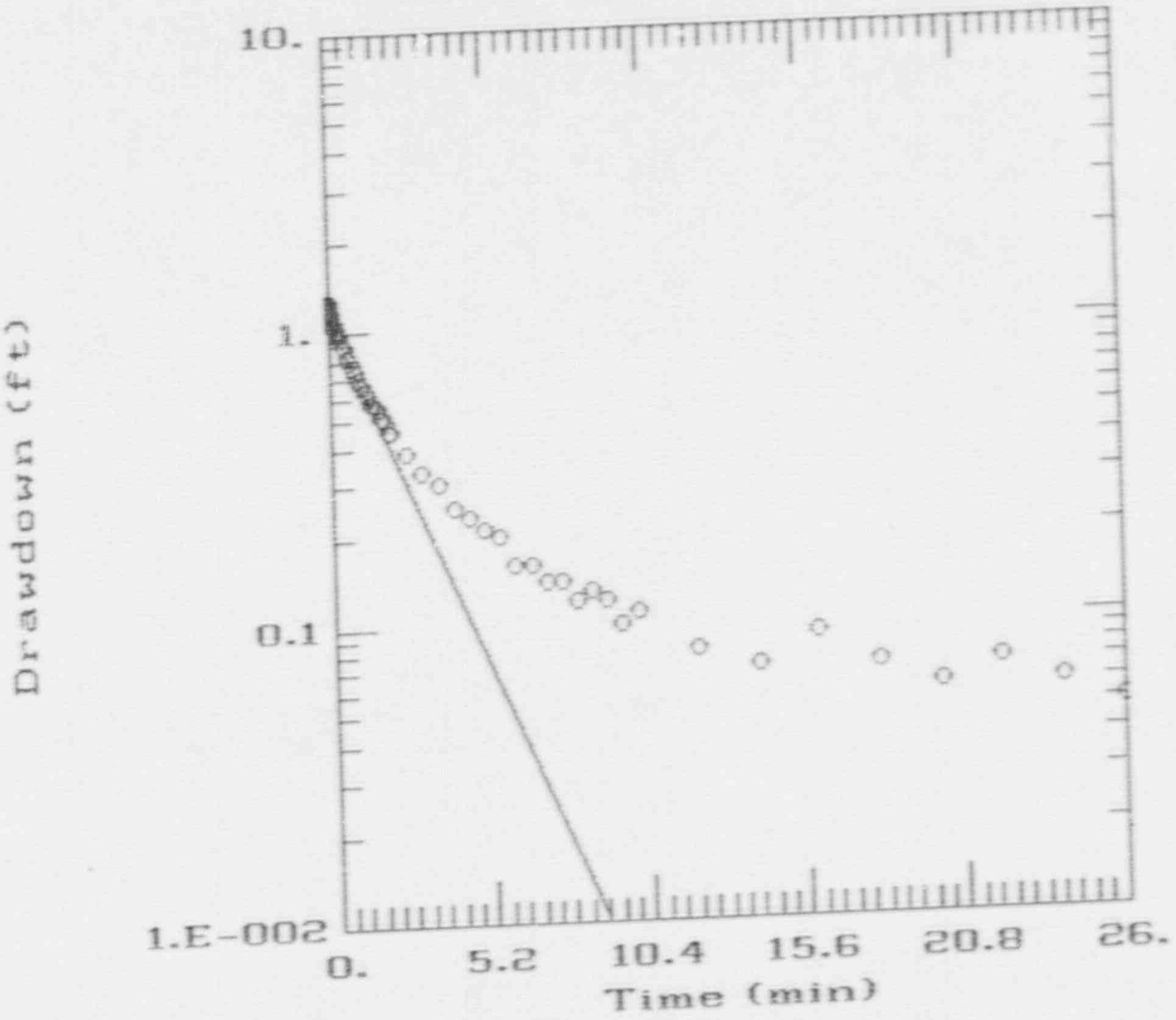
                                                        1
                         =  ----------------------------------------------
                                     1.1                       2.7
                            ------------------------ +   ----------------
                            ln (   26.32 /  0.307   )     14.56 / 0.307

                                                        1
                         =  ----------------------------------------------
                                     1.1                       2.7
                            ------------------------ +   ----------------
                                     4.45                     47.43

                         =  3.29
                            =====
                                      2
                                    rc    ln(Re/rw)     1          yo
SOLVING FOR:        K    =  ------------------------  ----    ln  -------
                                  2 Le                  t          yt
                                      2
                              0.0833 (   3.29 )       1          1.118
                         =  ------------------------  ----    ln  -------
                                 (2)      14.56       8.8         0.01

                               0.02282
                         =  ---------------- 0.113   ( 4.7 )
                                29.12

                         =       4.18E-04    FT/MIN
                            =====================
                                                               2
EQUIVALENT  K  VALUES    =            4.50    GAL/DAY/FT
                                      0.60    FT/DAY
                                  2.12E-04    CM/SEC
```



MW-6A RISING HEAD TEST

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                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:      MW-8A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):            6.79      FT
WELL TOTAL DEPTH (G.L.):             31.00      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.21   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.21   FT = H  = SATURATED THICKNESS OF AQUIFER
    11.4   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.879   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
      22   t  = TIME SINCE yo  (MINUTES)
     2.3   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                       1.1                          C
                             --------------------------- +  ----------------
                                   ln  (Lw/rw)                    Le/rw

                                                        1
                          =  ------------------------------------------------
                                       1.1                         2.3
                             --------------------------- +  ----------------
                             ln (    24.21 /  0.307    )       11.4 / 0.307

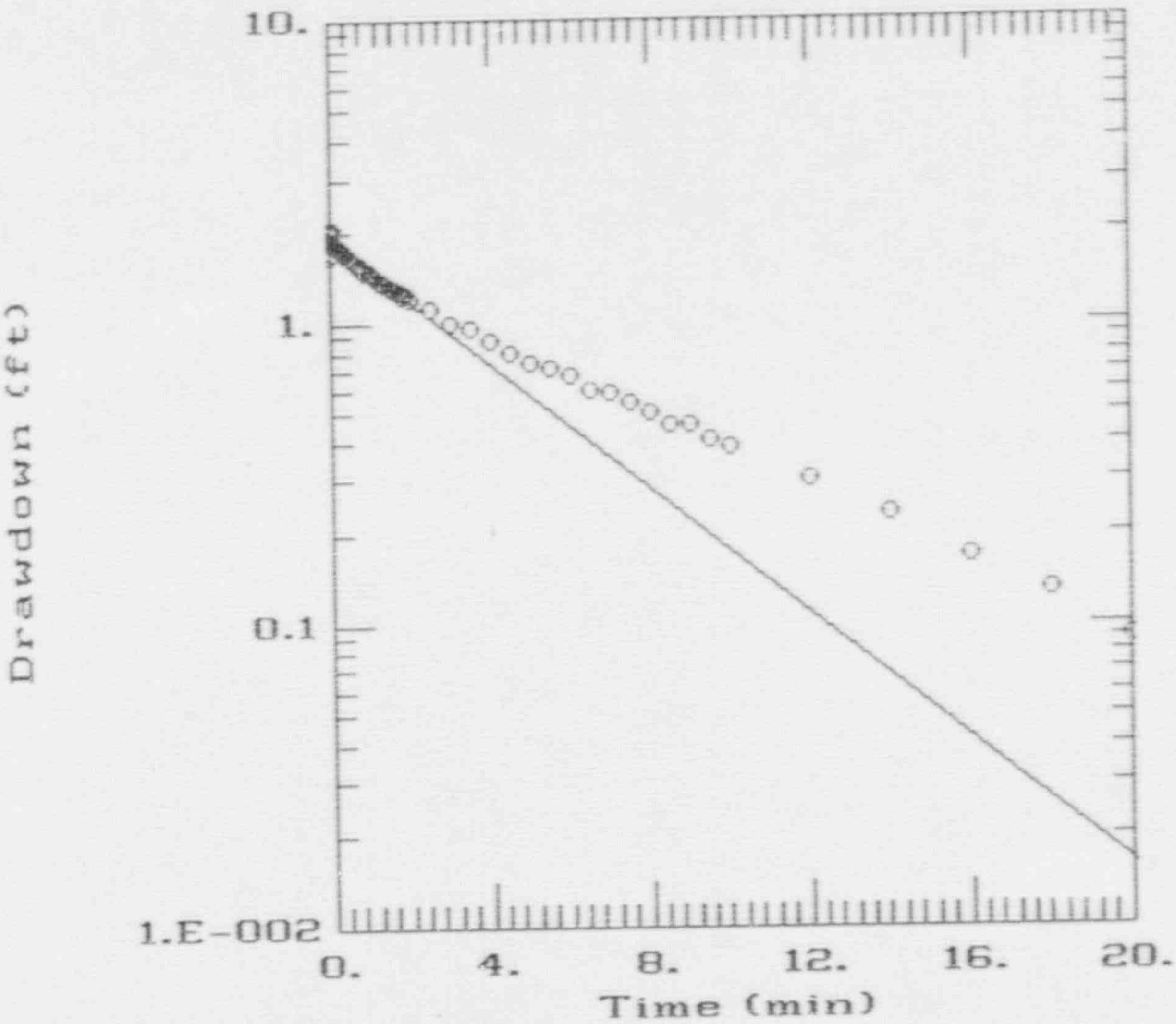
                                                        1
                          =  ------------------------------------------------
                                       1.1                         2.3
                             --------------------------- +  ----------------
                                       4.37                       37.13

                          =  3.19
                             =====
                                       2
                                     rc    ln(Re/rw)      1             yo
   SOLVING FOR:        K      =  ------------------------   ----      ln  -------
                                    2 Le                     t              yt
                                        2
                                  0.0833 (   3.19 )       1            1.879
                              =  ------------------------   ----      ln  -------
                                      (2)      11.40      22             0.01

                                  0.02211
                              =  ----------------  0.045    ( 5.2 )
                                    22.80

                              =      2.31E-04    FT/MIN
                                 =======================
                                                           2
    EQUIVALENT  K  VALUES     =           2.49   GAL/DAY/FT
                                          0.33   FT/DAY
                                      1.17E-04   CM/SEC
```

MW-8A FALLING HEAD TEST



```
                     HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                     ---------------------------------

MONITORING WELL NUMBER:      MW-8A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):              6.79      FT
WELL TOTAL DEPTH (G.L.):               31.00      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.21    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.21    FT = H  = SATURATED THICKNESS OF AQUIFER
    11.4    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.772    FT = yo = y AT TIME ZERO
    0.10    FT = yt = y AT TIME t
   13.72    t  = TIME SINCE yo  (MINUTES)
     2.3    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                     1.1                            C
                             ------------------------ +  ----------------
                                 ln  (Lw/rw)                      Le/rw

                                                  1
                          =  ------------------------------------------------
                                     1.1                           2.3
                             ------------------------ +  ----------------
                             ln (    24.21 /  0.307    )      11.4 / 0.307

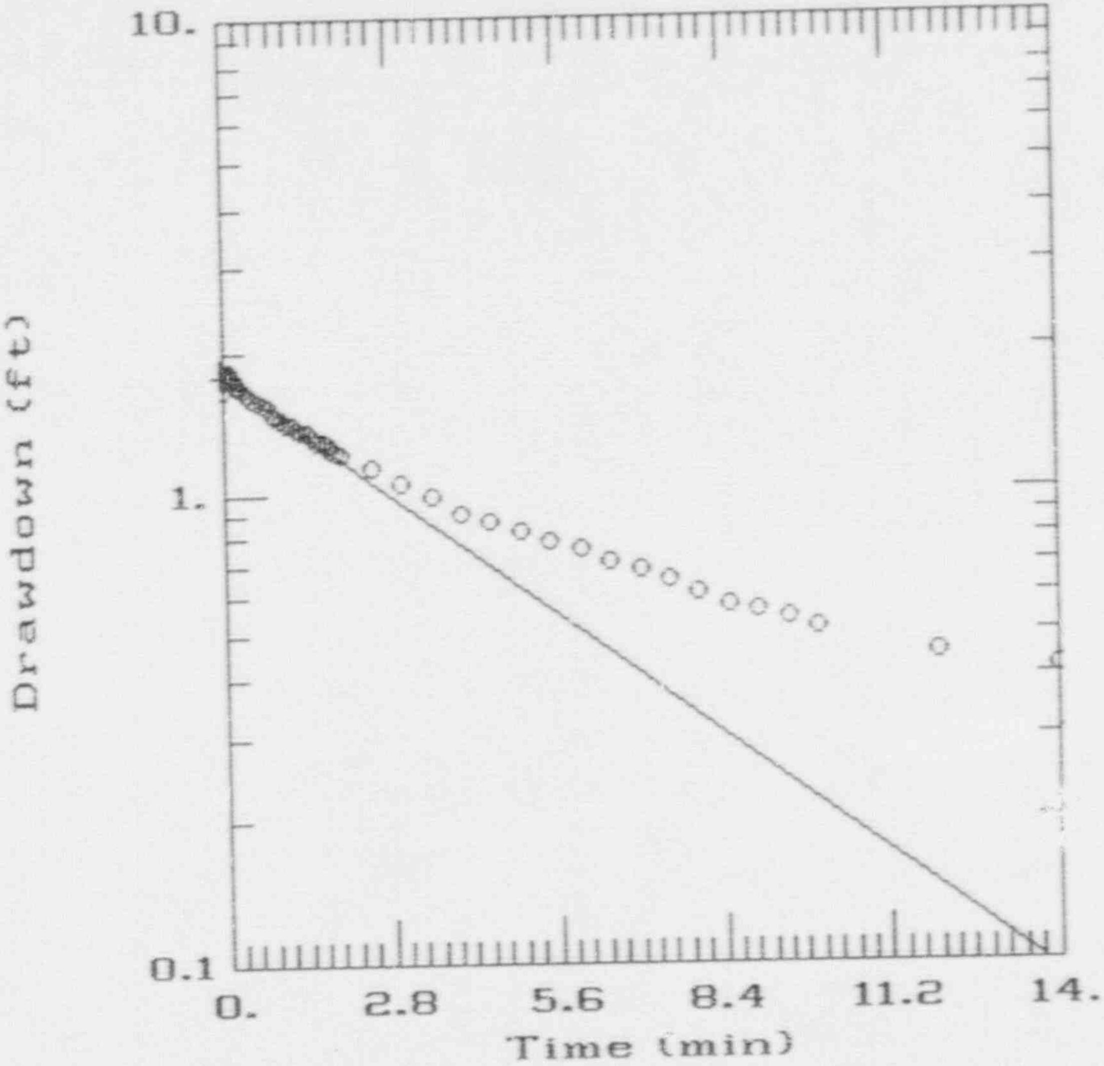
                                                  1
                          =  ------------------------------------------------
                                     1.1                           2.3
                             ------------------------ +  ----------------
                                     4.37                        37.13

                          =  3.19
                             =====
                                    2
                                  rc    ln(Re/rw)     1              yo
 SOLVING FOR:        K     =  ----------------------  ----      ln  -------
                                 2 Le                 t               yt
                                     2
                                0.0833 (   3.19 )     1             1.772
                           =  ----------------------  ----      ln  -------
                                (2)       11.40      14               0.1

                                0.02211
                           =  -------------- 0.073    ( 2.9 )
                                22.80

                           =      2.03E-04    FT/MIN
                              ======================
                                                          2
 EQUIVALENT  K  VALUES     =           2.19   GAL/DAY/FT
                                       0.29   FT/DAY
                                   1.03E-04   CM/SEC
```

MW-8A RISING HEAD TEST



```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                         ----------------------------------

MONITORING WELL NUMBER:      MW-9A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             7.25      FT
WELL TOTAL DEPTH (G.L.):              31.80      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.55   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.55   FT = H  = SATURATED THICKNESS OF AQUIFER
   11.33   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
    1.05   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
   15.12   t  = TIME SINCE yo  (MINUTES)
     2.3   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
SOLVING FOR:   ln Re/rw  =  -------------------------------------------------
                                     1.1                             C
                            ---------------------------- +  ------------------
                                 ln  (Lw/rw)                       Le/rw

                                                        1
                         =  -------------------------------------------------
                                     1.1                            2.3
                            ---------------------------- +  ------------------
                            ln (   24.55 /  0.307   )         11.33 / 0.307

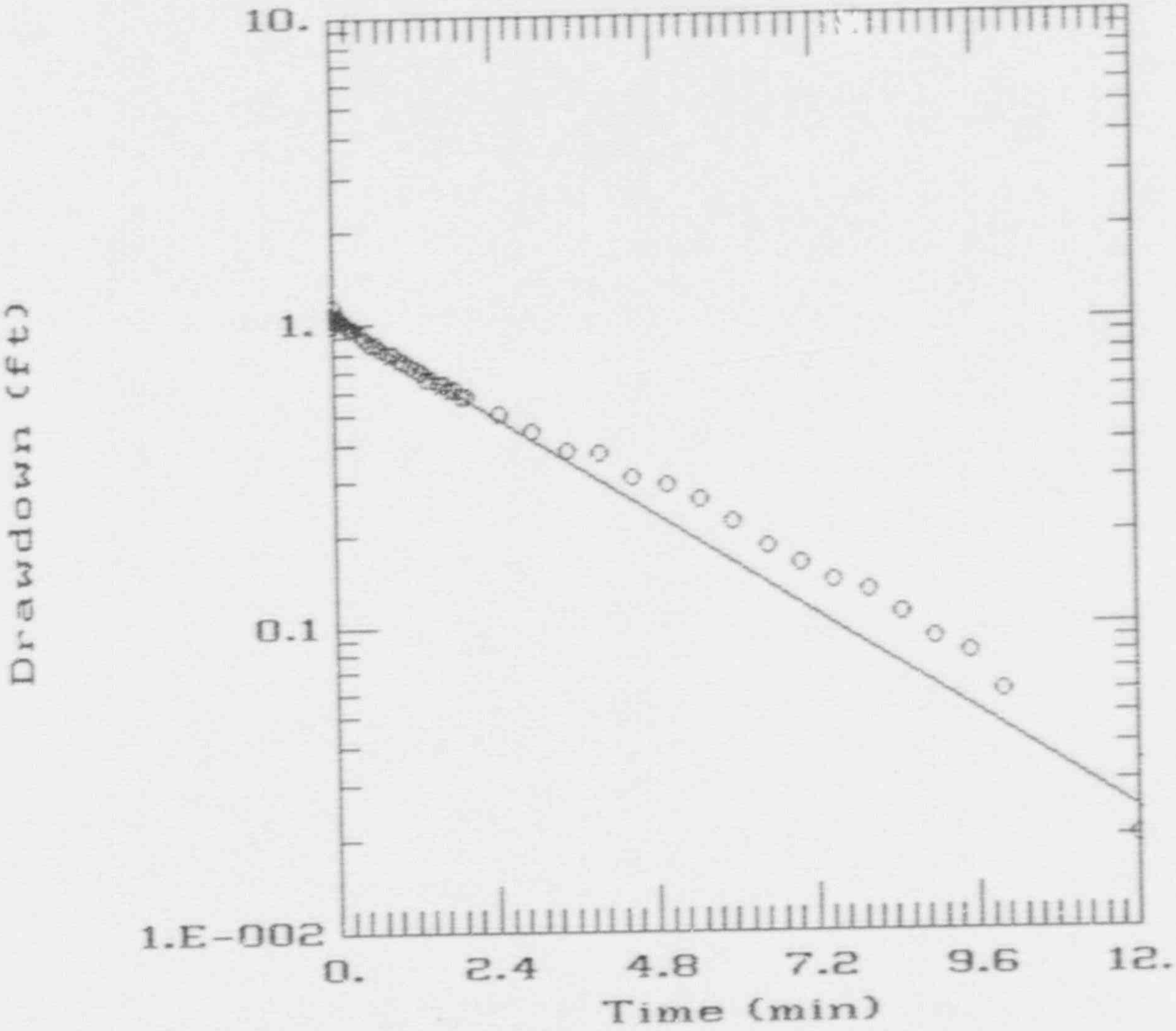
                                                        1
                         =  -------------------------------------------------
                                     1.1                            2.3
                            ---------------------------- +  ------------------
                                     4.38                          36.91

                         =  3.19
                            =====
                                  2
                                rc    ln(Re/rw)      1                yo
SOLVING FOR:         K     =  ------------------------  ----       ln  -------
                              2 Le                       t                yt
                                   2
                              0.0833 (   3.19 )      1                1.05
                           =  ------------------------  ----       ln  -------
                                (2)      11.33       15               0.01

                              0.02214
                           =  ---------------- 0.066   ( 4.7 )
                                22.66

                           =      3.01E-04   FT/MIN
                              ======================
                                                          2
EQUIVALENT  K  VALUES     =             3.24   GAL/DAY/FT
                                        0.43   FT/DAY
                                    1.53E-04   CM/SEC
```

MW-9A FALLING HEAD TEST



```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:      MW-9A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        RISING   HEAD
STATIC WATER LEVEL (G.L.):           7.25      FT
WELL TOTAL DEPTH (G.L.):             31.80     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.55   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.55   FT = H  = SATURATED THICKNESS OF AQUIFER
   11.33   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.217   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
    5.12   t  = TIME SINCE yo  (MINUTES)
     2.3   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                       1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                        1.1                          C
                              --------------------------- +  -----------------
                                    ln  (Lw/rw)                     Le/rw

                                                       1
                           =  ------------------------------------------------
                                        1.1                         2.3
                              --------------------------- +  -----------------
                              ln (    24.55 /  0.307    )        11.33 / 0.307

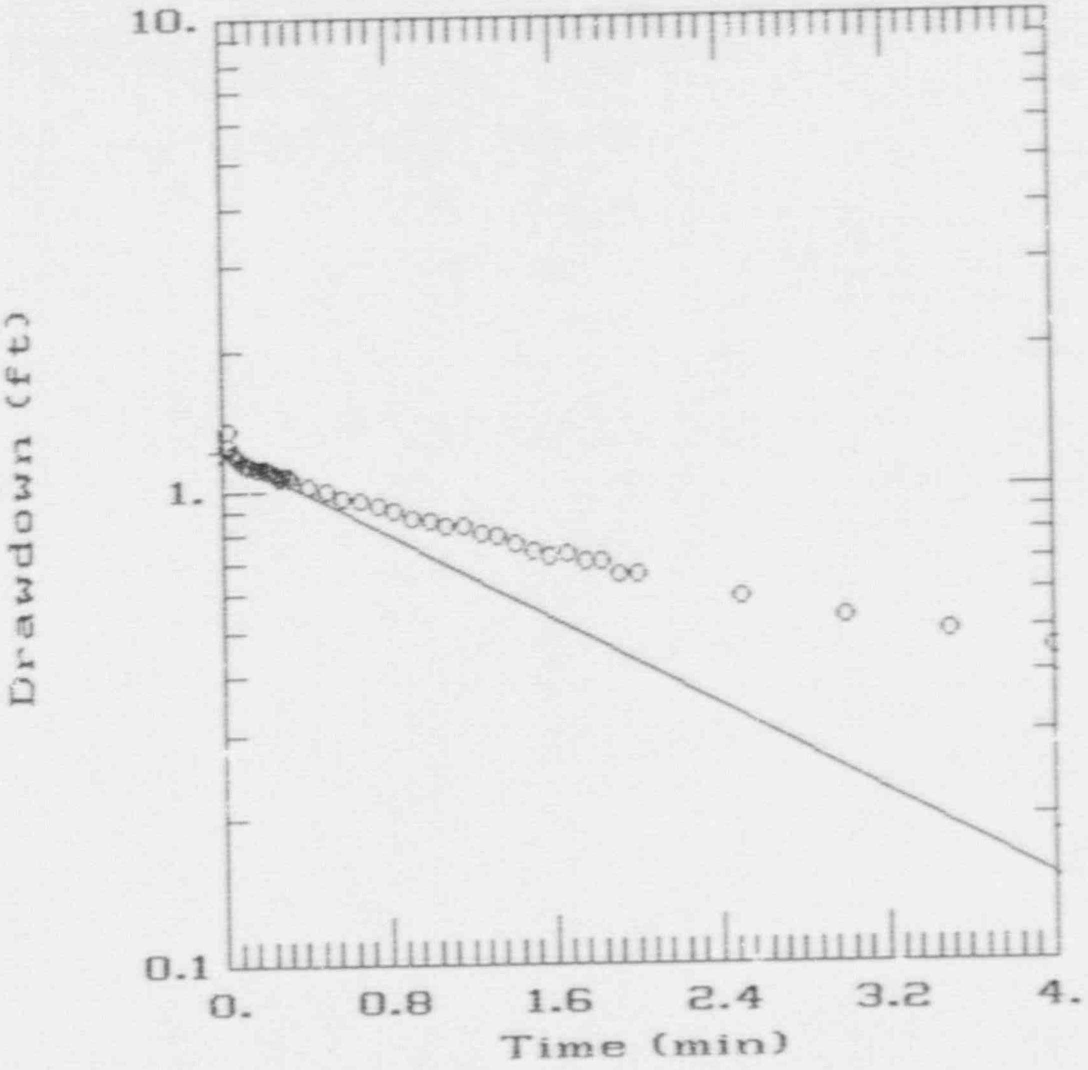
                                                       1
                           =  ------------------------------------------------
                                        1.1                         2.3
                              --------------------------- +  -----------------
                                       4.38                        36.91

                            =  3.19
                              =====
                                         2
                                      rc    ln(Re/rw)      1         yo
  SOLVING FOR:       K      =  -------------------------  ----    ln  -------
                                      2 Le                 t          yt
                                           2
                                      0.0833 (   3.19 )    1         1.217
                            =  -------------------------  ----    ln  -------
                                      (2)       11.33     5.1          0.1

                                     0.02214
                            =  ---------------- 0.195    ( 2.5 )
                                       22.66

                            =       4.77E-04    FT/MIN
                               =======================
                                                          2
   EQUIVALENT  K  VALUES    =           5.14    GAL/DAY/FT
                                        0.69    FT/DAY
                                    2.42E-04    CM/SEC
```

MW-9A RISING HEAD TEST



```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ----------------------------------

MONITORING WELL NUMBER:      MW-10A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             7.19      FT
WELL TOTAL DEPTH (G.L.):              35.00      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.81   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.81   FT = H  = SATURATED THICKNESS OF AQUIFER
   13.31   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.169   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
   42.24   t  = TIME SINCE yo  (MINUTES)
     2.5   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                     1.1                          C
                            --------------------------- +  ----------------
                                 ln  (Lw/rw)                     Le/rw

                                                      1
                         =  ------------------------------------------------
                                     1.1                          2.5
                            --------------------------- +  ----------------
                            ln (    27.81 /  0.307   )       13.31 / 0.307

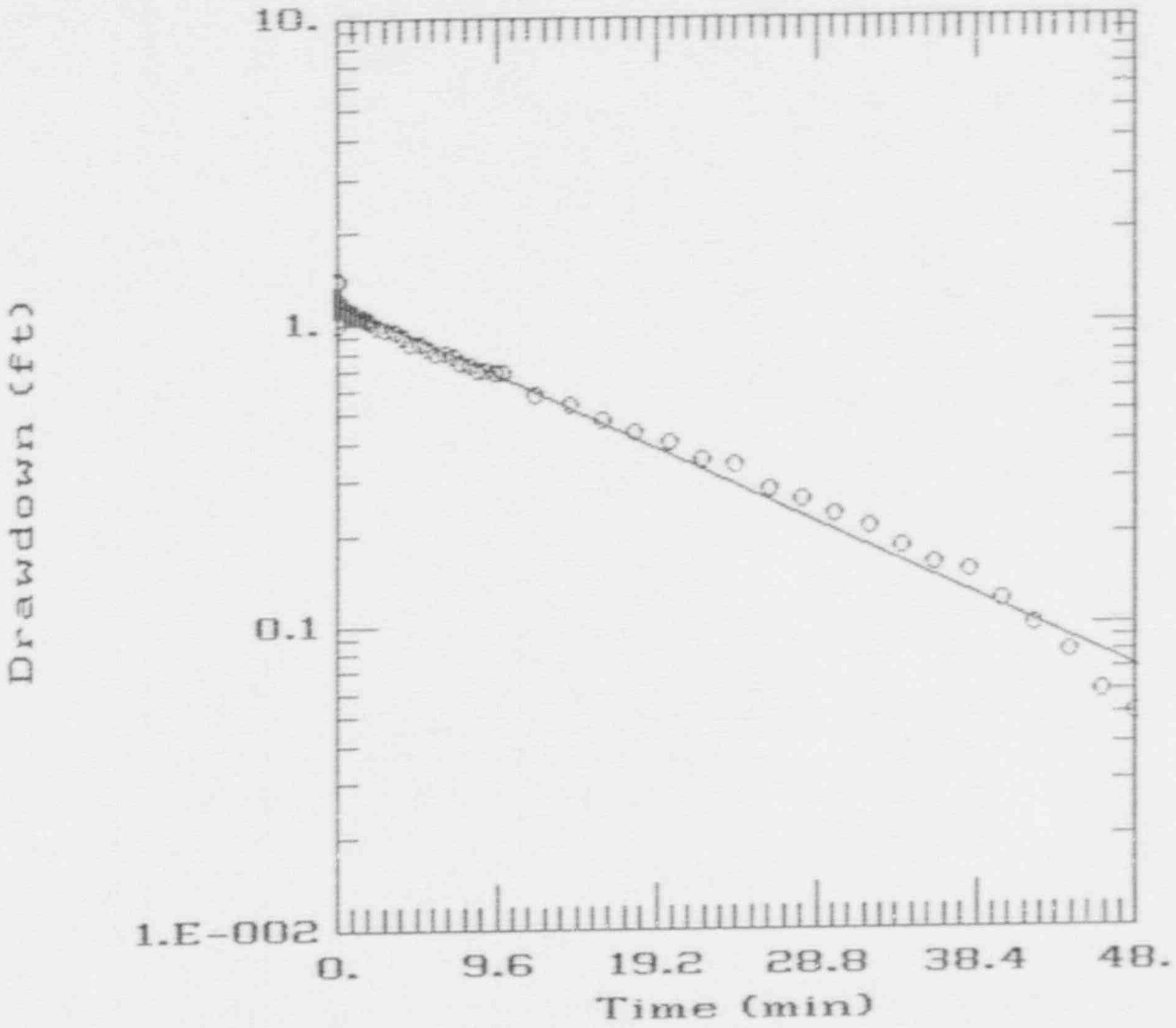
                                                      1
                         =  ------------------------------------------------
                                     1.1                          2.5
                            --------------------------- +  ----------------
                                     4.51                        43.36

                         =  3.31
                            =====
                                   2
                                 rc    ln(Re/rw)      1            yo
SOLVING FOR:        K    =  -----------------------  ----      ln  -------
                                2 Le                  t            yt
                                   2
                              0.0833 (   3.31 )       1           1.169
                         =  -----------------------  ----      ln  -------
                                (2)       13.31      42              0.1

                              0.02299
                         =  --------------- 0.024    ( 2.5 )
                               26.62

                         =       5.03E-05    FT/MIN
                            =====================
                                                            2
EQUIVALENT  K  VALUES    =              0.54    GAL/DAY/FT
                                        0.07    FT/DAY
                                    2.55E-05    CM/SEC
```

MW-10A FALLING HEAD TEST



```
                          HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                          ................................

MONITORING WELL NUMBER:      MW-10A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         RISING   HEAD
STATIC WATER LEVEL (G.L.):            7.19     FT
WELL TOTAL DEPTH (G.L.):             35.00     FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.81    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.81    FT = H  = SATURATED THICKNESS OF AQUIFER
   13.31    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.145    FT = yo = y AT TIME ZERO
    0.10    FT = yt = y AT TIME t
    60.8    t  = TIME SINCE yo  (MINUTES)
     2.5    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
SOLVING FOR:   ln Re/rw  =  ...................................................
                                    1.1                           C
                            ........................... +  ................
                                 ln  (Lw/rw)                    Le/rw

                                                        1
                         =  ...................................................
                                    1.1                          2.5
                            ........................... +  ................
                            ln (    27.81 /  0.307    )      13.31 / 0.307

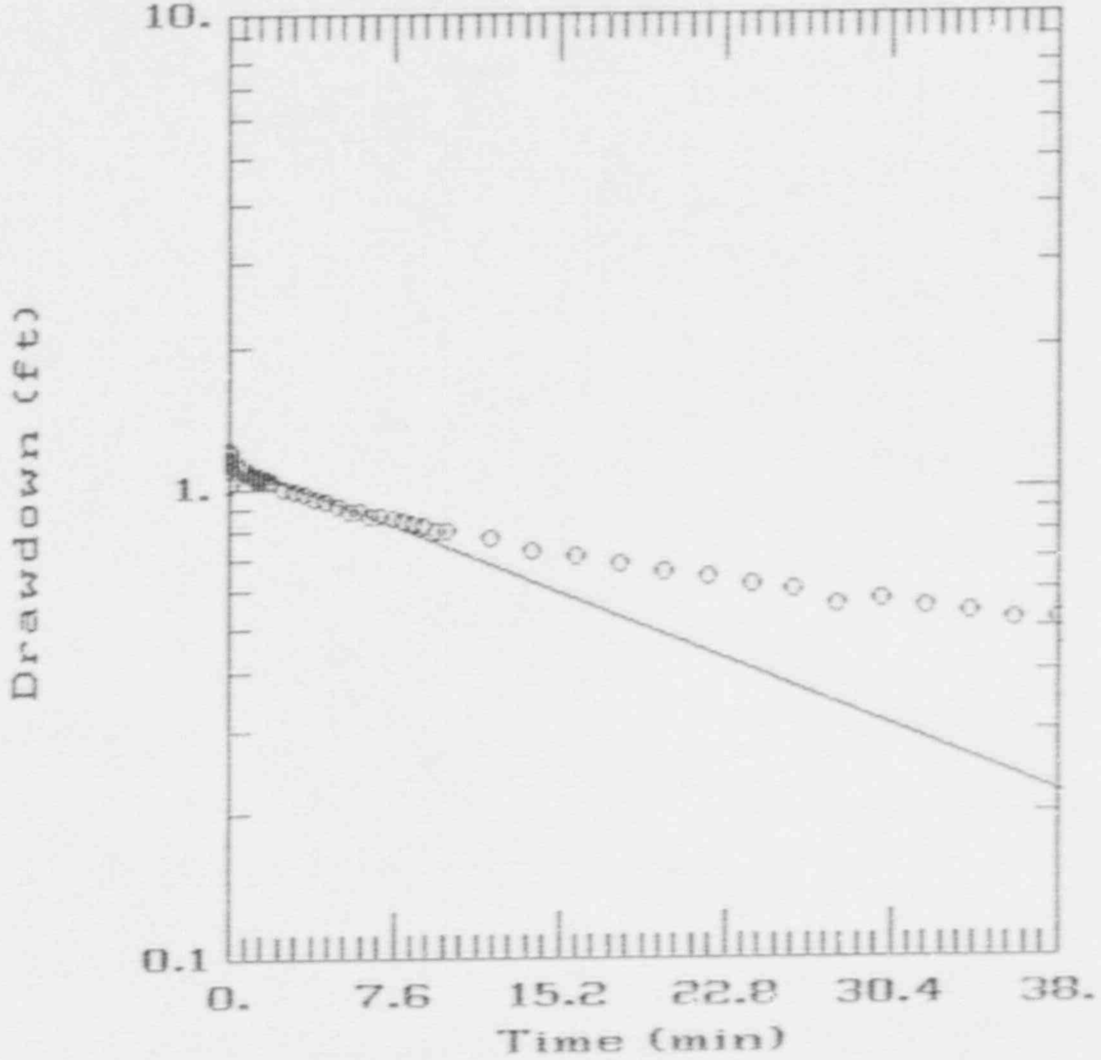
                                                        1
                         =  ...................................................
                                    1.1                          2.5
                            ........................... +  ................
                                    4.51                        43.36

                         =  3.31
                            =====
                                   2
                                 rc    ln(Re/rw)      1             yo
SOLVING FOR:         K   =  .........................  ....     ln  .......
                                2 Le                   t             yt
                                   2
                              0.0833 (   3.31 )       1            1.145
                         =  .........................  ....     ln  .......
                                (2)      13.31        61             0.1

                              0.02299
                         =  ............... 0.016   ( 2.4 )
                               26.62

                         =      3.46E-05   FT/MIN
                            ======================
                                                          2
EQUIVALENT  K  VALUES    =            0.37   GAL/DAY/FT
                                      0.05   FT/DAY
                                  1.76E-05   CM/SEC
```

MW-10A RISING HEAD TEST



```
                        HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                        ---------------------------------

MONITORING WELL NUMBER:     MW-11A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 900o7.02
TEST TYPE:         RISING   HEAD
STATIC WATER LEVEL (G.L.):           10.44     FT
WELL TOTAL DEPTH (G.L.):             37.00     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.56   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.56   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.76   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SFCTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.4081   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
     4.8   t  = TIME SINCE yo  (MINUTES)
     2.7   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
SOLVING FOR:    ln Re/rw  = -------------------------------------------------
                                       1.1                        C
                             ---------------------------- + ------------------
                                  ln  (Lw/rw)                    Le/rw

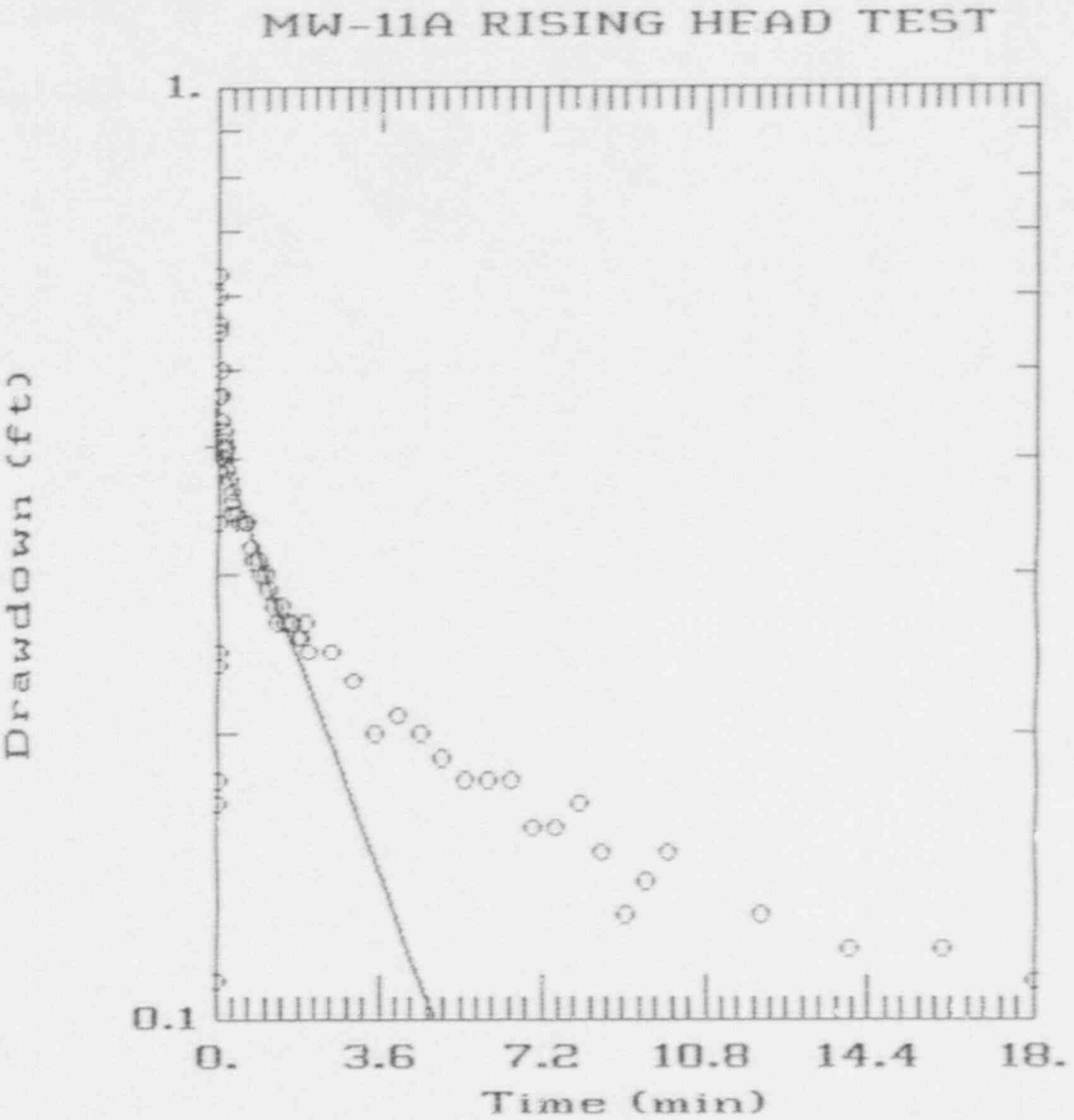
                                                      1
                          = -------------------------------------------------
                                       1.1                      2.7
                             ---------------------------- + ------------------
                             ln (    26.56 /  0.307    )       14.76 / 0.307

                                                      1
                          = -------------------------------------------------
                                       1.1                      2.7
                             ---------------------------- + ------------------
                                      4.46                     48.08

                          = 3.30
                            =====
                                        2
                                     rc    ln(Re/rw)     1             yo
SOLVING FOR:        K     = -------------------------   ----     ln -------
                                    2 Le                 t             yt
                                          2
                                    0.0833 (  3.30 )     1          0.4081
                          = -------------------------   ----     ln -------
                                     (2)      14.76     4.8            0.1

                                   0.02292
                          = ---------------- 0.208   ( 1.4 )
                                     29.52

                          =      2.27E-04    FT/MIN
                            =======================
                                                        2
 EQUIVALENT  K  VALUES     =           2.45   GAL/DAY/FT
                                       0.33   FT/DAY
                                   1.16E-04   CM/SEC
```


MW-11A RISING HEAD TEST
1.
0.1
Drawdown (ft)
0.
3.6
7.2
10.8
14.4
18.
Time (min)

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                 SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-12A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         FALLING  HEAD
STATIC WATER LEVEL (G.L.):            9.39      FT
WELL TOTAL DEPTH (G.L.):             38.00      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   28.61   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   28.61   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.42   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  0.0987   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     5.0   t  = TIME SINCE yo  (MINUTES)
     2.6   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:  ln Re/rw = ---------------------------------------------------
                                   1.1                             C
                         --------------------------- + -----------------
                               ln  (Lw/rw)                       Le/rw

                                                  1
                       = ---------------------------------------------------
                                   1.1                           2.6
                         --------------------------- + -----------------
                         ln (   28.61 /  0.307   )        14.42 / 0.307

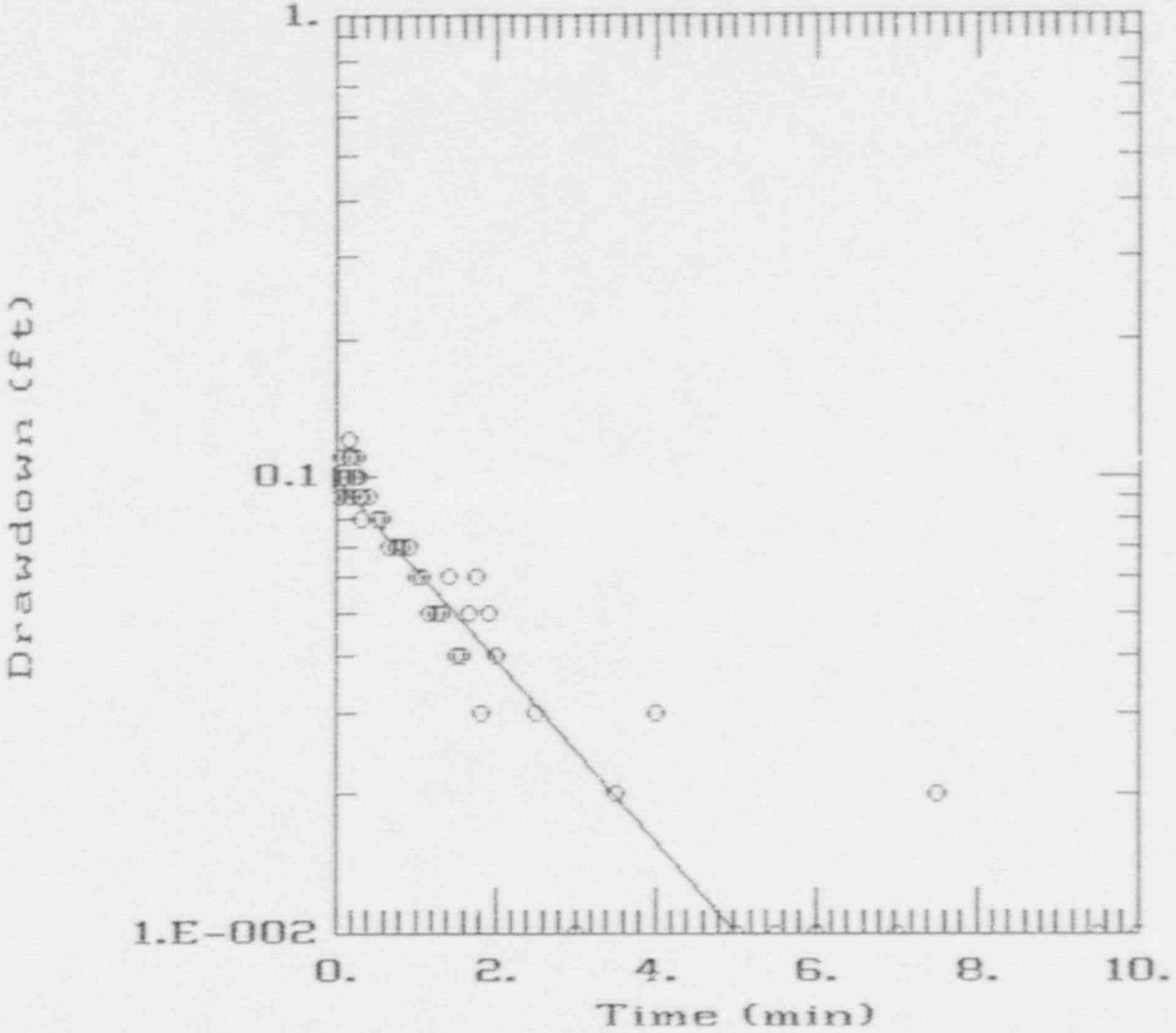
                                                  1
                       = ---------------------------------------------------
                                   1.1                           2.6
                         --------------------------- + -----------------
                                   4.53                        46.97

                       = 3.36
                         =====
                                 2
                                rc    ln(Re/rw)      1              yo
SOLVING FOR:        K  = --------------------------  ----      ln  -------
                               2 Le                   t              yt
                                 2
                            0.0833 (   3.36 )        1            0.0987
                       = --------------------------  ----      ln  -------
                               (2)      14.42        5              0.01

                            0.02329
                       = --------------- 0.200   ( 2.3 )
                             28.84

                       =       3.70E-04    FT/MIN
                             =======================
                                                           2
EQUIVALENT  K  VALUES    =            3.98    GAL/DAY/FT
                                      0.53    FT/DAY
                                  1.88E-04    CM/SEC
```

MW-12A FALLING HEAD TEST



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                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-12A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        RISING   HEAD
STATIC WATER LEVEL (G.L.):           9.39      FT
WELL TOTAL DEPTH (G.L.):            38.00      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   28.61   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   28.61   FT = H  = SATURATED THICKNESS OF AQUIFER
   14.42   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   0.092   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
     7.0   t  = TIME SINCE yo  (MINUTES)
     2.6   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
SOLVING FOR:    ln Re/rw  =  ------------------------------------------------
                                      1.1                           C
                             --------------------------- +  ----------------
                                   ln  (Lw/rw)                    Le/rw

                                                      1
                          =  ------------------------------------------------
                                      1.1                          2.6
                             --------------------------- +  ----------------
                             ln (    28.61 /  0.307   )       14.42 / 0.307

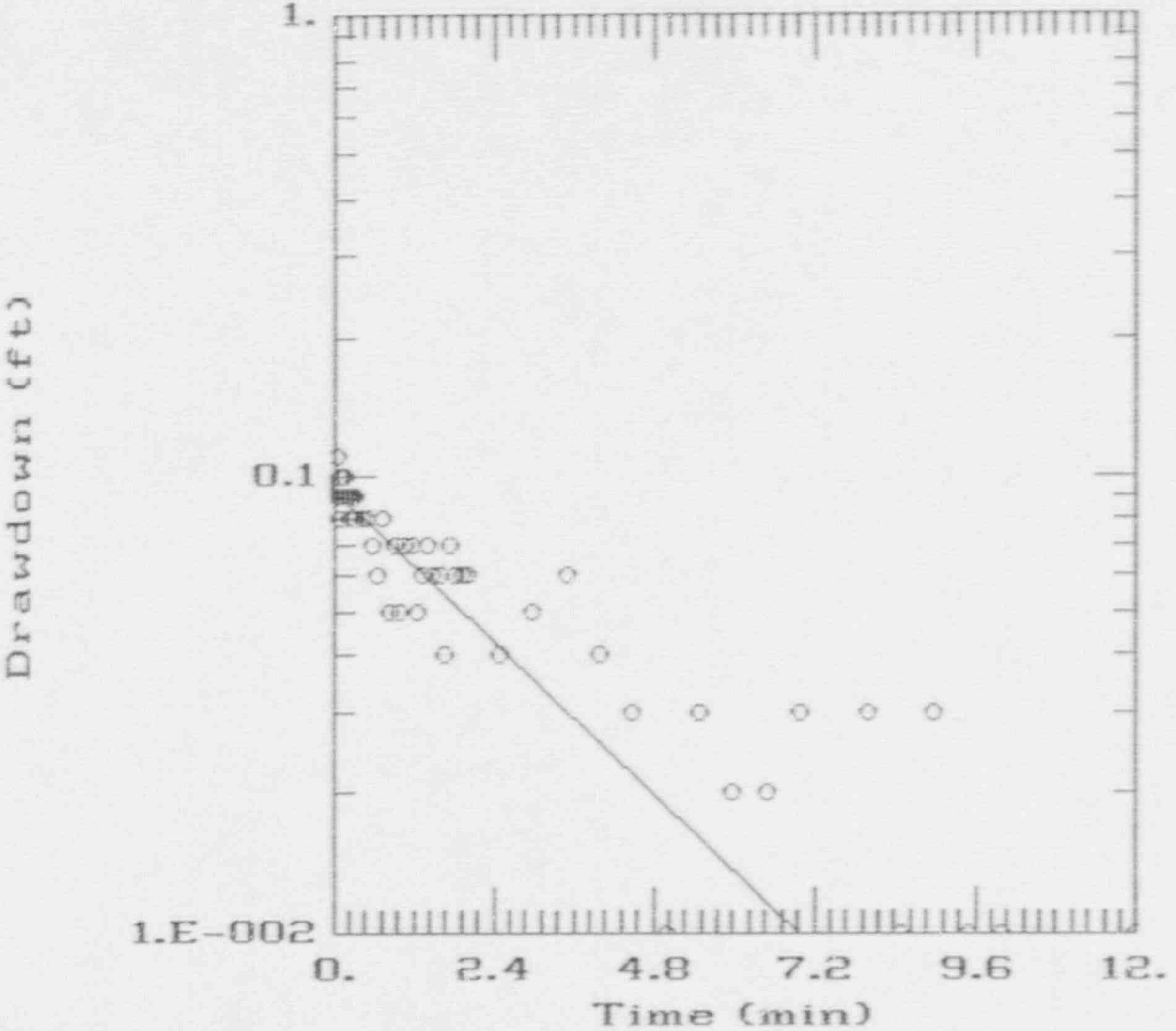
                                                      1
                          =  ------------------------------------------------
                                      1.1                          2.6
                             --------------------------- +  ----------------
                                     4.53                         46.97

                          =  3.36
                             =====
                                       2
                                     rc    ln(Re/rw)       1            yo
SOLVING FOR:        K     =  -------------------------  ----       ln  -------
                                   2 Le                    t            yt
                                         2
                                   0.0833 (  3.36 )        1           0.092
                          =  -------------------------  ----       ln  -------
                                    (2)      14.42         7            0.01

                                   0.02329
                          =  ---------------- 0.143   ( 2.2 )
                                    28.84

                          =      2.56E-04   FT/MIN
                             =======================
                                                       2
EQUIVALENT  K  VALUES     =            2.76   GAL/DAY/FT
                                       0.37   FT/DAY
                                   1.30E-04   CM/SEC
```

MW-12A RISING HEAD TEST



```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-13A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 900[illegible]7.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           9.99      FT
WELL TOTAL DEPTH (G.L.):            30.90      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   20.91   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   20.91   FT = H  = SATURATED THICKNESS OF AQUIFER
    7.34   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.233   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
    20.5   t  = TIME SINCE yo  (MINUTES)
     1.8   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                      1
SOLVING FOR:    ln Re/rw  =  ------------------------------------------------
                                       1.1                         C
                             --------------------------- +  -----------------
                                   ln  (Lw/rw)                    Le/rw

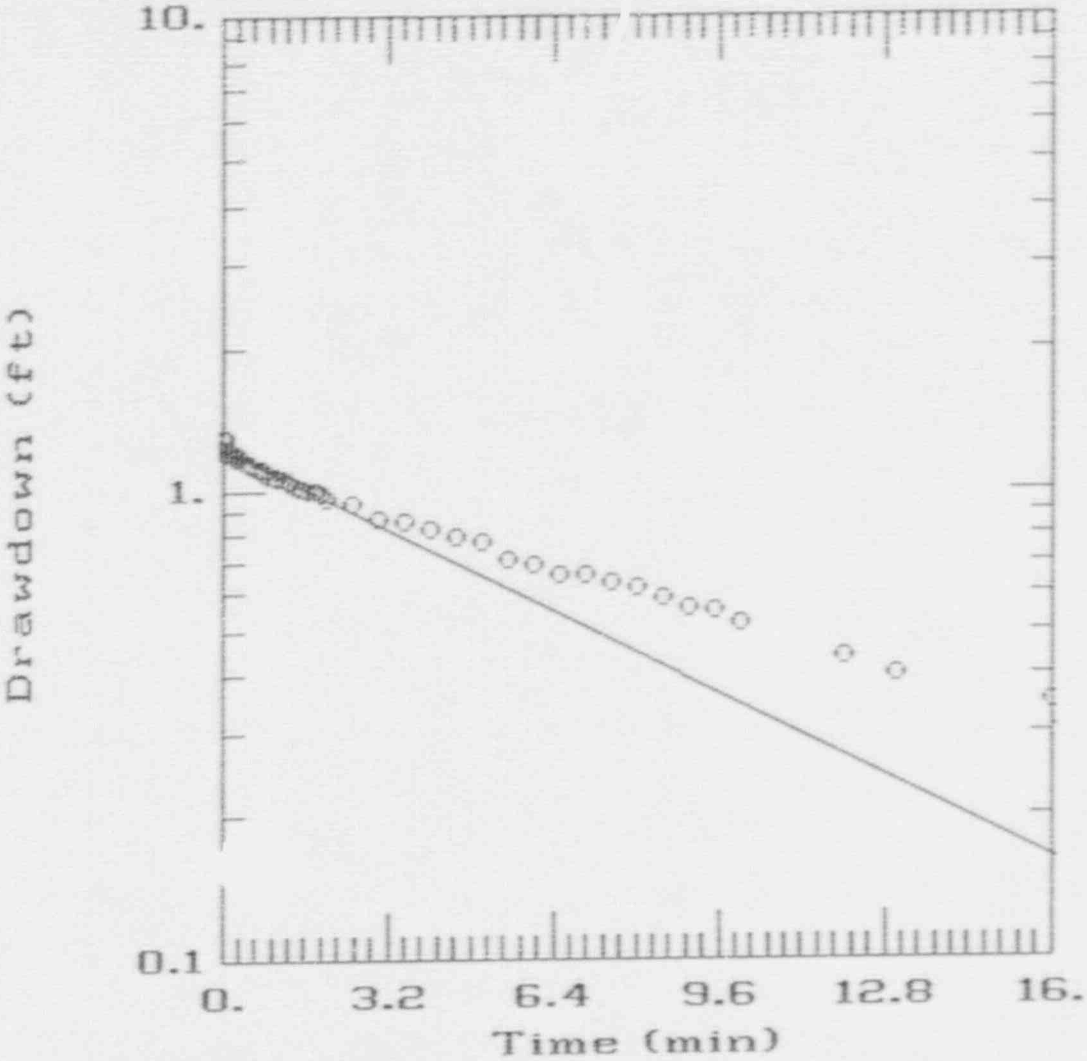
                                                      1
                          =  ------------------------------------------------
                                       1.1                        1.8
                             --------------------------- +  -----------------
                             ln (   20.91 /  0.307   )         7.34 / 0.307

                                                      1
                          =  ------------------------------------------------
                                       1.1                        1.8
                             --------------------------- +  -----------------
                                      4.22                       23.91

                          =  2.98
                             =====
                                       2
                                     rc    ln(Re/rw)      1             yo
SOLVING FOR:        K     =  -------------------------  ----      ln  -------
                                    2 Le                  t             yt
                                         2
                                    0.0833 (   2.98 )     1            1.233
                          =  -------------------------  ----      ln  -------
                                      (2)        7.34    20              0.1

                                   0.02066
                          =  ---------------- 0.049   ( 2.5 )
                                     14.68

                          =       1.73E-04   FT/MIN
                             =======================
                                                        2
EQUIVALENT  K  VALUES     =           1.86   GAL/DAY/FT
                                      0.25   FT/DAY
                                  8.77E-05   CM/SEC
```



MW-13A FALLING HEAD TEST

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         --------------------------------

MONITORING WELL NUMBER:     MW-14A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
T.    TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):              7.3     FT
WELL TOTAL DEPTH (G.L.):              32.29     FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.99    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.99    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.46    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.223    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
    13.1    t  = TIME SINCE yo  (MINUTES)
       2    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:   ln Re/rw  =  -------------------------------------------------
                                     1.1                          C
                            --------------------------- + -----------------
                                 ln  (Lw/rw)                   Le/rw

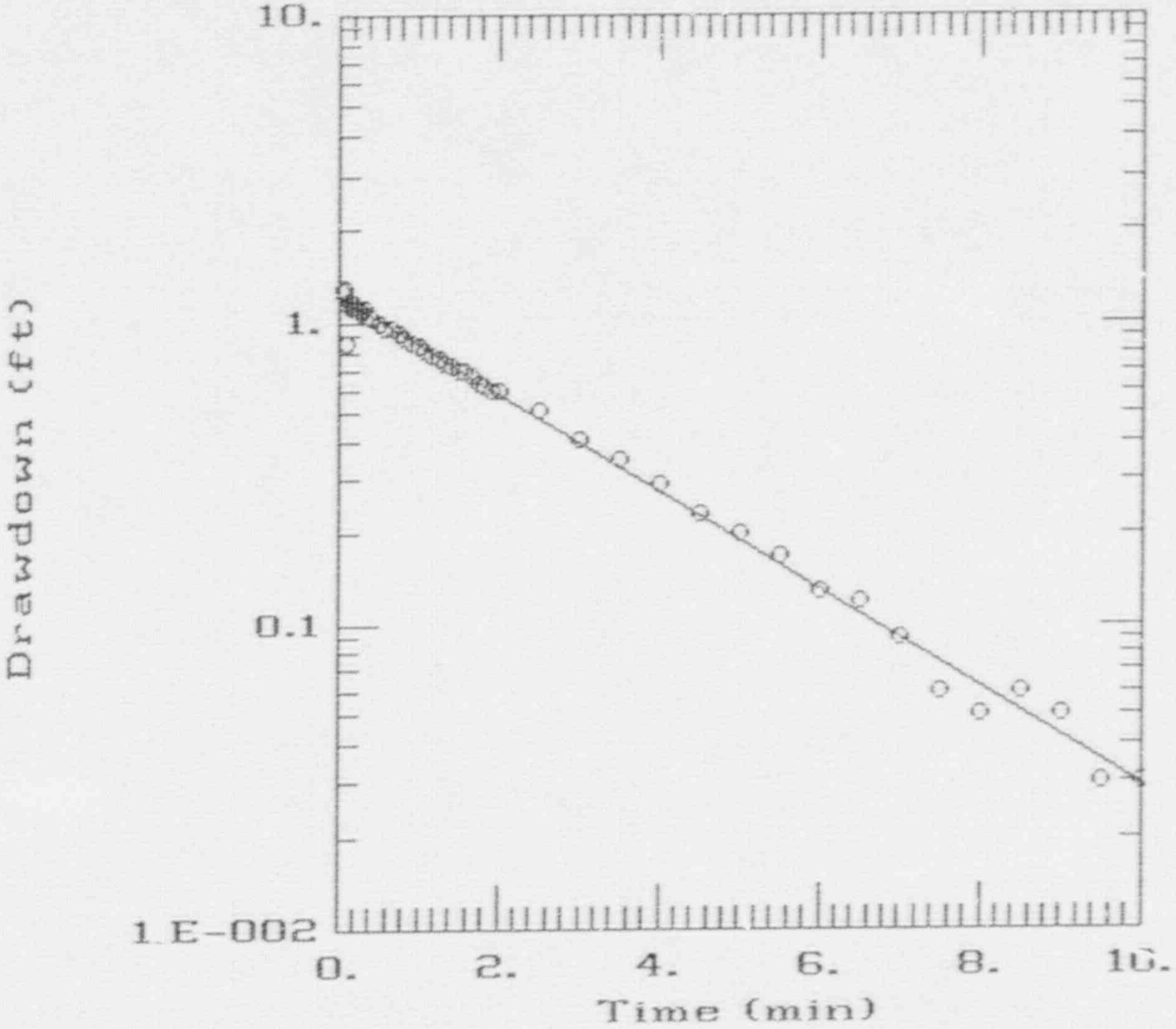
                                                  1
                         =  -------------------------------------------------
                                     1.1                          2
                            --------------------------- + -----------------
                            ln (    24.99 /  0.307    )       9.46 / 0.307

                                                  1
                         =  -------------------------------------------------
                                     1.1                          2
                            --------------------------- + -----------------
                                    4.40                       30.81

                         =  3.18
                            =====
                                   2
                                  rc     ln(Re/rw)      1           yo
SOLVING FOR:       K     =  ------------------------- ----    ln  -------
                                2 Le                    t           yt
                                   2
                               0.0833 (    3.18 )       1          1.223
                         =  ------------------------- ----    ln  -------
                                 (2)       9.46        13           0.01

                               0.02203
                         =  ---------------- 0.076    ( 4.8 )
                                18.92

                         =       4.27E-04    FT/MIN
                            ======================
                                                            2
EQUIVALENT  K  VALUES    =           4.60    GAL/DAY/FT
                                     0.62    FT/DAY
                                 2.17E-04    CM/SEC
```



MW-14A [illegible] ING HEAD TEST

```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       --------------------------------

MONITORING WELL NUMBER:      MW-14A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):            7.3     FT
WELL TOTAL DEPTH (G.L.):            32.29     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.99   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.99   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.46   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.232   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
    10.6   t  = TIME SINCE yo  (MINUTES)
       2   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                     1.1                           C
                            -------------------------- +  ----------------
                                  ln  (Lw/rw)                   Le/rw

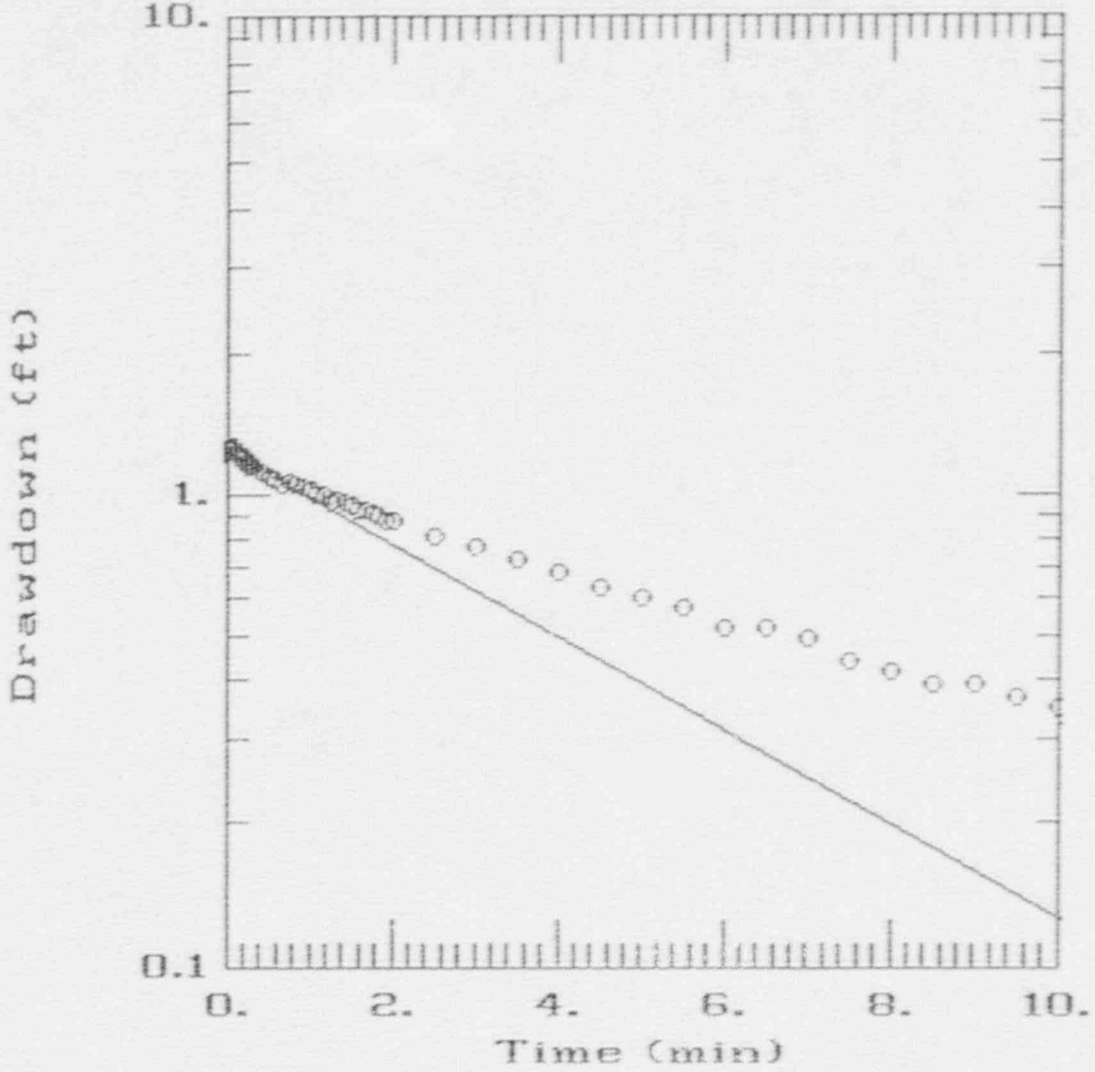
                                                  1
                         =  ------------------------------------------------
                                     1.1                           2
                            -------------------------- +  ----------------
                            ln (    24.99 /  0.307   )        9.46 / 0.307

                                                  1
                         =  ------------------------------------------------
                                     1.1                           2
                            -------------------------- +  ----------------
                                    4.40                        30.81

                         =  3.18
                            =====
                                 2
                               rc    ln(Re/rw)      1            yo
SOLVING FOR:         K   =  -- --------------------  ----     ln  -------
                              2 Le                   t               yt
                                 2
                              0.0833 (   3.18 )      1           1.232
                         =  -------------------------  ----     ln  -------
                               (2)        9.46      11              0.1

                              0.02203
                         =  ---------------- 0.094   ( 2.5 )
                               18.92

                         =       2.76E-04    FT/MIN
                            ======================
                                                              2
EQUIVALENT  K  VALUES    =             2.97    GAL/DAY/FT
                                       0.40    FT/DAY
                                   1.40E-04    CM/SEC
```



MW-14A RISING HEAD TEST

```
                              HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                          SLUG  TEST
                              --------------------------------

MONITORING WELL NUMBER:       MW-17A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             7.27      FT
WELL TOTAL DEPTH (G.L.):              31.90      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.63    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.63    FT = H  = SATURATED THICKNESS OF AQUIFER
    9.47    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.307    FT = yo = y AT TIME ZERO
    0.90    FT = yt = y AT TIME t
      30    t  = TIME SINCE yo  (MINUTES)
     2.1    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
SOLVING FOR:   ln Re/rw  =  ----------------------------------------------
                                   1.1                          C
                            --------------------------- +  ----------------
                                 ln  (Lw/rw)                    Le/rw

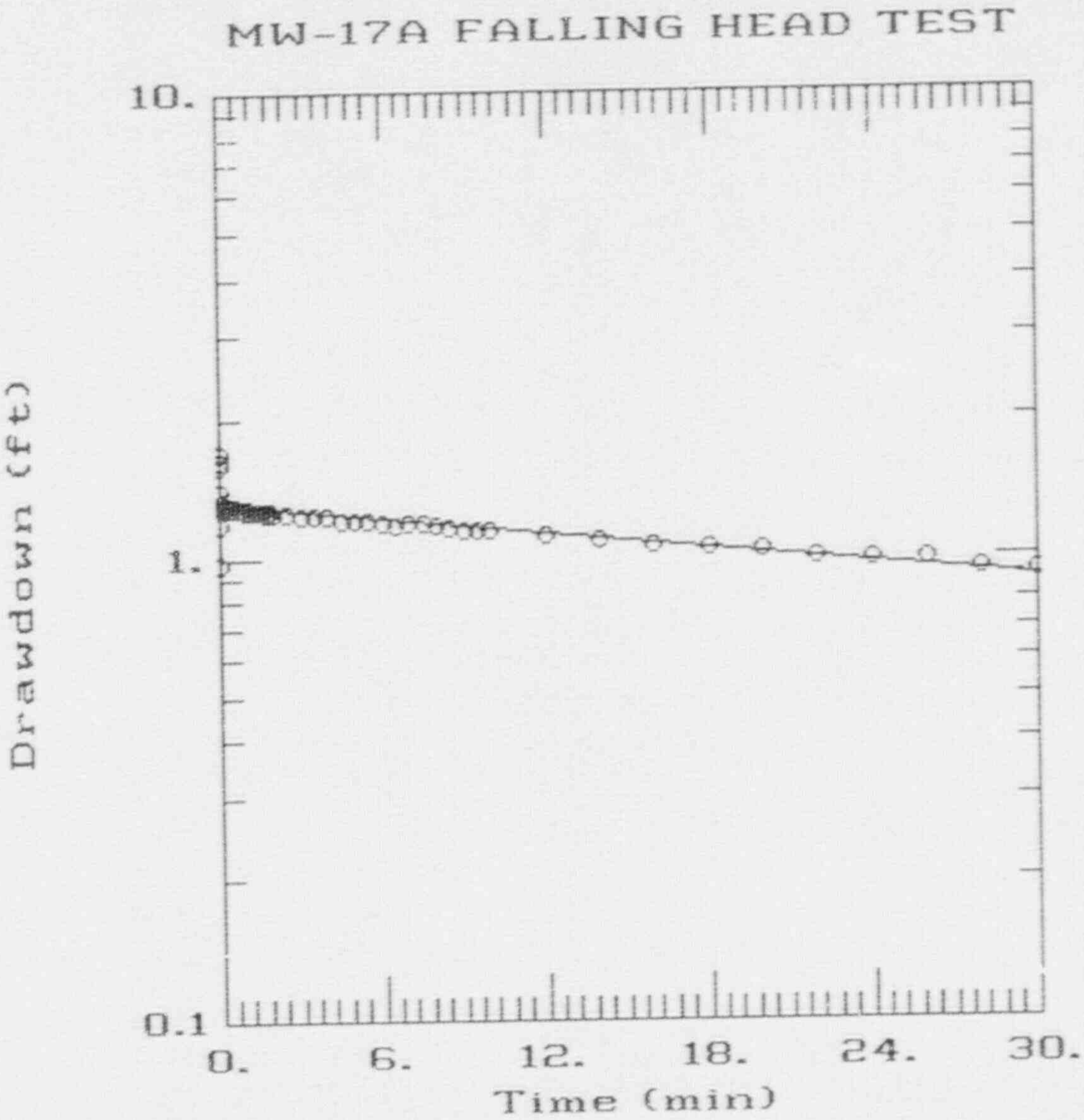
                                                        1
                         =  ----------------------------------------------
                                   1.1                         2.1
                            --------------------------- +  ----------------
                            ln (    24.63 /  0.307   )       9.47 / 0.307

                                                        1
                         =  ----------------------------------------------
                                   1.1                         2.1
                            --------------------------- +  ----------------
                                   4.38                       30.85

                         =  3.14
                            =====
                                  2
                                 rc    ln(Re/rw)      1              yo
SOLVING FOR:        K    =  -------------------------  ----      ln  -------
                               2 Le                    t               yt
                                    2
                               0.0833 (   3.14 )      1             1.307
                         =  -------------------------  ----      ln  -------
                                 (2)      9.47        30               0.9

                               0.02176
                         =  ---------------- 0.033    ( 0.4 )
                                18.94

                         =       1.43E-05    FT/MIN
                            ======================
                                                          2
EQUIVALENT  K  VALUES    =              0.15    GAL/DAY/FT
                                        0.02    FT/DAY
                                    7.26E-06    CM/SEC
```


MW-17A FALLING HEAD TEST
10.
1.
0.1
Drawdown (ft)
0.
6.
12.
18.
24.
30.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:       MW-17A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):               7.27      FT
WELL TOTAL DEPTH (G.L.):                31.90      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.63   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.63   FT = H  = SATURATED THICKNESS OF AQUIFER
    9.47   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
     0.4   FT = yo = y AT TIME ZERO
    0.10   FT = yt = y AT TIME t
      19   t  = TIME SINCE yo  (MINUTES)
     2.1   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                 1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                   1.1                          C
                            --------------------------  +  ----------------
                                ln  (Lw/rw)                    Le/rw

                                                 1
                         =  ------------------------------------------------
                                   1.1                         2.1
                            --------------------------  +  ----------------
                            ln (   24.63 /  0.307    )      9.47 / 0.307

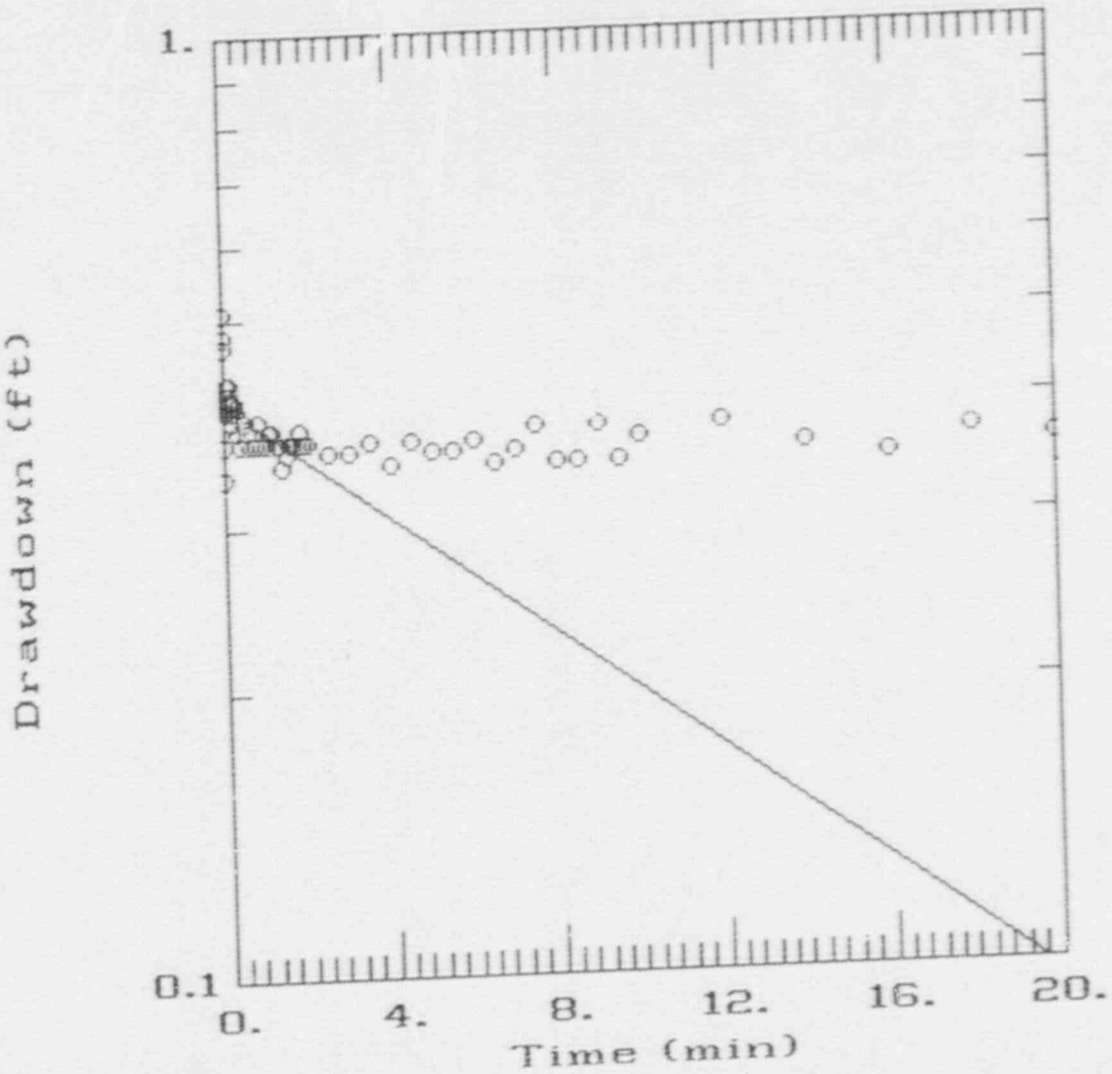
                                                 1
                         =  ------------------------------------------------
                                   1.1                         2.1
                            --------------------------  +  ----------------
                                   4.38                       30.85

                         =  3.14
                            =====
                                   2
                                 rc    ln(Re/rw)      1              yo
SOLVING FOR:        K      =  ------------------------  ----      ln   -------
                                  2 Le                    t              yt
                                   2
                              0.0833 (   3.14 )         1              0.4
                           =  ------------------------  ----      ln   -------
                                (2)        9.47         19              0.1

                               0.02176
                           =  ---------------- 0.053   ( 1.4 )
                                18.94

                           =       8.38E-05    FT/MIN
                              =====================
                                                              2
EQUIVALENT  K  VALUES      =               0.90    GAL/DAY/FT
                                           0.12    FT/DAY
                                       4.26E-05    CM/SEC
```

MW-17A RISING HEAD TEST



HYDRAULIC CONDUCTIVITY ANALYSIS
SLUG TEST

```
                         -------------------------------

MONITORING WELL NUMBER:     MW-20A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING HEAD
STATIC WATER LEVEL (G.L.):              6.65     FT
WELL TOTAL DEPTH (G.L.):               33.00     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.35   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.35   FT = H  = SATURATED THICKNESS OF AQUIFER
    12.7   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.291   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
    21.6    t  = TIME SINCE yo  (MINUTES)
     2.4    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                    1
 SOLVING FOR:   ln Re/rw  =  -----------------------------------------------------
                                     1.1                          C
                             ---------------------------- +  ----------------
                                  ln  (Lw/rw)                   Le/rw

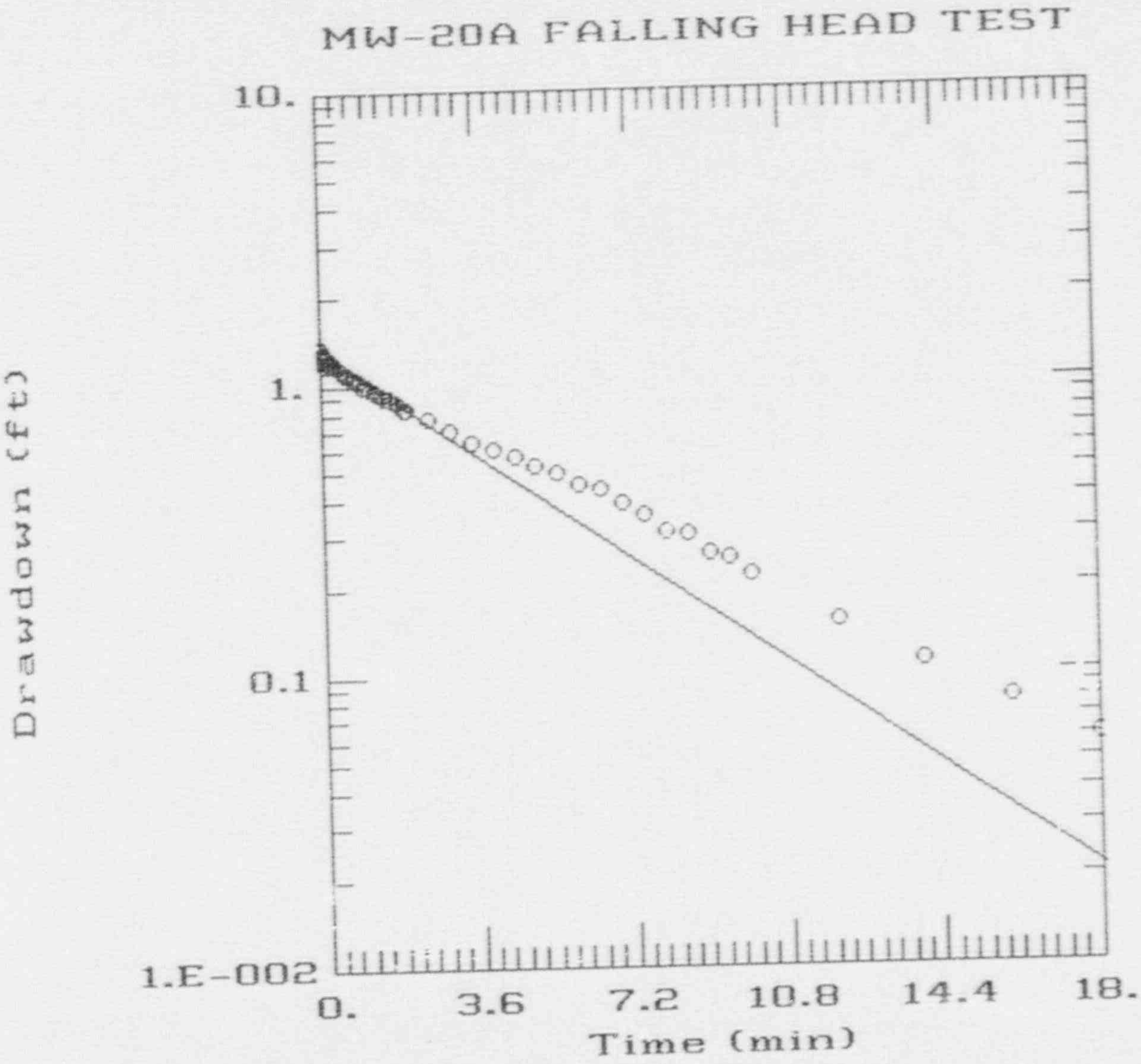
                                                    1
                          =  -----------------------------------------------------
                                     1.1                         2.4
                             ---------------------------- +  ----------------
                             ln (    26.35 /  0.307    )      12.7 / 0.307

                                                    1
                          =  -----------------------------------------------------
                                     1.1                         2.4
                             ---------------------------- +  ----------------
                                     4.45                       41.37

                          =  3.28
                             =====
                                     2
                                    rc    ln(Re/rw)      1            yo
 SOLVING FOR:        K    =  -------------------------  ----     ln  -------
                                   2 Le                   t           yt
                                      2
                                0.0833 (   3.28 )      1           1.291
                          =  -------------------------  ----     ln  -------
                                  (2)       12.70       22            0.01

                                0.02274
                          =  ---------------- 0.046   ( 4.9 )
                                 25.40

                          =        2.02E-04    FT/MIN
                             =======================
                                                              2
 EQUIVALENT  K  VALUES    =              2.17    GAL/DAY/FT
                                         0.29    FT/DAY
                                     1.02E-04    CM/SEC
```


MW-20A FALLING HEAD TEST
Drawdown (ft)
10.
1.
0.1
1.E-002
0.
3.6
7.2
10.8
14.4
18.
Time (min)

```
                              HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                         SLUG  TEST
                              -------------------------------

MONITORING WELL NUMBER:        MW-20A
PROJECT NAME/NUMBER:       SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):              6.65      FT
WELL TOTAL DEPTH (G.L.):               33.00      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   26.35    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   26.35    FT = H  = SATURATED THICKNESS OF AQUIFER
    12.7    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.136    FT = yo = y AT TIME ZERO
    0.10    FT = yt = y AT TIME t
    13.2    t  = TIME SINCE yo  (MINUTES)
     2.4    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                     1
 SOLVING FOR:   ln Re/rw  =  ---------------------------------------------------
                                     1.1                          C
                             -------------------------- +  ----------------
                                 ln  (Lw/rw)                    Le/rw

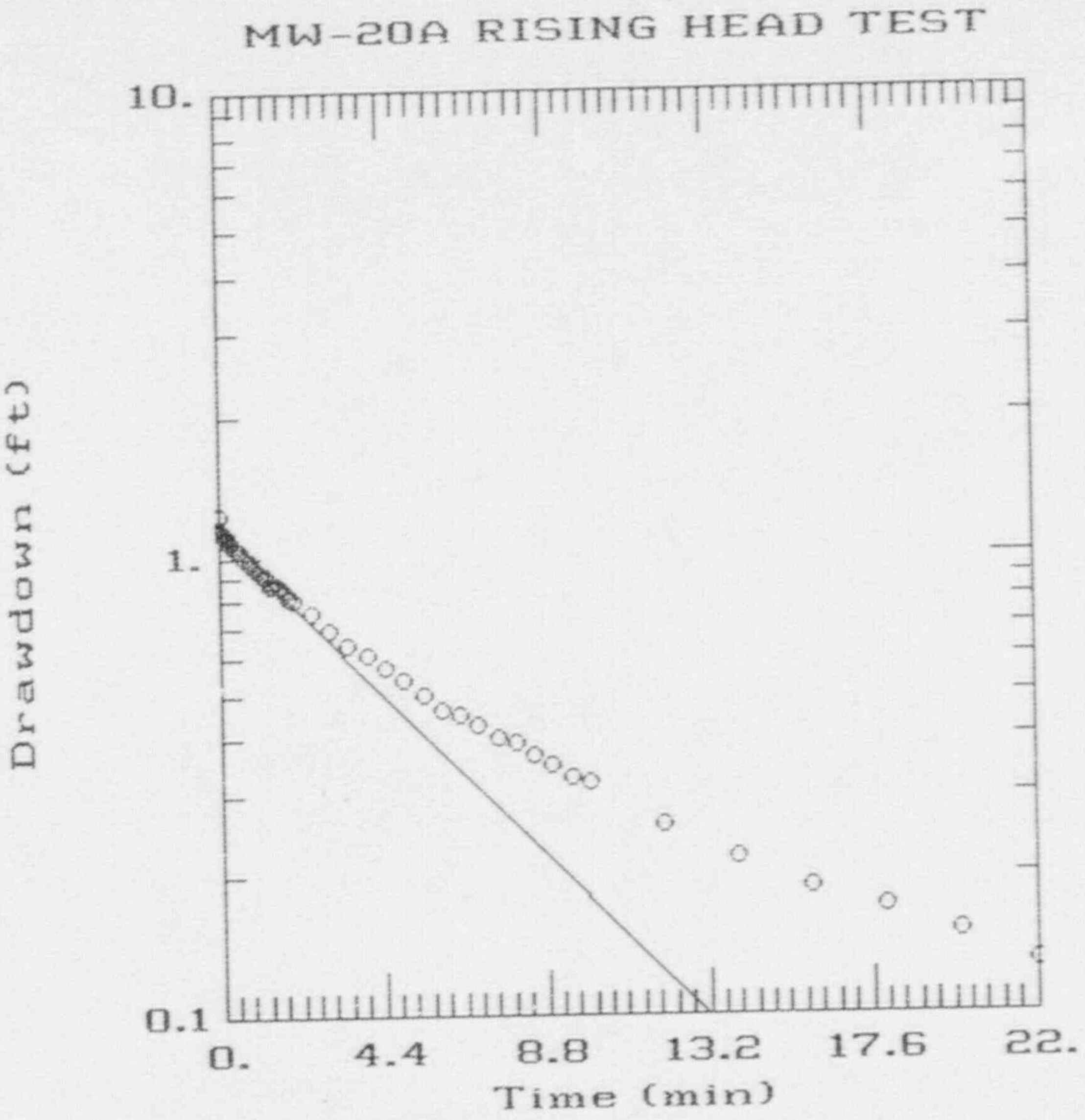
                                                     1
                          =  ---------------------------------------------------
                                     1.1                         2.4
                             -------------------------- +  ----------------
                             ln (    26.35 /  0.307    )       12.7 / 0.307

                                                     1
                          =  ---------------------------------------------------
                                     1.1                         2.4
                             -------------------------- +  ----------------
                                     4.45                       41.37

                          =  3.28
                             =====
                                     2
                                 rc     ln(Re/rw)      1            yo
  SOLVING FOR:        K   =  -------------------------  ----     ln  -------
                                 2 Le                   t            yt
                                     2
                              0.0833 (   3.28 )        1            1.136
                          =  -------------------------  ----     ln  -------
                                (2)       12.70        13             0.1

                              0.02274
                          =  ---------------- 0.076    ( 2.4 )
                               25.40

                          =       1.65E-04    FT/MIN
                              =======================
                                                          2
  EQUIVALENT  K  VALUES    =           1.78    GAL/DAY/FT
                                       0.24    FT/DAY
                                   8.37E-05    CM/SEC
```


MW-20A RISING HEAD TEST
10.
1.
0.1
Drawdown (ft)
0.
4.4
8.8
13.2
17.6
22.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         --------------------------------

MONITORING WELL NUMBER:      MW-21A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         FALLING  HEAD
STATIC WATER LEVEL (G.L.):              7.35      FT
WELL TOTAL DEPTH (G.L.):               33.30      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   25.95    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   25.95    FT = H  = SATURATED THICKNESS OF AQUIFER
    14.3    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.296    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     6.6    t  = TIME SINCE yo  (MINUTES)
     2.6    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                        1
 SOLVING FOR:   ln Re/rw  =  -----------------------------------------------
                                       1.1                          C
                              ------------------------- +  ---------------
                                   ln  (Lw/rw)                   Le/rw

                                                        1
                           =  -----------------------------------------------
                                       1.1                         2.6
                              ------------------------- +  ---------------
                              ln (   25.95 /  0.307   )      14.3 / 0.307

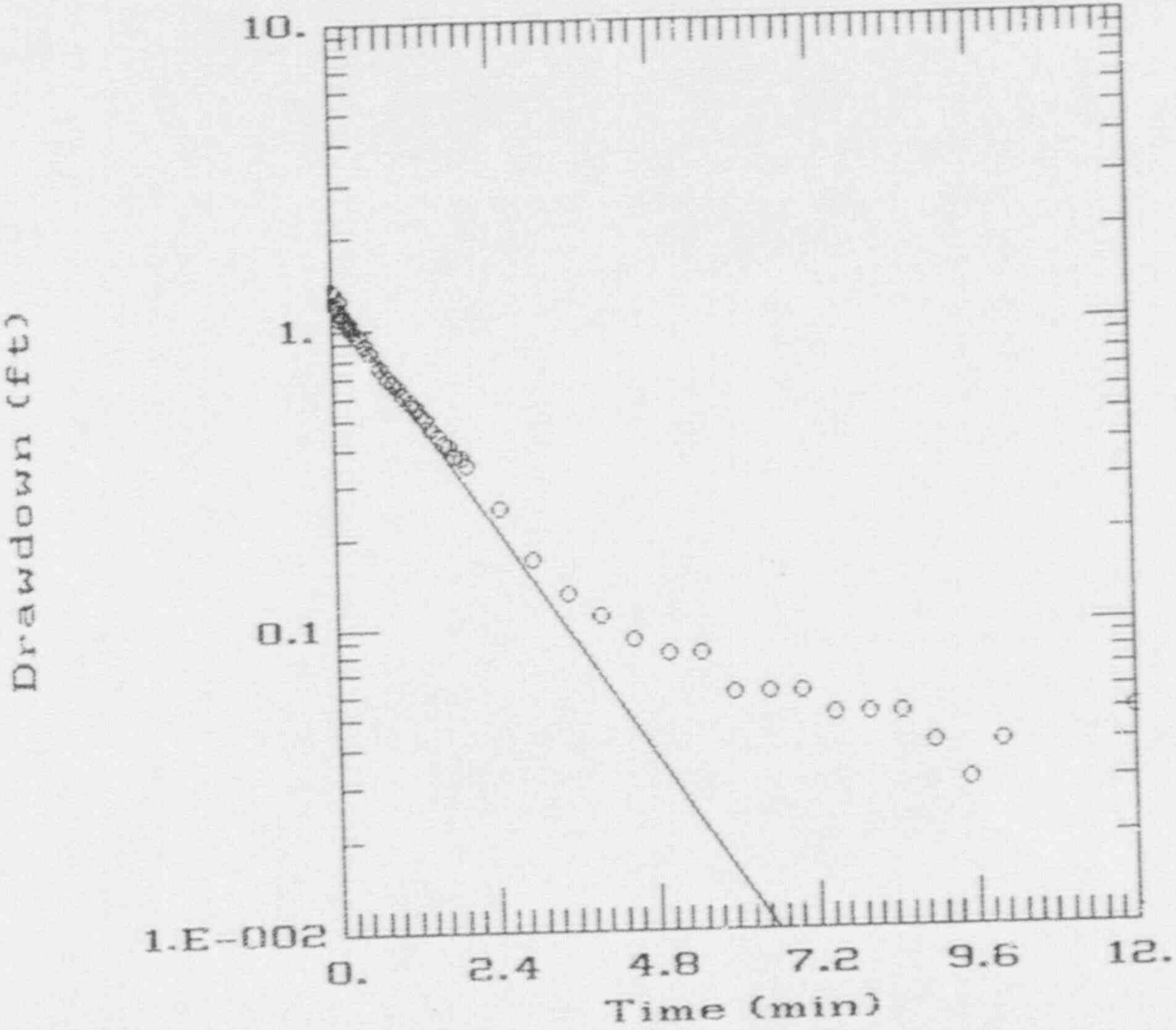
                                                        1
                           =  -----------------------------------------------
                                       1.1                         2.6
                              ------------------------- +  ---------------
                                       4.44                       46.58

                           =  3.29
                              =====
                                    2
                                  rc    ln(Re/rw)      1             yo
 SOLVING FOR:      K       =  ----------------------   ----     ln  ------
                                  2 Le                  t             yt
                                    2
                              0.0833 (   3.29 )        1            1.296
                           =  ----------------------   ----     ln  ------
                                 (2)      14.30        6.6           0.01

                              0.02285
                           =  --------------- 0.152    ( 4.9 )
                               23.60

                           =      5.89E-04    FT/MIN
                              ======================
                                                                  2
 EQUIVALENT  K  VALUES     =             6.34    GAL/DAY/FT
                                         0.85    FT/DAY
                                     2.99E-04    CM/SEC
```

MW-21A FALLING HEAD TEST



```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ..................................

MONITORING WELL NUMBER:      MW-21A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):              7.35      FT
WELL TOTAL DEPTH (G.L.):               33.30      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   25.95    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   25.95    FT = H  = SATURATED THICKNESS OF AQUIFER
    14.3    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.232    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     5.6    t  = TIME SINCE yo  (MINUTES)
     2.6    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
SOLVING FOR:   ln Re/rw  =  -----------------------------------------------
                                    1.1                             C
                            --------------------------  +  ----------------
                               ln  (Lw/rw)                      Le/rw

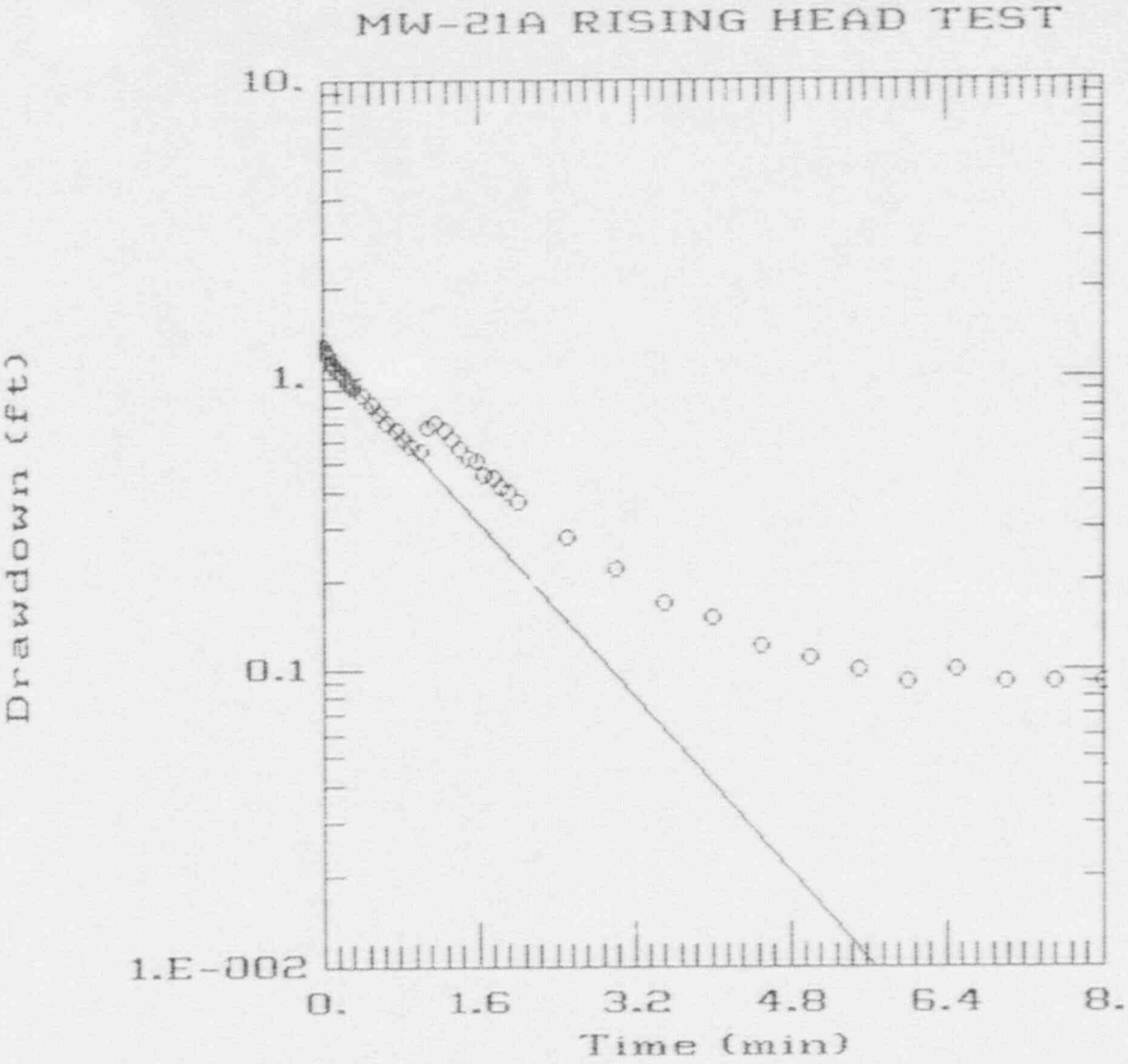
                                                   1
                         =  -----------------------------------------------
                                    1.1                            2.6
                            --------------------------  +  ----------------
                            ln (   25.95 /  0.307    )       14.3 / 0.307

                                                   1
                         =  -----------------------------------------------
                                    1.1                            2.6
                            --------------------------  +  ----------------
                                    4.44                          46.58

                         =  3.29
                            =====
                                     2
                                   rc    ln(Re/rw)      1            yo
SOLVING FOR:         K      =  --------------------------  ----    ln  -------
                                   2 Le                     t            yt
                                       2
                                0.0833 (   3.29 )       1            1.232
                            =  --------------------------  ----    ln  -------
                                  (2)        14.30     5.6            0.01

                                 0.02285
                            =  ---------------- 0.179   ( 4.8 )
                                  28.60

                            =       6.87E-04    FT/MIN
                                 ========================
                                                                 2
   EQUIVALENT  K  VALUES    =            7.40    GAL/DAY/FT
                                         0.99    FT/DAY
                                     3.49E-04    CM/SEC
```


MW-21A RISING HEAD TEST
10.
1.
0.1
1.E-002
Drawdown (ft)
0.
1.6
3.2
4.8
6.4
8.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                    SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-22A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          FALLING  HEAD
STATIC WATER LEVEL (G.L.):             9.03      FT
WELL TOTAL DEPTH (G.L.):              34.00      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.97   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.97   FT = H  = SATURATED THICKNESS OF AQUIFER
   13.98   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.249   FT = yo = y AT TIME ZERO
    0.01   FT = yt = y AT TIME t
    10.1    t  = TIME SINCE yo  (MINUTES)
     2.6    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                    1
SOLVING FOR:  ln Re/rw  =  ------------------------------------------------
                                   1.1                           C
                           -------------------------- +  ----------------
                                ln  (Lw/rw)                    Le/rw

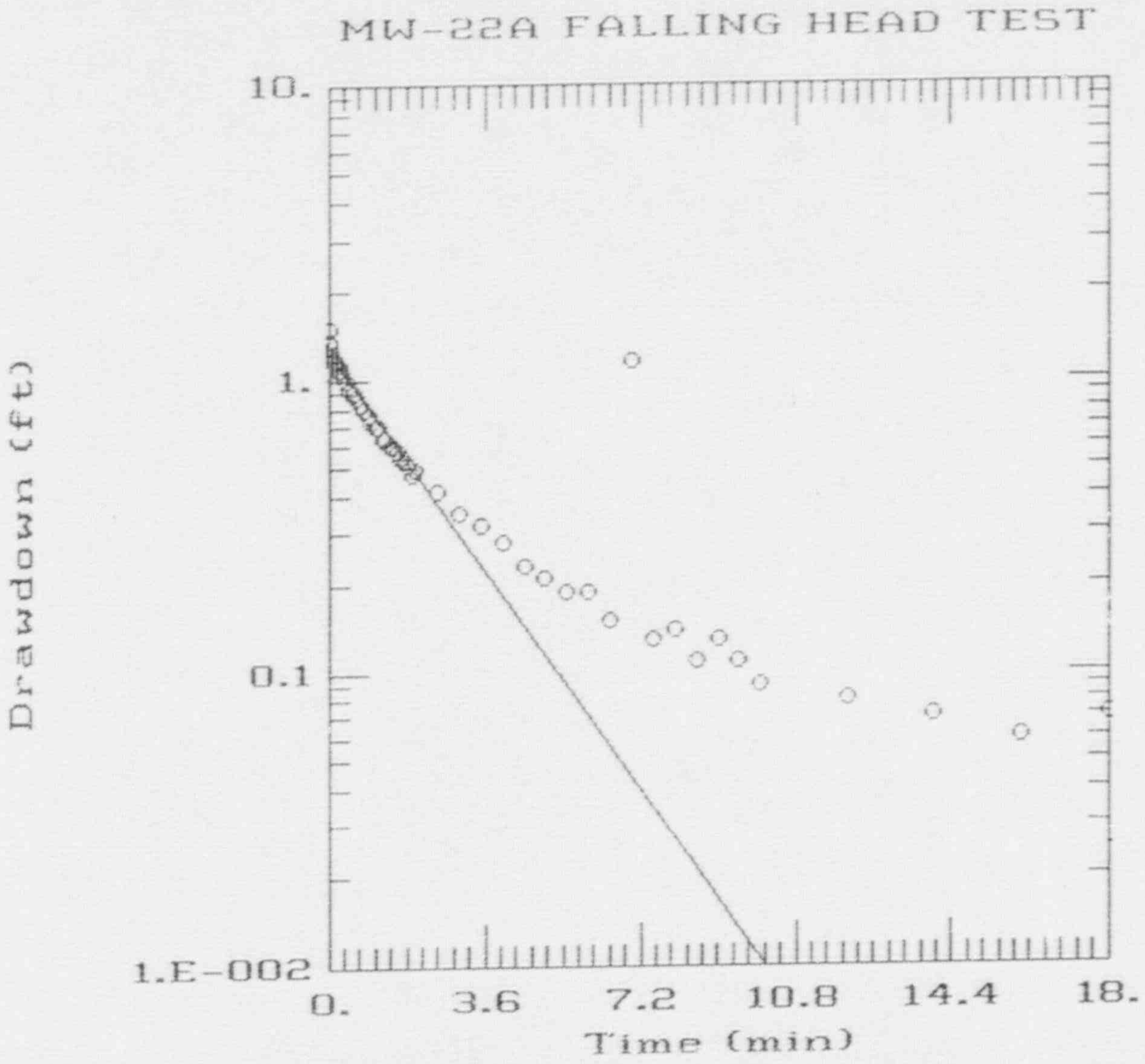
                                                    1
                        =  ------------------------------------------------
                                   1.1                          2.6
                           -------------------------- +  ----------------
                           ln (    24.97 /  0.307    )      13.98 / 0.307

                                                    1
                        =  ------------------------------------------------
                                   1.1                          2.6
                           -------------------------- +  ----------------
                                  4.40                       45.54

                        =  3.26
                           =====
                                  2
                               rc    ln(Re/rw)      1            yo
SOLVING FOR:        K   =  -------------------------  ----       ln  -------
                               2 Le                   t              yt
                                  2
                               0.0833 (   3.26 )    1           1.249
                        =  -------------------------  ----       ln  -------
                               (2)     13.98        10              0.01

                             0.02259
                        =  ---------------- 0.099   ( 4.8 )
                              27.96

                        =       3.86E-04   FT/MIN
                           =======================
                                                            2
EQUIVALENT  K  VALUES   =             4.16   GAL/DAY/FT
                                      0.56   FT/DAY
                                  1.96E-04   CM/SEC
```


MW-22A FALLING HEAD TEST
10.
1.
0.1
1.E-002
Drawdown (ft)
0.
3.6
7.2
10.8
14.4
18.
Time (min)

```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                     SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-22A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         RISING   HEAD
STATIC WATER LEVEL (G.L.):             9.03      FT
WELL TOTAL DEPTH (G.L.):              34.00      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   24.97    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   24.97    FT = H  = SATURATED THICKNESS OF AQUIFER
   13.98    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
    1.25    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     9.3     t  = TIME SINCE yo  (MINUTES)
     2.6     C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                 1
SOLVING FOR:  ln Re/rw  =  ---------------------------------------------
                                     1.1                         C
                           ------------------------- +  ----------------
                                ln  (Lw/rw)                   Le/rw

                                                 1
                        =  ---------------------------------------------
                                     1.1                        2.6
                           ------------------------- +  ----------------
                           ln (    24.97 /  0.307   )      13.98 / 0.307

                                                 1
                        =  ---------------------------------------------
                                     1.1                        2.6
                           ------------------------- +  ----------------
                                     4.40                      45.54

                        =  3.26
                           =====
                                 2
                               rc    ln(Re/rw)      1           yo
 SOLVING FOR:       K      =  ---------------------  ----      ln  -------

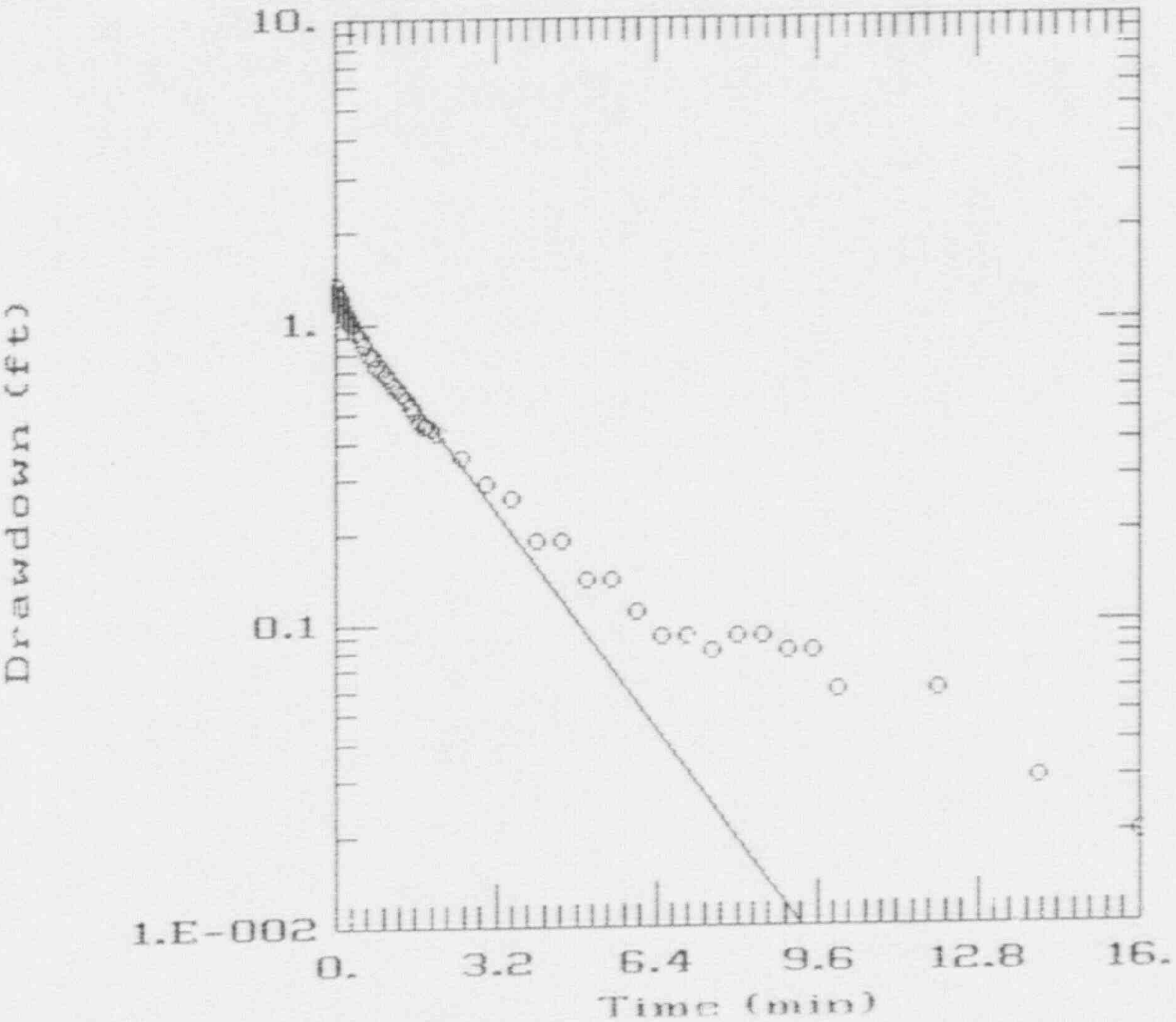
                              2 Le                   t              yt
                                 2
                              0.0833 (   3.26 )     1             1.25
                           =  ---------------------  ----      ln  -------

                              (2)       13.98       9.3            0.01

                             0.02259
                           = --------------- 0.108   ( 4.8 )
                              27.96

                           =      4.19E-04    FT/MIN
                                ======================
                                                                2
 EQUIVALENT  K  VALUES     =            4.52     GAL/DAY/FT
                                        0.60     FT/DAY
                                    2.13E-04     CM/SEC
```

MW-22A RISING HEAD TEST



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                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-24A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):           11.69      FT
WELL TOTAL DEPTH (G.L.):             35.34      FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   23.65   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   23.65   FT = H  = SATURATED THICKNESS OF AQUIFER
    13.8   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.088   FT = yo = y AT TIME ZERO
    0.20   FT = yt = y AT TIME t
      18   t  = TIME SINCE yo  (MINUTES)
     2.6   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                         1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                       1.1                            C
                             --------------------------- +  -----------------
                                  ln  (Lw/rw)                       Le/rw

                                                         1
                          =  ------------------------------------------------
                                       1.1                           2.6
                             --------------------------- +  -----------------
                             ln (    23.65 /  0.307    )        13.8 / 0.307

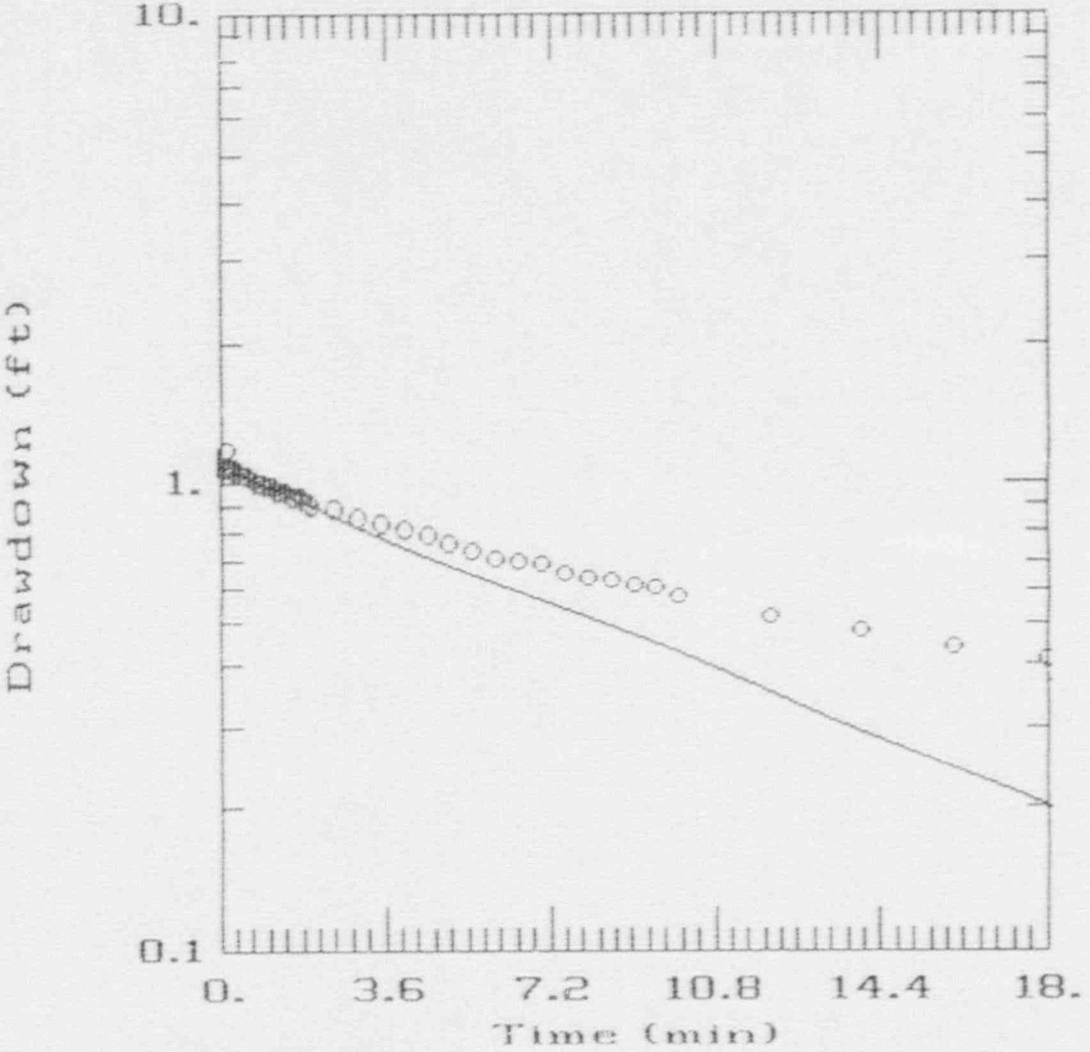
                                                         1
                          =  ------------------------------------------------
                                       1.1                           2.6
                             --------------------------- +  -----------------
                                      4.34                        44.95

                          =  3.21
                             =====
                                          2
                                     rc    ln(Re/rw)     1             yo
 SOLVING FOR:       K     =  -------------------------  ----      ln  -------
                                    2 Le                 t              yt
                                         2
                                    0.0833 (   3.21 )    1            1.088
                          =  -------------------------  ----      ln  -------
                                     (2)      13.80     18              0.2

                                   0.02231
                          =  ---------------- 0.056   ( 1.7 )
                                     27.60

                          =        7.61E-05   FT/MIN
                             ======================
                                                        2
 EQUIVALENT  K  VALUES    =           0.82   GAL/DAY/FT
                                      0.11   FT/DAY
                                  3.86E-05   CM/SEC
```

MW-24A FALLING HEAD TEST



```
                          HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                     SLUG  TEST
                          -------------------------------

MONITORING WELL NUMBER:     MW-28A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:        FALLING  HEAD
STATIC WATER LEVEL (G.L.):          9.17     FT
WELL TOTAL DEPTH (G.L.):           31.40     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   22.23   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   22.23   FT = H  = SATURATED THICKNESS OF AQUIFER
     9.4   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.318   FT = yo = y AT TIME ZERO
    1.00   FT = yt = y AT TIME t
      36    t  = TIME SINCE yo  (MINUTES)
       2    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                         1
SOLVING FOR:  ln Re/rw  =  -----------------------------------------------
                                    1.1                          C
                            -------------------------  +  -------------
                                 ln  (Lw/rw)                    Le/rw

                                                         1
                          =  -----------------------------------------------
                                    1.1                          2
                            -------------------------  +  -------------
                            ln (    22.23 /  0.307   )        9.4 / 0.307

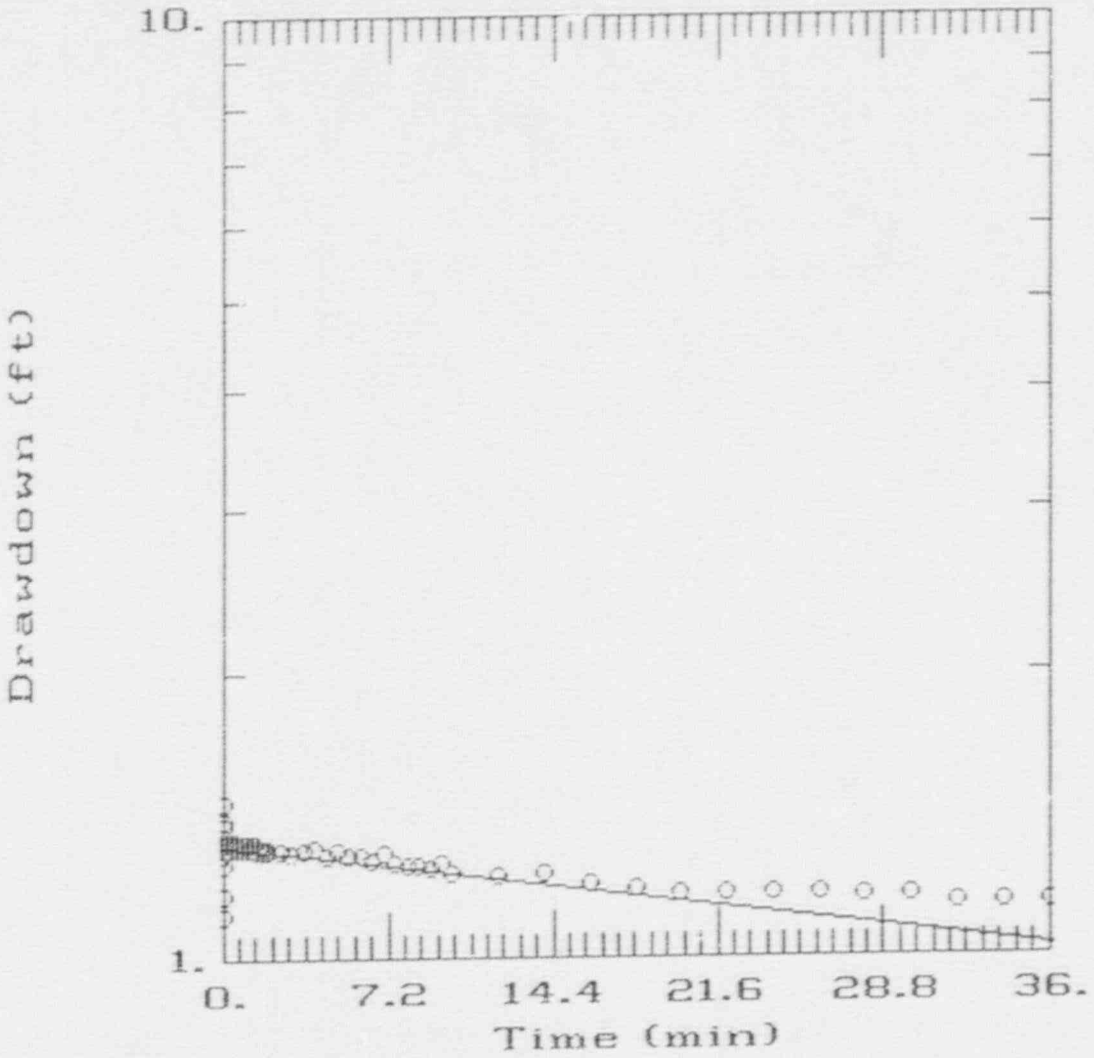
                                                         1
                          =  -----------------------------------------------
                                    1.1                          2
                            -------------------------  +  -------------
                                   4.28                        30.62

                          =  3.10
                             =====
                                      2
                                    rc    ln(Re/rw)      1             yo
SOLVING FOR:        K     =  ------------------------  ----     ln  -------
                                   2 Le                  t             yt
                                        2
                                   0.0833 (   3.10 )     1           1.318
                          =  ------------------------  ----     ln  -------
                                    (2)        9.40     36               1

                                  0.02154
                          =  --------------- 0.028   ( 0.3 )
                                   18.80

                          =      8.79E-06     FT/MIN
                             ======================
                                                      2
EQUIVALENT  K  VALUES     =            0.09     GAL/DAY/FT
                                       0.01     FT/DAY
                                   4.46E-06     CM/SEC
```

MW-28A FALLING HEAD TEST



```
                       HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                  SLUG  TEST
                       ---------------------------------

MONITORING WELL NUMBER:     MW-30A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):              0      FT
WELL TOTAL DEPTH (G.L.):             18.50      FT
   0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                      LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
    18.5    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
    18.5    FT = H  = SATURATED THICKNESS OF AQUIFER
    7.94    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                      THROUGH WHICH GROUND WATER ENTERS
   1.848    FT = yo = y AT TIME ZERO
    0.01    FT = yt = y AT TIME t
     107    t  = TIME SINCE yo  (MINUTES)
     1.9    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                 1
 SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                     1.1                          C
                             -------------------------- + -----------------
                                  ln  (Lw/rw)                   Le/rw

                                                 1
                          =  ------------------------------------------------
                                     1.1                         1.9
                             -------------------------- + -----------------
                             ln (     18.5 /  0.307    )      7.94 / 0.307

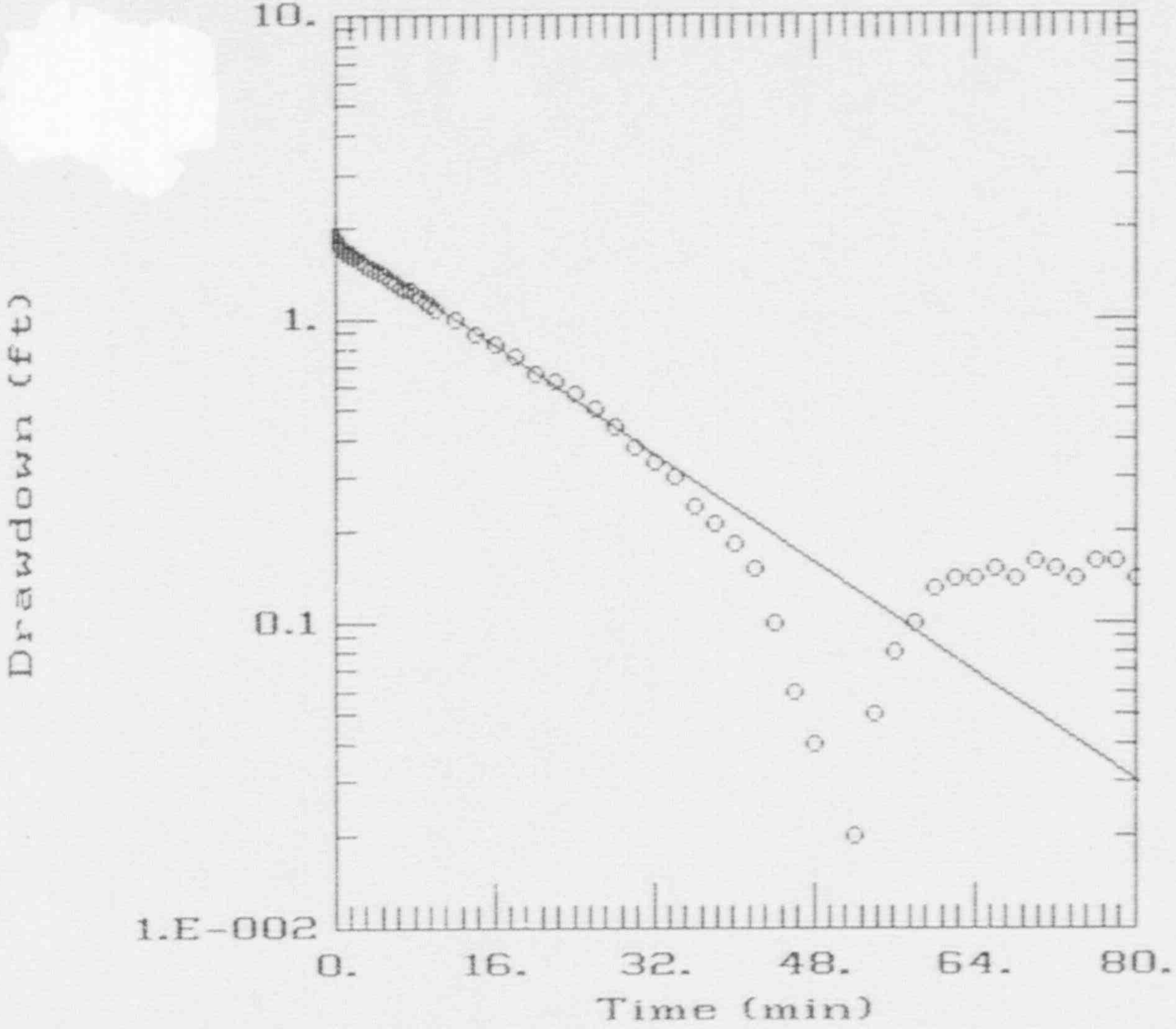
                                                 1
                          =  ------------------------------------------------
                                     1.1                         1.9
                             -------------------------- + -----------------
                                     4.10                       25.86

                          =  2.93
                             =====
                                   2
                                 rc    ln(Re/rw)       1              yo
  SOLVING FOR:        K   =  ------------------------ ----       ln  -------
                                 2 Le                  t              yt
                                     2
                               0.0833 (   2.93 )       1            1.848
                          =  ------------------------ ----       ln  -------
                                (2)        7.94       107             0.01

                                 0.02030
                          =  ---------------- 0.009    ( 5.2 )
                                 15.88

                          =      6.24E-05    FT/MIN
                             ======================
                                                          2
  EQUIVALENT  K  VALUES   =             0.67    GAL/DAY/FT
                                        0.09    FT/DAY
                                    3.17E-05    CM/SEC
```

MW-30A RISING HEAD TEST



```
                         HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                   SLUG  TEST
                         ---------------------------------

MONITORING WELL NUMBER:      MW-30A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):               0      FT
WELL TOTAL DEPTH (G.L.):             18.50      FT
  0.307    FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
 0.0833    FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   18.5    FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   18.5    FT = H  = SATURATED THICKNESS OF AQUIFER
   7.94    FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
  1.654    FT = yo = y AT TIME ZERO
   0.06    FT = yt = y AT TIME t
     62    t  = TIME SINCE yo  (MINUTES)
    1.9    C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                       1
SOLVING FOR:   ln Re/rw  =  ------------------------------------------------
                                   1.1                          C
                            --------------------------- + ----------------
                                ln  (Lw/rw)                    Le/rw

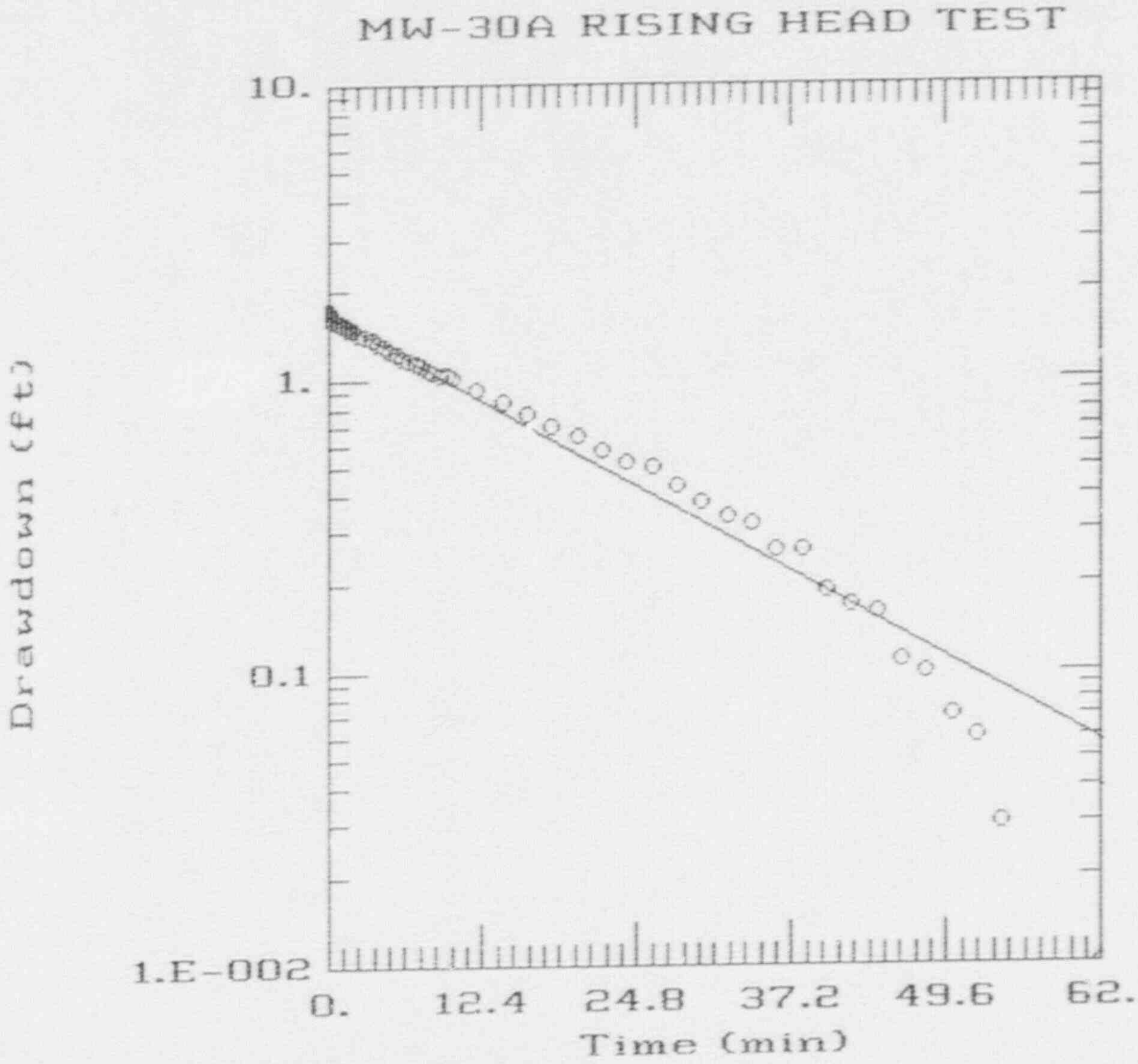
                                                       1
                         =  ------------------------------------------------
                                   1.1                         1.9
                            --------------------------- + ----------------
                            ln (     18.5 /  0.307    )       7.94 / 0.307

                                                       1
                         =  ------------------------------------------------
                                   1.1                         1.9
                            --------------------------- + ----------------
                                  4.10                        25.86

                         =  2.93
                            =====
                                  2
                                 rc    ln(Re/rw)     1              yo
SOLVING FOR:       K     =  -------------------------  ----      ln  -------
                               2 Le                   t               yt
                                   2
                              0.0833 (   2.93 )      1             1.654
                         =  -------------------------  ----      ln  -------
                                (2)        7.94      62              0.06

                              0.02030
                         =  ---------------- 0.016    ( 3.3 )
                                15.88

                         =       6.84E-05    FT/MIN
                            ======================
                                                        2
EQUIVALENT  K  VALUES    =            0.74    GAL/DAY/FT
                                      0.10    FT/DAY
                                  3.47E-05    CM/SEC
```


MW-30A RISING HEAD TEST
10.
1.
0.1
1.E-002
Drawdown (ft)
0.
12.4
24.8
37.2
49.6
62.
Time (min)

```
                     HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                     -----------------------------------

MONITORING WELL NUMBER:      MW-31A
PROJECT NAME/NUMBER:      SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:          RISING   HEAD
STATIC WATER LEVEL (G.L.):             -0.99     FT
WELL TOTAL DEPTH (G.L.):               27.00     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.99   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.99   FT = H  = SATURATED THICKNESS OF AQUIFER
   12.17   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.552   FT = yo = y AT TIME ZERO
    1.00   FT = yt = y AT TIME t
      20   t  = TIME SINCE yo  (MINUTES)
     2.4   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                  1
SOLVING FOR:   ln Re/rw  =  ----------------------------------------------------
                                    1.1                            C
                            ---------------------------- +  -----------------
                                 ln  (Lw/rw)                     Le/rw

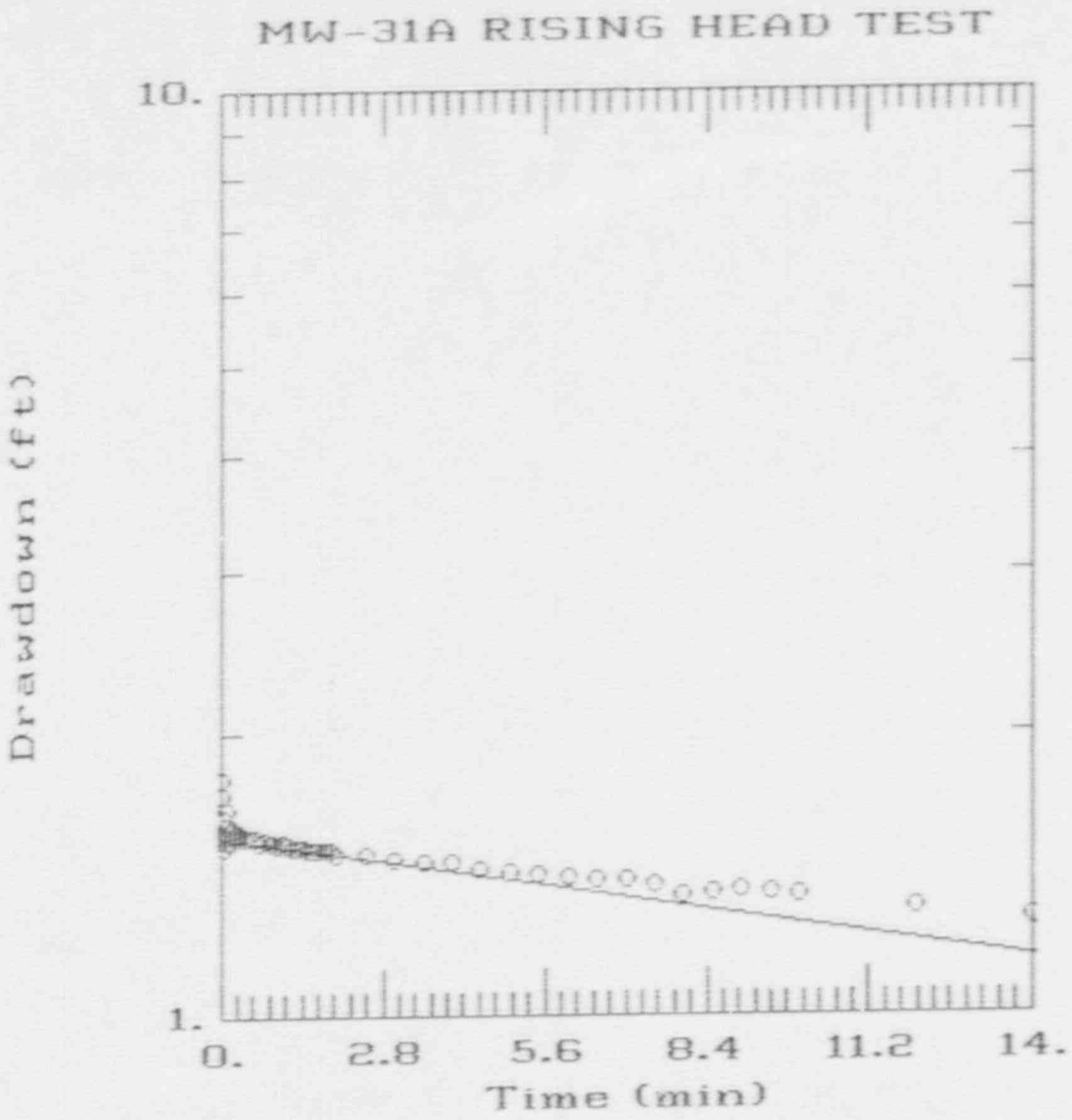
                                                  1
                         =  ----------------------------------------------------
                                    1.1                           2.4
                            ---------------------------- +  -----------------
                            ln (    27.99 /  0.307   )        12.17 / 0.307

                                                  1
                         =  -------------------------------------------   ----
                                    1.1                           2.4
                            ---------------------------- +  -----------------
                                    4.51                         39.64

                         =  3.29
                            =====
                                  2
                                rc    ln(Re/rw)      1               yo
 SOLVING FOR:        K    =  -------------------------  ----      ln  -------
                               2 Le                     t               yt
                                    2
                               0.0833 (   3.29 )      1              1.552
                          =  -------------------------  ----      ln  -------
                                (2)       12.17       20                 1

                               0.02280
                          =  ---------------- 0.050   ( 0.4 )
                                24.34

                          =      2.06E-05    FT/MIN
                             ======================
                                                       2
  EQUIVALENT  K  VALUES    =            0.22   GAL/DAY/FT
                                        0.03   FT/DAY
                                    1.05E-05   CM/SEC
```


MW-31A RISING HEAD TEST
Drawdown (ft)
10.
1.
0.
2.8
5.6
8.4
11.2
14.
Time (min)

```
                      HYDRAULIC  CONDUCTIVITY  ANALYSIS
                                SLUG  TEST
                      ******************************

MONITORING WELL NUMBER:     MW-32A
PROJECT NAME/NUMBER:     SEQUOYAH FUELS CORPORATION / 90067.02
TEST TYPE:         RISING   HEAD
STATIC WATER LEVEL (G.L.):           -1.29     FT
WELL TOTAL DEPTH (G.L.):             26.50     FT
   0.307   FT = rw = RADIAL DISTANCE BETWEEN WELL CENTER AND UNDISTURBED AQUIFER
  0.0833   FT = rc = RADIUS OF CASING/SCREEN OF WELL WHERE RISE OR FALL OF WATER
                     LEVEL IS MEASURED (ASSUMES RISE/FALL WITHIN CASED INTERVAL)
   27.79   FT = Lw = DEPTH OF WELL BELOW STATIC WATER LEVEL
   27.79   FT = H  = SATURATED THICKNESS OF AQUIFER
    14.3   FT = Le = HEIGHT OF PERFORATED, SCREENED, OR OTHERWISE OPEN SECTION OF WELL
                     THROUGH WHICH GROUND WATER ENTERS
   1.613   FT = yo = y AT TIME ZERO
    0.78   FT = yt = y AT TIME t
      28   t  = TIME SINCE yo  (MINUTES)
     2.6   C  = DIMENSIONLESS COEFFICIENT DERIVED FROM Le/rw GRAPH

                                                   1
SOLVING FOR:   ln Re/rw  =  ------------------------  -------------------
                                      1.1                        C
                            ------------------------- +  ---------------
                                 ln  (Lw/rw)                   Le/rw

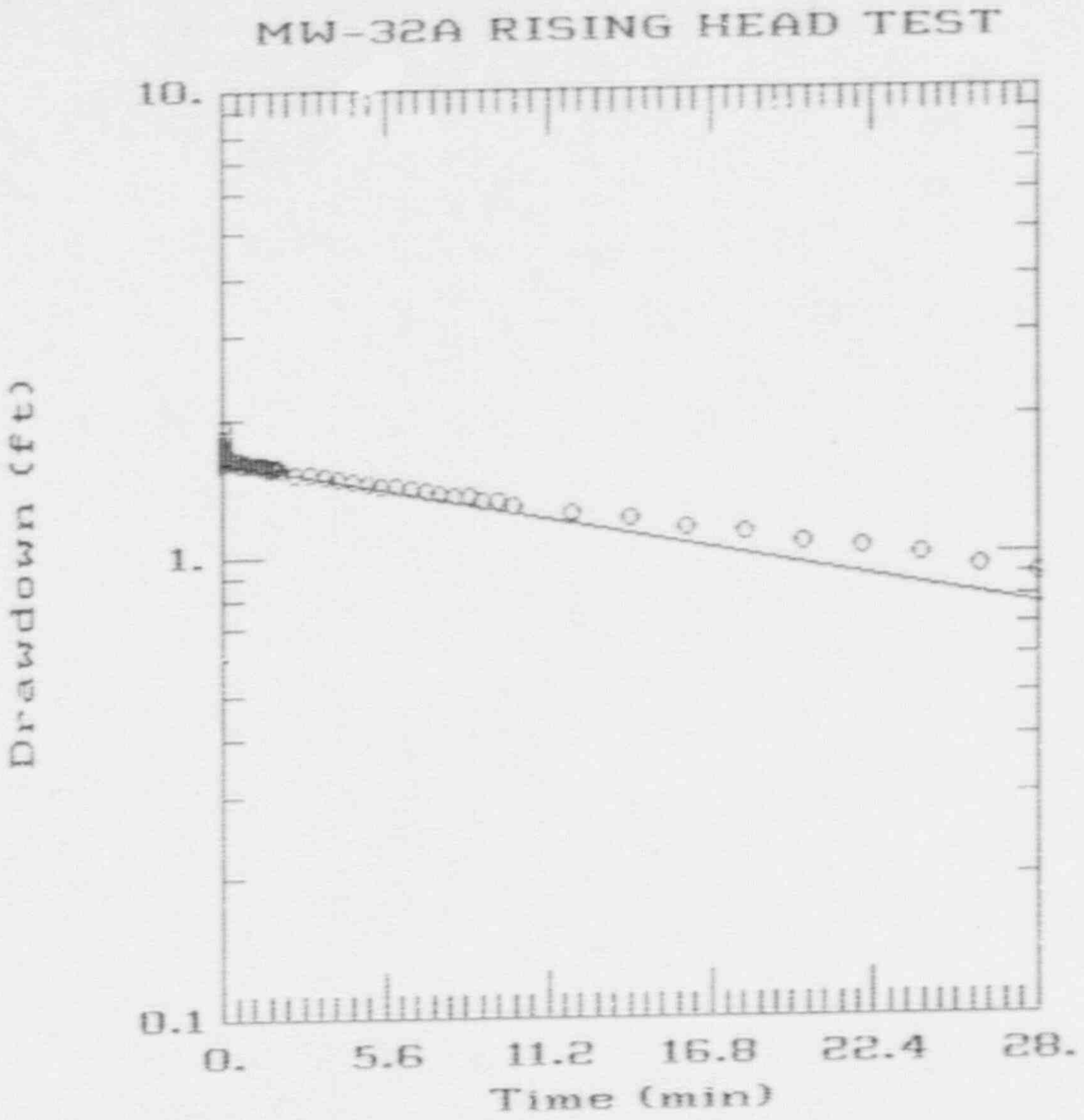
                                                   1
                         =  ---------------------------------------------
                                      1.1                       2.6
                            ------------------------- +  ---------------
                            ln (    27.79 /  0.307   )      14.3 / 0.307

                                                   1
                         =  ---------------------------  ----------------
                                      1.1                       2.6
                            ------------------------- +  ---------------
                                      4.51                     46.58

                         =  3.33
                            =====
                                      2
                                    rc    ln(Re/rw)      1           yo
SOLVING FOR:        K    =  -----------------------   ----     ln  -------
                                   2 Le                  t           yt
                                      2
                                  0.0833 (    3.33 )     1           1.613
                         =  -----------------------   ----     ln  -------
                                   (2)       14.30      28           0.78

                                 0.02313
                         =  --------------- 0.036   ( 0.7 )
                                  28.60

                         =      2.10E-05   FT/MIN
                             =====================
                                                           2
EQUIVALENT  K  VALUES    =           0.23   GAL/DAY/FT
                                     0.03   FT/DAY
                                 1.07E-05   CM/SEC
```


MW-32A RISING HEAD TEST
Drawdown (ft)
10.
1.
0.1
0.
5.6
11.2
16.8
22.4
28.
Time (min)

APPENDIX H

GROUNDWATER USAGE

OWRB CORRESPONDENCE

OKLAHOMA WATER RESOURCES BOARD
1957

FAX TRANSMITTAL DOCUMENT

DATE: 10-3-90

TO:

ORGANIZATION: Roberts / Schornick & Assoc.

TELEPHONE:

FACSIMILE: 364-1708

NO. OF PAGES INCLUDING COVER: 1

MESSAGES

We have reviewed our records and have found no
drillers logs for the Sections of 15, 16, 17, 20, 21,
22, 27, 28, 29 in Township 12 N, Range 21 E in
Sequoyah County, Oklahoma

FROM: Noel Osborn

DIVISION: Groundwater

TELEPHONE: 271-2576

OKC FAX NO.: (405) 271-2740

P.O. BOX 53585 1000 N.E. 10TH STREET
OKLAHOMA CITY, OKLAHOMA (405) 271-2555
73152

ROBERTS/SCHORNICK
& ASSOCIATES, INC.
Environmental Consultants

3700 West Robinson
Suite 200
Norman, Oklahoma 73072
405/321-3895