

22011206

P. S. MILURE

SL-1211B

COPY

00-1463

Formerly Utilized Sites Remedial Action Program (FUSRAP)
Contract No. DE-AC05-91OR21949

SITE SUITABILITY STUDY
FOR THE
ST. LOUIS AIRPORT SITE

St. Louis, Missouri

Volume II

February 1994



Printed on recycled/recyclable paper.

APPENDIX E Results of Additional Investigations

E1.0 SUMMARY

The December 1993 field program was implemented to acquire additional data to refine the definition of the hydrogeologic conditions at SLAPS. Data were collected that are relevant to the horizontal and vertical hydraulic conductivity of the upper and lower water-bearing units at the site, the ability of the 3M unit to effectively isolate the lower unit, and the interconnection between the upper and lower units where the 3M unit is absent. Groundwater sampling was also conducted at several locations to determine whether the two groundwater systems are connected and to further define the extent of contamination in groundwater.

Observations made during the pump tests substantiate the conceptual model for the site: in areas where Subunit 3M is present, the lower groundwater system is isolated from the upper groundwater system. In areas where Subunit 3M is not present, the two groundwater systems are connected.

Hydraulic conductivity values calculated from the slug test and pump test data were similar to values determined from earlier tests. The geometric mean hydraulic conductivity values for the entire data set are slightly higher with the addition of the new data. However, review of the input parameter assumptions for the horizontal contaminant transport model indicates that the predicted travel times would not be significantly different using the slightly higher conductivity values. Thus, revision of the model to incorporate new input parameters is unnecessary.

E2.0 INTRODUCTION

E2.1 OBJECTIVE OF THE FIELD PROGRAM

The primary objective of the December 1993 field program was to acquire additional data from existing wells to facilitate a determination by state and federal agencies regarding the suitability of the site for long-term disposal of radioactively contaminated soils.

The December 1993 field program was specifically designed to acquire hydrogeologic data to further define the physical characteristics of the individual hydrologic units and their interrelationship. Slug tests, variable rate step tests, and constant drawdown pump tests were performed on selected wells. The slug tests and step tests provided additional information on the separate hydrologic units. Pump tests where the deep well of a well pair was pumped and the well completed in the shallow unit was monitored provided information on the interconnectedness of the upper and lower hydrologic units.

In addition to the well tests, a complete round of water level data from all the wells at SLAPS and the Ball Field property was collected during a single 24-h period on December 15. Also, selected wells were sampled in accordance with EPA Region VII directions for metals and organic contaminants. The laboratory analyses of the samples will be used by EPA to help evaluate the suitability of SLAPS as a long-term disposal site.

E2.2 DESCRIPTION OF THE FIELD PROGRAM

The following discussion describes the program that was planned before field mobilization occurred; changes in this program and the rationale for the changes are also discussed. The program included both well testing and sampling. The field program, as it was planned before mobilization on November 29, is shown in the well testing/sampling matrix Table E-1. The sampling program for metals and volatile organics analysis compounds followed the direction outlined in comments from EPA Region VII. The wells selected for sampling and the types of samples to be collected from each well specifically follow the EPA directives. No significant problems occurred in the field, and all the wells

were sampled for metals and volatile organic analytes in accordance with the plan. Summary tables of the analytical results are presented in Attachment E-F.

Four well pairs (B53W06S and B53W06D, B53W11S and B53W09D, M10-15S and M10-15D, and M13.5-8.5S and M13.5-8.5D) were to be pump tested. Both wells in each well pair were to be slug tested before the pump test was started. The deep well in each well pair was to be step tested to determine the optimum pumping rate that could be sustained during the planned 48-h test.

Testing of well pairs 6S/6D and 11S/9D began within the first few days of the field program. Step test data from the 6S/6D well pair indicated that a constant rate of approximately 2.5 gpm could be maintained by the deep well, and the 48-h test could proceed as planned. Step test data from the 11S/9D well pair indicated that a rate of 0.1 gpm (approximately the lower-range pump rate) caused the well to become dry and that rates of approximately 0.05 gpm or less would be required to maintain a constant discharge and drawdown without pumping the well dry.

Of the wells scheduled to be tested, the 11S/9D well pair was the only set from which the 3M aquitard was absent. The test of this well pair was considered critical to obtain a value for the vertical permeability of the area where Units 3T and 3B merge near the southeastern corner of the site. This test would define the characteristics of the materials above and below the aquitard. Because of the critical nature of this test and the poor performance of the 11S/9D well pair, an alternate set of wells (M10-25S and D) was selected as a substitute. The M10-25 well pair had the deeper well screened in the 3B unit immediately above shale bedrock and the shallow well completed in the uppermost portion of 3T near the Unit 2 contact. No Unit 3M is present in the area of these wells; they were therefore used to supply the pertinent data regarding the physical characteristics of the materials above and below the aquiclude.

The planned 48-h pump test was initiated at the 6S/6D well pair on December 3, 1993, at an initial rate in excess of 2 gpm. The well drew down rapidly, and in order to maintain the water level above the pump intake, the discharge rate had to be adjusted downward

repeatedly. Thus, the test was not a constant discharge test and had to be rerun. However, the Missouri Department of Natural Resources requested that a longer test be performed.

After review of the preliminary data, a week-long, constant-discharge pump test at a rate of 1 gpm was planned for the 6S/6D well pair. This discharge rate was easily established, and a constant drawdown of the well of approximately 27 ft was established within 8 h and maintained for 7 days.

While the initial work was done on the 6S/6D and 11S/9D pump tests, sampling was conducted on the other two SLAPS well pairs scheduled to be pump tested. Sampling these well pairs started early so they would have time to recover before pump testing was started. Well purging before sampling is done using low flow methods to reduce the turbidity in the wells and the volume of purge water that must be handled; purge rates are generally 1 to 2 gpm. Well pair M10-15 pumped dry in approximately an hour at this purge rate and took over an hour to recover so that sampling could be performed. The well's performance indicated that it would not be suitable for a constant discharge pump test. This low yield and the fact that the thickest section of Unit 3M was in the area of this well pair led to the conclusion that it was impractical to run the pump test, so the M10-15 well pair was dropped from the program.

Step tests were performed on the M13.5-8.5 well pair on December 8. Evaluation of the test data indicated that a constant discharge rate of 0.2 gpm could be maintained by the deep well, and a 48-h test was planned to begin December 10. Three attempts were made to perform the pump test using Grunfos submersible pumps. The pumps lost performance as the tests proceeded because formation gasses built up in the flow lines and in the pump. Initially, loss of performance was believed to be an equipment problem. However, repeated attempts with different pumps and controllers showed that the buildup of gas was occurring in the impeller housing of the pump and resulted in vapor blockage of flow. The pump test was finally performed using a bladder pump, and flow lines were rearranged to eliminate areas where gas could build up. The surging action of the bladder pump was adjusted to minimize the delay between intake and pump discharge; thus, a constant rate was readily achieved, and drawdown of approximately 26 ft was maintained for 48 h.

Step tests on the M10-25D well were performed on December 9. Test data indicated that the well had extremely low yield potential. A pumping rate of 0.02 gpm was determined to be the optimum rate to maintain constant discharge without pumping the well dry. The pump test began around noon on December 11. The well drew down rapidly and became nearly stabilized just above the screened interval at this extremely low pumping rate. The water level in the well continued to drop very slightly, and loss of flow occurred approximately 13 h into the test. Attempts to reestablish flow failed, and the test was discontinued early on December 12. Drawdown in the shallow offset well was observed before the end of the test, indicating vertical interconnection in the area of the M10-25 well pair.

As this discussion shows, numerous changes in the planned program had to be made in the field to obtain the necessary data. In an effort to obtain adequate data to meet the objectives of the field program, test procedure, duration, and locations had to be revised. The data obtained from this program are presented in the following sections and provide information of sufficient substance and quality for an evaluation of the physical characteristics of the hydrologic conditions at the site.

E3.0 REVIEW AND ANALYSIS OF SLUG TESTS

Eighteen slug tests were conducted on wells during the December 1993 field program. Previous testing included five slug tests conducted during winter 1992 and six tests conducted before 1992. Analyses of the rate at which wells respond to the input or removal of a "slug" in a well provide horizontal permeability values. The spatial distribution of the computed conductivity values from the slug tests are shown in Figures E-1, E-2, and E-3. Attachment E-A to this appendix contains a summary table of computed hydraulic conductivity values and plots of all the slug test response curves.

Figure E-1 shows the distribution of hydraulic conductivities computed from slug test data for wells installed in the upper water-bearing unit. The hydraulic conductivity results are also shown on a cross section in Figure E-2. The cross section shows a weak tendency for the sediments to become less permeable with depth. Decreased permeability with depth is expected because the sediments underlying SLAPS occur in a coarsening upward sequence above the glaciolacustrine 3M subunit clays (Section 3.0).

Figure E-3 shows the distribution of hydraulic conductivities calculated from slug test data for wells installed in the lower groundwater system. Hydraulic conductivities shown on the map range from 8.7×10^{-2} to 5.7×10^{-6} ft/min, with the highest values occurring near Coldwater Creek and the lowest in the southern and eastern parts of the site. The distribution of permeability is probably related to the depositional environment of the sediments (Section 3.0). Sediments in the southern and eastern portions of the site were deposited in a low energy environment (such as in a flood plain as overbank deposits). This resulted in less permeable sediments that were poorly sorted and contain a slightly higher clay percentage. Sediments closer to Coldwater Creek were deposited in the higher energy environment of a flowing stream, which would result in more permeable sediments.

The horizontal permeability data derived from the tests conducted during winter 1993 do not significantly change the geometric mean permeability for either the 3T or 3B unit. Geometric mean permeability values changed by a factor of two for Subunit 3B; however, evaluation of the model results indicates that contaminant transport rates would not change

significantly using the slightly higher values. Therefore, the modelling that was performed for earlier phases of this study is valid, so there is no need to rerun the model. Revisions of the vertical contaminant transport calculations have been added to this report (Section 5.0).

E4.0 REVIEW AND ANALYSIS OF PUMP TESTS

Five pump tests were performed at SLAPS during the December 1993 field program. The tests varied in duration from 105 min (well B53W09D pumped dry) to 7 days in well B53W06D. In all the tests, attempts were made to maintain a constant discharge pumping rate. Pumping rates in all cases were very low, varying from a maximum of 1 gpm to as little as 0.025 gpm.

The standard field procedure was to perform slug tests on the two wells in the well pair to be pump tested. A step drawdown test was conducted on the well to be pumped; at least 1 day was allowed for the well to recover, and the pump test was started.

A detailed analysis of the pump test data was prepared in the form of a project calculation package (a summary is included in Attachment E-B for reference). This calculation package uses various methods to analyze the data and determine aquifer characteristics. The calculation package includes a brief description of each of the tests, a review of the methods used in the analyses, and summary tables of results. Attachment E-C contains hydrographs of manual water level readings, and Attachment E-D contains meteorological data. Data in both attachments were used to support the calculations presented in Attachment E-B. The following discussion presents further observations and analyses.

E4.1 B53W06S/B53W06D WELL PAIR TESTS

The constant discharge step tests performed on well B53W06D (Figure E-3) indicated that the well should have the capacity to yield 2 to 3 gpm for a constant discharge pump test with a duration of 48 h as specified in the field work plan. The 2-day test was initiated at a rate of 3 gpm. An apparent formation boundary condition was encountered approximately 90 min into the test, and from then on the discharge rate had to be adjusted downward to a final rate of 1.5 gpm to prevent the well from pumping dry. The boundary condition is exhibited on the drawdown plots as an inflection point on the curve. The well yield decreases at this point, indicating that the formation was not capable of delivering water at

the 3 gpm rate. This condition may indicate that the well is completed in an isolated lens of more porous and permeable material such as a sand lens. No drawdown response was observed in the shallow monitoring well during the 2-day pump test. The water level in the well rose in response to a brief precipitation event and continued to rise through the recovery portion of the test.

Review of the preliminary data and rough calculations of distance relative to drawdown indicated that a response should be observed in the shallow monitoring well (B53W06S) in 2 to 4 days. This assumes an average vertical conductivity over the entire interval between the top of the screen in the deep well and the base of the screen in the shallow well of about 1.0×10^{-6} cm/s, constant drawdown of 30 ft below static water level in the deep unit, and constant discharge of 1 gpm. Based on these rough calculations and conversation with regulatory agencies (who sought a longer duration test), a 7-day constant discharge test was initiated. Monitoring of two offset well pairs was performed in conjunction with the test to provide water level data for the shallow unit to be used to correct readings in well 6S in case of another rainfall event, and to observe any effects from pumping of the deep interval that could be produced if the unit were effectively confined and isolated from the shallow unit.

Water levels in the B53W06D well were maintained at approximately 27 ft below the static water level. No drawdown response was observed in the shallow monitoring well (B53W06S) during the 7-day pump test. Plots of the electronic readings for B53W06S and the manual water levels for B53W06S, B53W04S and B53W07S are included in Attachment E-C. Water levels decreased in the deep wells B53W04D and B53W07D, which were monitored during the 7-day test. Water levels declined 0.5 and 1.0 ft, respectively, in these wells. Drawdown versus distance plots indicate that these declines could have been induced by pumping B53W06D if the unit is confined and reservoir characteristics are similar to what has been determined from these field tests.

Data from the pump test at B53W06D were analyzed using several different techniques as described in the summary of the project calculation package (Attachment E-B). The calculated horizontal hydraulic conductivity values from the 7-day test ranged from 9.4×10^{-5} to 5.6×10^{-4} cm/s, which agrees with values calculated from slug test data and

from the 2-day pump test. Because no response was observed in the shallow monitoring well, the vertical hydraulic conductivity is less than the assumed value of 1.0×10^{-6} cm/s. Analyses of the data from other tests performed onsite during the 1993 program yield values for vertical hydraulic conductivity of approximately 2.0×10^{-7} . This value is within the range of laboratory-measured values for Unit 3M and is consistent with observed responses at the well pairs where Unit 3M is present.

The results of the pumping tests at the B53W06S/6D well pair lead to the following conclusions. First, the deep water-bearing unit is effectively isolated from the upper unit by the 3M clay unit. Second, the lower unit is confined and does not recharge from the shallow unit where the 3M clay is present. And the vertical hydraulic conductivity of Unit 3M is less than 1.0×10^{-6} cm/s, apparently in the range of values measured in the laboratory (7.0×10^{-7} to 5.5×10^{-8} cm/s).

E4.2 M13.5-8.5S/M13.5-8.5D WELL PAIR TEST

Three attempts to perform pump tests at the M13.5-8.5 well pair using the Grunfos submersible pumps failed. It was determined that gas from the lower unit was coming out of solution as the formation pressure was decreased during pumping. This gas collected in the flow lines and in the pump, reducing flow to the point that drawdown of the well could not be maintained. Use of a bladder pump alleviated the gas problem, and a 48-h constant discharge test was performed. Wells M13.5-8.5S and "C," completed in the shallow water-bearing unit, were monitored during the test. Drawdown of M13.5-8.5D approximately 26 ft below static water level was sustained for 48 h. No response was observed in the shallow wells. This observed lack of response substantiates the conclusions regarding the isolation of the lower unit.

Data from the pump test at M13.5-8.5D were analyzed using the techniques described in the summary of the project calculation package (Attachment E-B). The calculated horizontal hydraulic conductivity values ranged from 3.0×10^{-5} to 8.1×10^{-5} cm/s, a range consistent with values calculated from slug test data.

E4.3 B53W11S/B53W09D WELL PAIR TEST

Step tests performed in well B53W09D pumped the well dry in a matter of minutes. Pumping at the lower end of the submersible pump capacity (0.1 gpm) drew the well down to the pump in 105 min, and the well required nearly 40 h to recover. No response was observed in the shallow monitoring well B53W11S. Based on this performance, the 48-h pump test was canceled. This performance indicated that the Pennsylvanian shale section where the 09D well was completed had extremely low permeability and was effectively isolated from the shallow water-bearing unit.

Data from the pump test at B53W09D were analyzed using the techniques described in the summary of the project calculation package (Attachment E-B). The data from the drawdown test were not considered because most of the water pumped from the well was the result of casing storage. Calculated horizontal hydraulic conductivity values ranged from 3.3×10^{-7} to 8.3×10^{-6} cm/s, a range consistent with values calculated from slug test data.

E4.4 M10-25S/M10-25D WELL PAIR TEST

The M10-25 well pair was selected as a substitute for the 11S/09D test. A critical part of the field program was execution of a pump test on a well pair where the 3M unit was absent. This was the case at the M10-25 well pair location. The slug test on the M10-25D well indicated that the lower unit had very low permeability of approximately 1.4×10^{-5} cm/s. The step test on this well indicated that the well could only sustain a flow rate at 0.05 gpm or less without going dry. This very low rate was at the lower end of the submersible pump capacity and would be very difficult to maintain. The step test also showed that a delayed response occurred in the shallow monitoring well, which was a very critical consideration. The decision was made to attempt a constant discharge pump test with the initial rate of 0.05 gpm. A delayed response in the shallow monitoring well was obvious at approximately 10 h into the test. The very low pump rate was maintained for 13 h, when the well went dry and flow could not be reestablished. The water level in the shallow monitoring well continued to fall after the deep well began to recover. The water level in the

shallow well appeared to stabilize near the end of the recovery cycle in the deep well (see Attachment E-C).

This test demonstrated that where Unit 3M was absent, the upper and lower water-bearing units were in communication. These results confirm the conceptual model for the site that describes the southeastern portion of the site as a recharge area for the lower zone. Vertical hydraulic conductivity computed from the data derived from this test are approximately 1.0×10^{-6} cm/s, an order of magnitude lower than the horizontal conductivity values computed from slug tests.

Data from the pump test at M10-25D were analyzed using the techniques described in the summary of the project calculation package (Attachment E-B). The data from the drawdown test were not considered because most of the water pumped from the well was from casing storage. Calculated horizontal hydraulic conductivity values ranged from 1.3×10^{-5} to 7.5×10^{-6} cm/s, a range consistent with values calculated from slug test data.

E5.0 GROUNDWATER GEOCHEMISTRY

Groundwater samples for analysis of water quality parameters were collected from eight wells. One duplicate was also collected. The results of the water quality analyses are presented in Attachment E-E. Generally, the wells installed in the deep groundwater system contain lower concentrations of calcium, magnesium, chloride, sulfate, and nitrate and higher concentrations of iron than samples collected from the wells installed in the shallow groundwater system. Sulfate values from B53W09D are higher and iron values are lower than the other deep wells, but this may be related to the zone of completion; the well is installed in shale bedrock. Water quality analyses also indicate that water in B53W11S is similar to water in the deep groundwater system. The results of a duplicate analysis conducted on samples from M13.5-8.5S agreed reasonably well with the results from M13.5-8.5S.

A charge balance was run using the model MINTEQA2. Results of the charge balance were below 5 percent in all except 3 wells (B53W06S, M10-15D, and M10-15S), indicating that most of the data are valid. The possible precipitates determined by MINTEQA2 were hematite and calcite (and dolomite in B53W06D). These precipitates agree with what is observed in well logs and during sampling of groundwater.

Water quality samples were collected from four well pairs, B53W06, B53W11S/B53W09D, M10-15, and M13.5-8.5; a duplicate was collected from M23.5-8.5. The results of the analyses are plotted on a trilinear diagram in Figure E-4, along with water quality results for the wells shown on the trilinear diagram presented in Section 4.0 of this study. These plots show that the geochemistry of all the wells is very similar. Water types range from sodium bicarbonate to calcium bicarbonate. Water in the deep groundwater system generally contains slightly higher concentrations of sodium, potassium, and bicarbonate and slightly lower concentrations of sulfate and chlorine. The only exception to this is water in B53W09D, which appears to be more closely related to the samples from the shallow groundwater system. This is expected because B53W09D is located in an area where

the two water-bearing zones may be connected. The inference that the two groundwater systems have a similar recharge area near the upgradient (southeast) end of the site remains valid.

E6.0 RESULTS OF GROUNDWATER SAMPLING AND ANALYSIS

During the 1993 field sampling effort, 19 wells were sampled for volatile organic analytes, and 23 wells were sampled for metals. The results are discussed below. Additionally, eight wells were sampled for water quality parameters; the results are discussed earlier in this appendix.

E6.1 RESULTS OF ANALYSES FOR VOLATILE ORGANIC ANALYTES

Groundwater sampling results reported in the *Remedial Investigation Addendum Report for the St. Louis Site* (SAIC 1993) indicate that trichloroethene (TCE) was detected in well B53W17S at a concentration of 1400 µg/L. In December 1993, 19 wells (including B53W17S) were sampled for volatile organic analytes, as requested by EPA. Table 1 in Attachment E-F provides a list of wells where contaminants were present at concentrations exceeding method detection limits. As shown in Table 1, the sample from well B53W17S contained TCE at a concentration of 1200 µg/L, approximately the same concentration as was reported in the addendum report. However, it is important to note that no other sampled wells exhibited elevated concentrations of this compound, implying that TCE is present in a small area of the shallow aquifer only.

A study of the interaction of earthen liner materials with industrial waste leachates (D. E. Daniel et al., 1988) indicates that chemical solutions containing TCE at a concentration of 200 mg/L (150 times higher than the concentration found in well B53W17S) did not have a deleterious effect on the hydraulic conductivity of clay soils. Consequently, it is highly unlikely that a localized TCE concentration of 1400 µg/L would increase either the hydraulic conductivity or the permeability of the clay layer between the shallow and deep water-bearing units.

The common industrial solvent 2-butanone was detected at concentrations slightly above the detection limit in wells M10-15D and M10-25D, two wells installed near the railroad tracks and screened in the deep aquifer below SLAPS. However, this compound is present

only at extremely low concentrations and is not identified as an organic compound of concern in the Safe Drinking Water Act (SDWA).

After chemical analyses on all samples were completed, chloroform was identified in the rinse blanks during data validation. To determine the source of this contamination, a sample was collected from an unused portion of the high pressure liquid chromatography (HPLC) purified water that had been purchased from an independent supply company for decontamination of equipment and collection of rinse blanks. Analysis of this sample established that chloroform was present as a contaminant in the HPLC water; however, because chloroform was not detected in any of the groundwater samples, the data were not compromised.

Acetone, a common laboratory contaminant, was identified in the trip blanks supplied by the analytical laboratory (eight of nine analyzed) but was not identified in the samples. The data were not compromised.

The volatile organic analytical results for all samples are included in Table 2 of Attachment E-F.

E6.2 RESULTS OF ANALYSES FOR METALS

As reported in the RI Addendum (SAIC 1993), analytical results indicate that several wells contain concentrations of metals exceeding SDWA maximum contaminant levels (MCLs). Sixteen monitoring wells installed in 1987/1988 and the five wells installed in 1992, as specifically requested by EPA, were sampled in December 1993 for analysis for the same suite of metals analyzed in 1992. Additionally, wells B53W06S and B53W06D were sampled. It is important to note that only the five 1992 wells had been recently developed. Wells B53W11D, B53W15S, and all of the M wells at SLAPS had been sampled regularly through 1991. All other wells (B53W04S, B53W04D, B53W05S, B53W05D, B53W06S, B53W06D, B53W11S, B53W09D, B53W12S, B53W10D) had been installed for the sole purpose of monitoring water levels; these wells have not been developed but were nevertheless sampled, as requested.

Arsenic, chromium, and selenium were found in some wells at concentrations exceeding the federal or state MCLs (whichever was lower) for the metals. Arsenic was detected at above-MCL concentrations in 3 of 10 deep wells sampled but in none of the shallow wells sampled. Of the 13 shallow wells sampled, 4 exhibited concentrations of selenium that were above the MCL. Two shallow wells and three deep wells contained concentrations of chromium that were above the MCL. Attachment E-F, Table 3 gives the results for wells exceeding MCLs.

Selenium and arsenic are analogue elements known to be associated with uranium ores (Dreesen et al. 1982) and consequently with the residues of uranium ore processing. The selenium detected in shallow wells on SLAPS and in the immediate vicinity may be associated with the processing residues stored on SLAPS. Arsenic was detected in deep wells only, indicating that the metal is probably not associated with the waste at the site. Any metal contamination for which the residues were the source should appear in the shallow wells. Arsenic may be specifically associated with Unit IV, the unit in which those three deep wells were installed.

Chromium contamination occurred in both shallow and deep wells but in no pattern that allows its source to be identified.

For metals for which there are no MCLs but for which there are federal secondary MCLs (SMCLs), the SMCLs were used as a screen for determining which additional metals could be of concern. The SMCL is the maximum permissible concentration of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system. Therefore, SMCLs are in no way a reflection of typical groundwater concentrations, but they are a good tool for determining which metals in the groundwater samples should be considered further.

Of the metals sampled, only aluminum, iron, and manganese were present in groundwater at concentrations above the SMCLs. However, all three metals are common constituents of groundwater. In particular, iron and manganese concentrations in the groundwater of the area are typically high, and the water tends to be hard

(Miller et al., 1974). In all groundwater samples from SLAPS and the ballfields, iron and manganese occurred in concentrations within the range considered typical for groundwater of the region. Attachment E-E lists the ranges of concentrations of typical metals in groundwater from Mississippi and Missouri River alluvium. Similarly, aluminum, present as a silicate, is a common constituent of clay soils (Hurlburt and Klein, 1977). Soils in the SLAPS area contain illite, which is an alumino-silicate. Thus, aluminum is to be expected in the groundwater of the area.

E7.0 SUMMARY

The data gathered during the December 1993 field program substantiate the conclusions presented in the *SLAPS Site Suitability Study*. The additional measurements of horizontal hydraulic conductivity for both the upper and lower water-bearing units are comparable to the range of values reported in the study. The computed vertical hydraulic conductivities for areas where the 3M aquitard is absent are low, but test results indicate that the upper and lower water-bearing units are connected in these areas. The vertical hydraulic conductivity in areas where Unit 3M is present is in the range of values measured by laboratory analyses. Where Unit 3M is present, the lower water-bearing unit is effectively isolated from the upper water-bearing unit.

Water quality data confirm these conclusions. In the southeastern portion of the site, the water chemistry is very consistent. In the western and northern portions of the area where Unit 3M meets the upper and lower units, the water quality is slightly different.

E8.0 REFERENCES

D. E. Daniel, H. M. Liljestrand, G. P. Broderick, and J. J. Bowders, 1988. "Interaction of Earthen Liner Materials with Industrial Waste Leachate," *Hazardous Waste and Hazardous Materials*, Vol. 5, No. 2, 93-108.

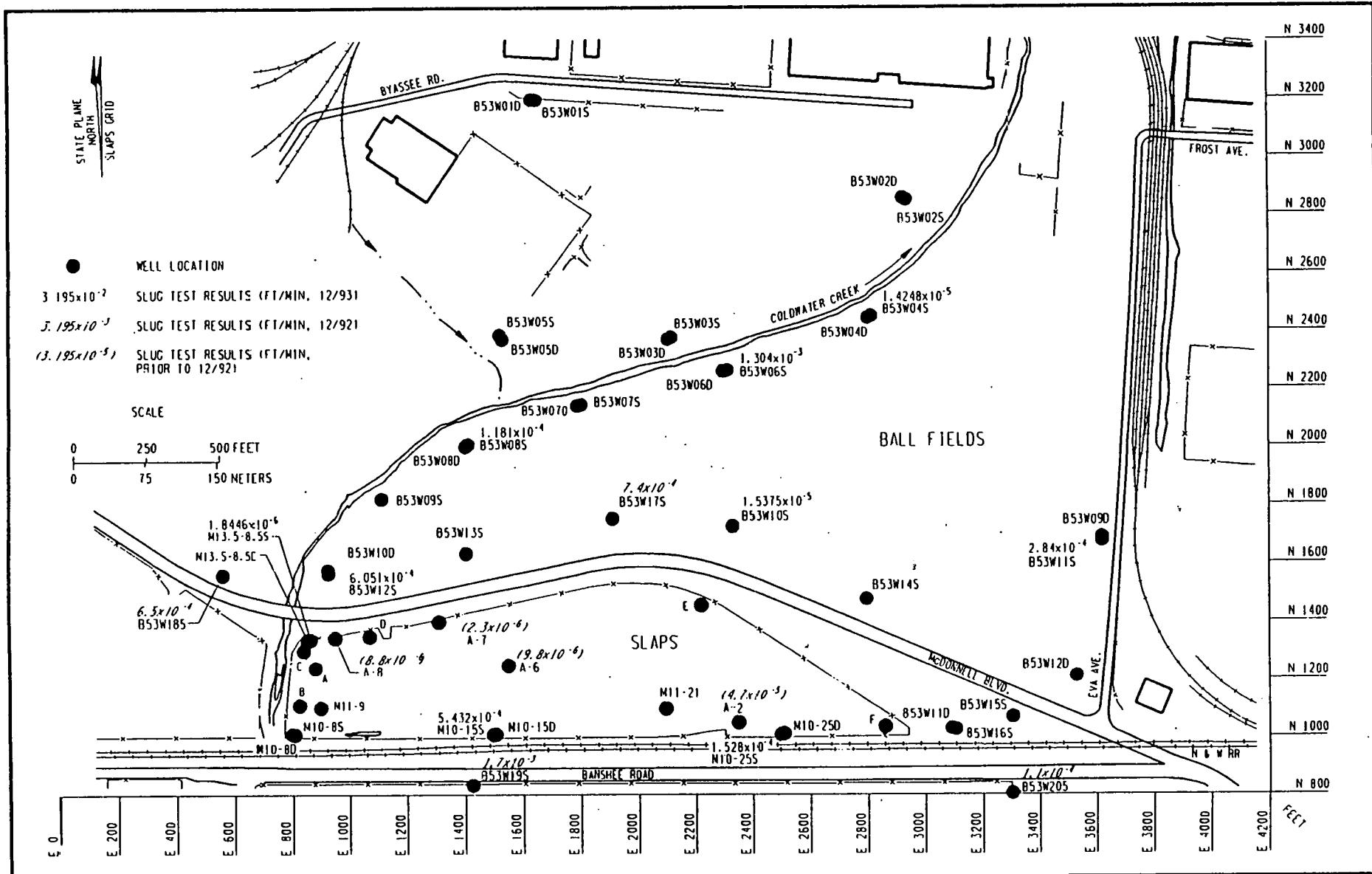
Dreesen, D. R. et al., 1982. "Mobility and Bioavailability of Uranium Mill Tailings Contaminants," *Environmental Science Technology*, Vol. 10, No. 10.

Hurlburt Jr., Cornelius S. and Cornelis Klein, 1977. *Manual of Mineralogy*, 19 ed., New York.

Miller, Don E., L. F. Emmett, J. Skelton, H. G. Jeffery, and J. H. Barks, 1974. *Water Resources of the St. Louis Area, Missouri*. United States Geological Survey, 37-38.

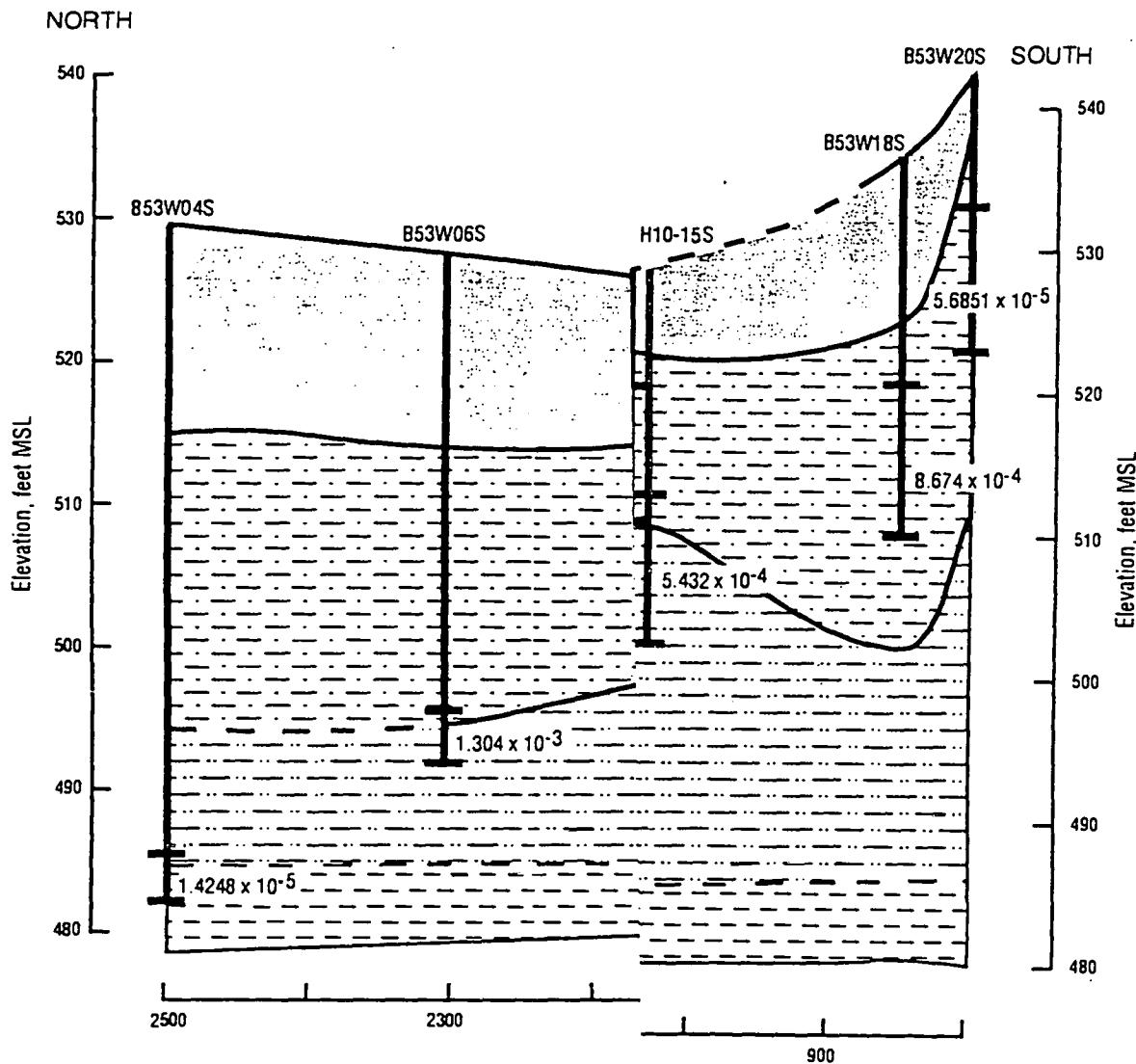
Science Applications International Corporation, 1993. *Remedial Investigation Addendum Report for the St. Louis Site, St. Louis, Missouri*, DOE/OR/21950-132, Oak Ridge, Tenn. (May).

FIGURES FOR APPENDIX E

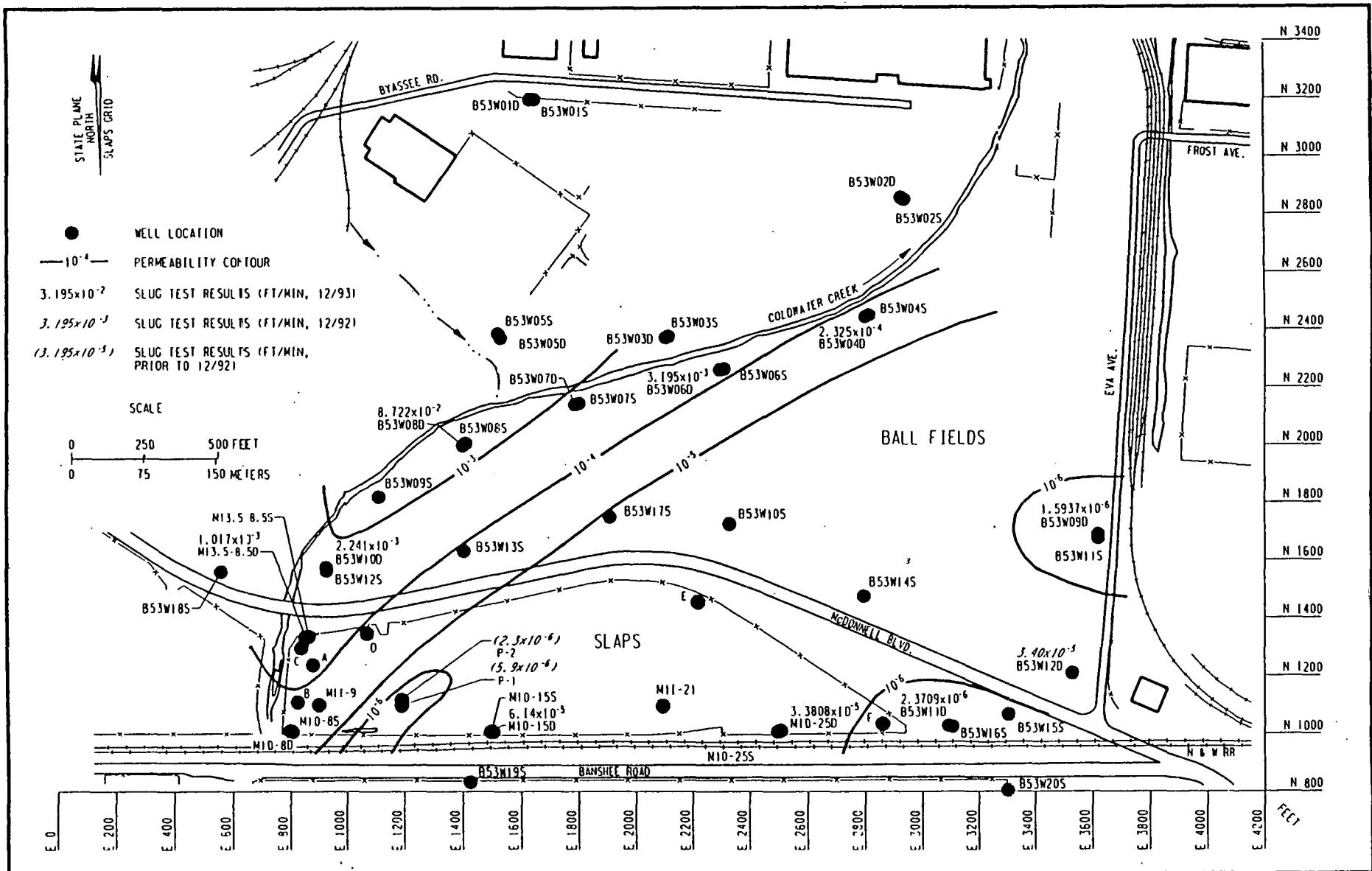


R02F036.DGN

Figure E-1
Shallow Well Slug Results
Falling Head Test

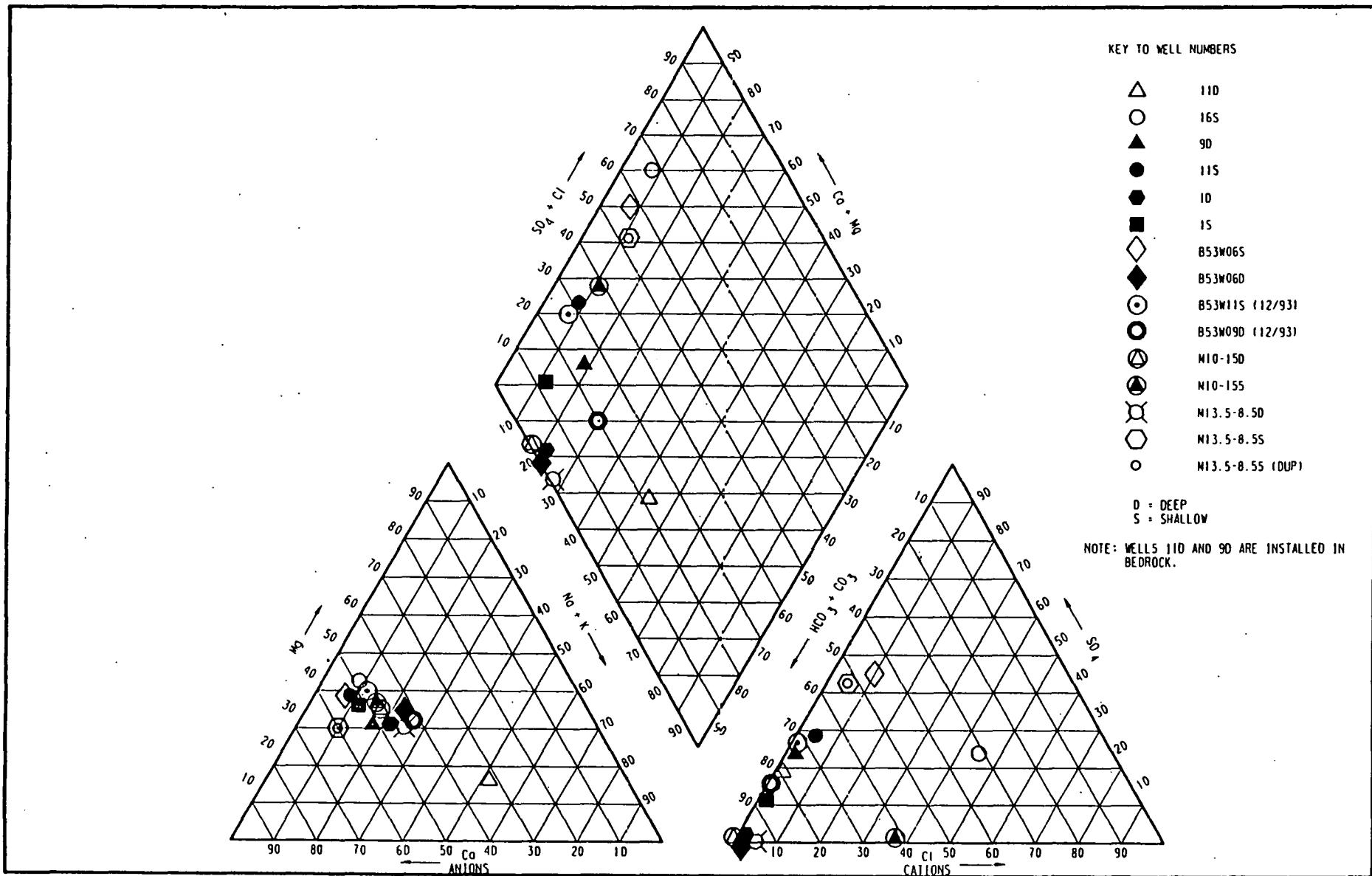


E-27



R02F035.DGN

Figure E-3
Deep Well Slug Results
Falling Head Test



R02F039.DCN

Figure E-4
Trilinear Water Chemistry Diagram for Well Pairs in the Ball Fields Area

TABLES FOR APPENDIX E

Table E-1
PLANNED FIELD PROGRAM

Well Testing/Sampling Matrix

Well ID	Pump	Slug	Step	WQ	Metals	VOAs
B53W04S		X			X	
B53W04D		X			X	
B53W05S					X	X
B53W05D					X	X
B53W06S	X ^M	X		X	X	X
B53W06D	X	X	X	X		X
B53W07S		X				X
B53W07D		X				X
B53W08S		X				X
B53W08D		X				X
B53W09D	X	X	X	X	X	X
B53W10S		X				X
B53W10D						X
B53W11S	X ^M	X		X	X	
B53W11D		X				X
B53W12S						X
B53W12D						X
B53W13S						X
B53W15S					X	X
B53W17S					X	X
B53W18S					X	X
B53W19S					X	
B53W20S					X	
M10-8S						X
M10-15S	X ^M			X	X	X
M10-15D	X ^M	X	X	X	X	X
M10-25S		X			X	X
M10-25D					X	X
M13.5-8.5S	X ^M	X		X	X	X
M13.5-8.5D	X	X	X	X	X	X

^M Signifies Monitoring Well During Pump Test.

ATTACHMENT E-A: Slug Test Data with Plots

Summary of Results

Well	Test Type	Method of Analysis	Hydraulic Unit ¹	Hydraulic Unit Thickness (ft)	Transmissivity (ft ² /min)	Hydraulic Conductivity (ft/min)
B53W04D	Falling	Cooper et al	Lower	25.7	2.325×10^{-4}	
	Rising	Cooper et al		25.7	5.495×10^{-4}	
B53W04S	Falling	Bouwer-Rice	Upper	27.4		1.4248×10^{-5}
	Rising	Bouwer-Rice		27.4		1.8657×10^{-5}
B53W06D	Falling	Cooper et al	Lower	26.3	3.195×10^{-3}	
	Rising	Cooper et al		26.3	8.255×10^{-3}	
B53W06S	Falling	Bouwer-Rice	Upper	ND		1.304×10^{-3}
	Rising	Bouwer-Rice		ND		1.539×10^{-3}
B53W08D	Falling	Cooper et al	Lower	11.7	8.722×10^{-2}	
	Rising	Cooper et al		11.7	1.722×10^{-1}	
B53W08S	Falling	Bouwer-Rice	Upper	ND		1.181×10^{-4}
	Rising	Bouwer-Rice		ND		2.137×10^{-4}
B53W09D	Falling	Bouwer-Rice	Lower	14		1.5937×10^{-6}
	Rising	Bouwer-Rice		14		1.3462×10^{-6}
B53W10D	Falling	Cooper et al	Lower	26	2.241×10^{-3}	
	Rising	Cooper et al		26	7.502×10^{-5}	
B53W10S	Falling	Bouwer-Rice	Upper	38.5		1.5375×10^{-5}
	Rising	Bouwer-Rice		38.5		8.3218×10^{-6}
B53W11D	Falling	Bouwer-Rice	Lower	12.3		2.3709×10^{-6}
	Rising	Bouwer-Rice		12.3		3.7591×10^{-6}
B53W11S	Falling	Bouwer-Rice	Upper	ND		2.84×10^{-4}
	Rising	Bouwer-Rice		ND		2.471×10^{-4}
B53W12S	Falling	Bouwer-Rice	Upper	ND		6.051×10^{-4}
	Rising	Bouwer-Rice		ND		1.3905×10^{-5}
M10-15D	Falling	Cooper et al	Lower	7.2	4.4906×10^{-5}	
	Rising	Cooper et al		7.2	3.6166×10^{-5}	
M10-15S	Falling	Bouwer-Rice	Upper	41.5		5.432×10^{-4}
	Rising	Bouwer-Rice		41.5		3.89×10^{-4}
M10-25D	Falling	Bouwer-Rice	Upper	44.7		3.3808×10^{-5}
	Rising	Bouwer-Rice		44.7		2.1624×10^{-5}

Well	Test Type	Method of Analysis	Hydraulic Unit ¹	Hydraulic Unit Thickness (ft)	Transmissivity (ft ² /min)	Hydraulic Conductivity (ft/min)
M10-25S	Falling	Bouwer-Rice	Upper	46		1.528×10^{-4}
	Rising	Bouwer-Rice		46		9.6028×10^{-4}
M13.5-8.5D	Falling	Cooper et al	Lower	23.7	1.017×10^{-3}	
	Rising	Cooper et al		23.7	1.333×10^{-3}	
M13.5-8.5S	Falling	Bouwer-Rice	Upper	32.9		1.8446×10^{-6}
	Rising	Bouwer-Rice		32.9		2.8818×10^{-5}

¹ For descriptions of hydraulic units see BNI (1993) *Site Suitability Study for the St. Louis Airport Site, St. Louis, Missouri*. July 1993.

ND Depth not determined; unit not fully penetrated in borehole.

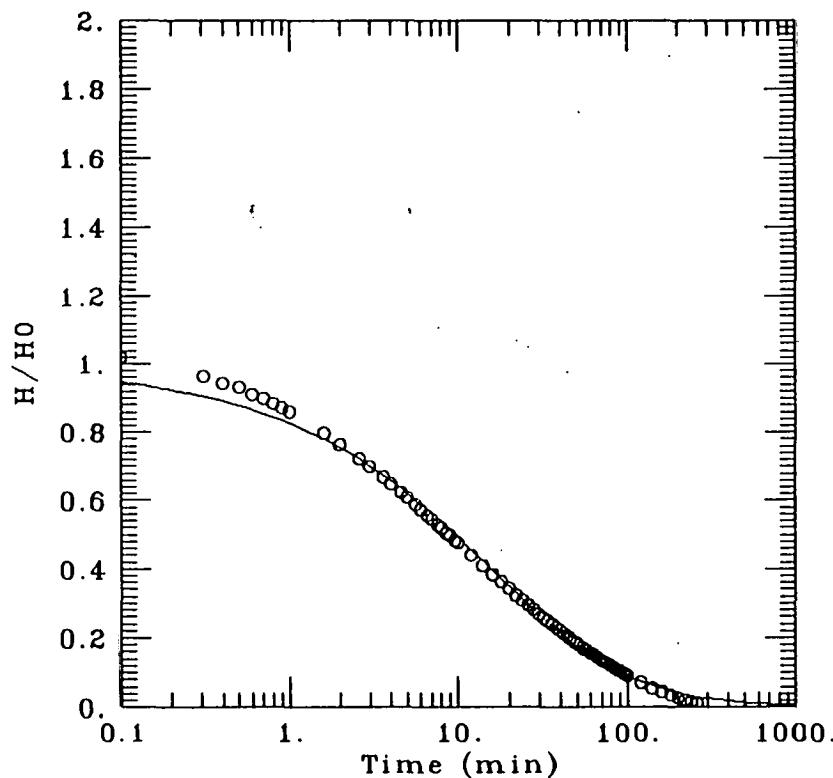
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W04D FALLING HEAD TEST



DATA SET:

b53w04df.dat

01/11/94

AQUIFER TYPE:

Confined

SDLUTION METHOD:

Cooper et al.

TEST DATE:

12/05/93

TEST WELL:

B53W04D

OBS. WELL:

B53W04D

ESTIMATED PARAMETERS:

$T = 0.0002325 \text{ ft}^2/\text{min}$

$S = 0.006587$

TEST DATA:

$HD = 1.7 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

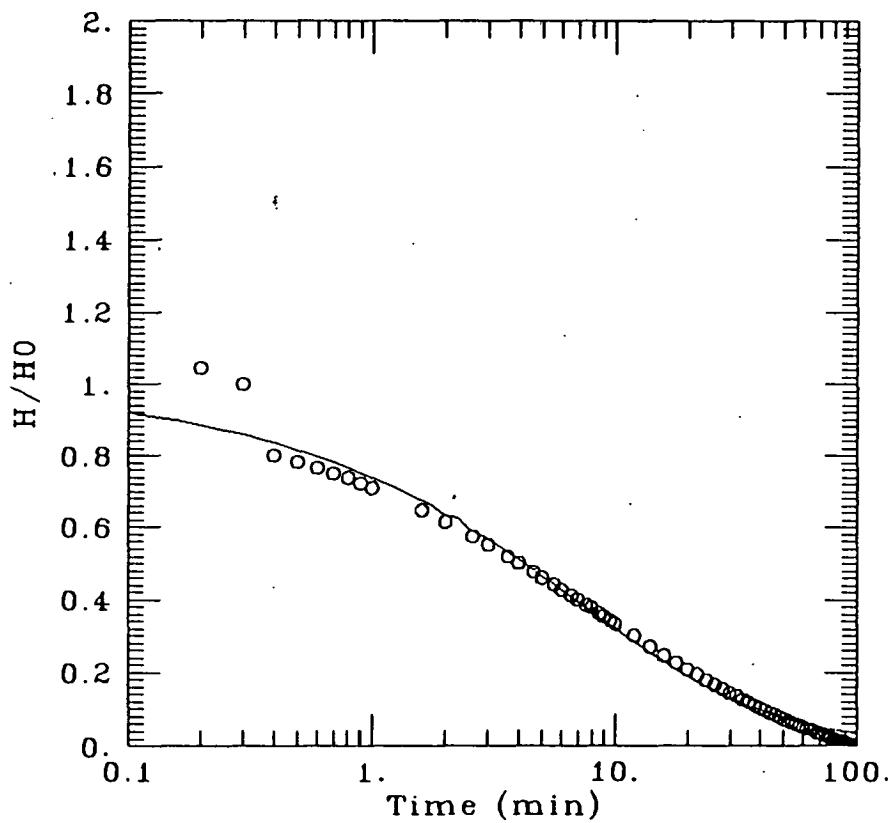
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W04D RISING HEAD TEST



DATA SET:

b53w04dr.data

01/11/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/05/93

TEST WELL:

B53W04D

OBS. WELL:

B53W04D

ESTIMATED PARAMETERS:

$T = 0.0005495 \text{ ft}^2/\text{min}$

$S = 0.006119$

TEST DATA:

$H_0 = 1.8 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

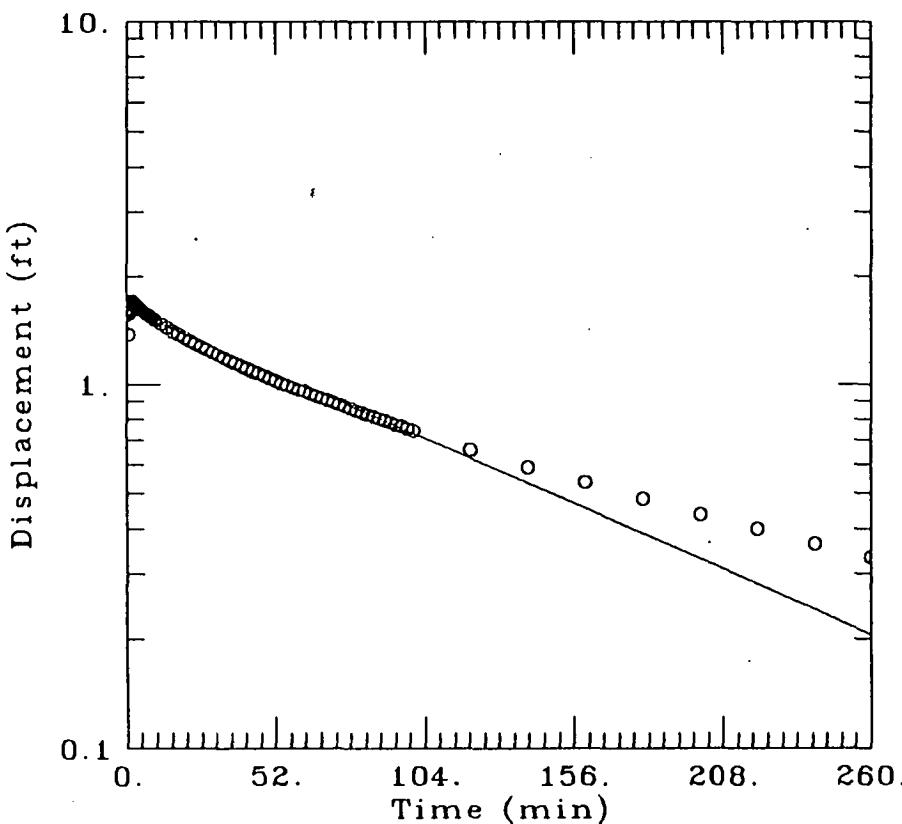
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W04S FALLING HEAD TEST



DATA SET:

b53w04sf.dat

01/11/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/05/93

TEST WELL:

B53W04S

OBS. WELL:

B53W04S

ESTIMATED PARAMETERS:

$K = 1.4248E-05 \text{ ft/min}$

$y_0 = 1.621 \text{ ft}$

TEST DATA:

$H_0 = 1.7 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 31.43 \text{ ft}$

$H = 31.43 \text{ ft}$

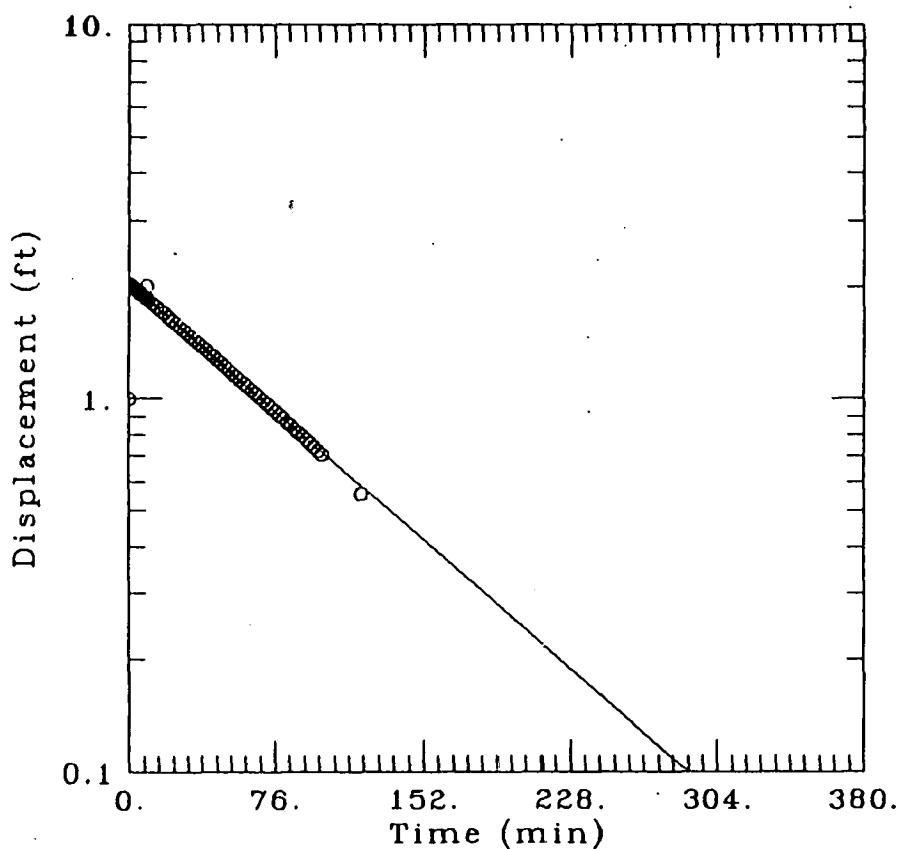
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W04S RISING HEAD TEST



DATA SET:

b53w04sr.dat

01/13/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/05/83

TEST WELL:

B53W04S

OBS. WELL:

B53W04S

ESTIMATED PARAMETERS:

$K = 1.8657E-05 \text{ ft/min}$

$y_0 = 2.045 \text{ ft}$

TEST DATA:

$h_0 = 1. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 31.43 \text{ ft}$

$H = 31.43 \text{ ft}$

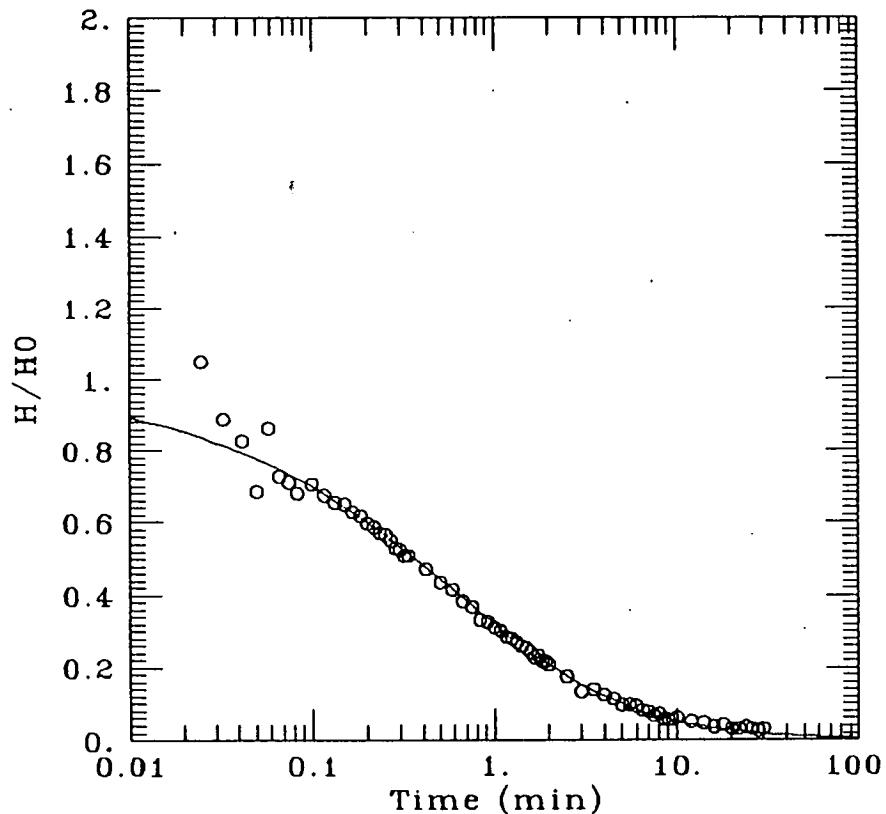
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W06D FALLING HEAD TEST



DATA SET:

a:b53w06df.dat

01/18/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

11/30/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06D

ESTIMATED PARAMETERS:

$T = 0.003195 \text{ ft}^2/\text{min}$

$S = 0.02128$

TEST DATA:

$H_0 = 0.9 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

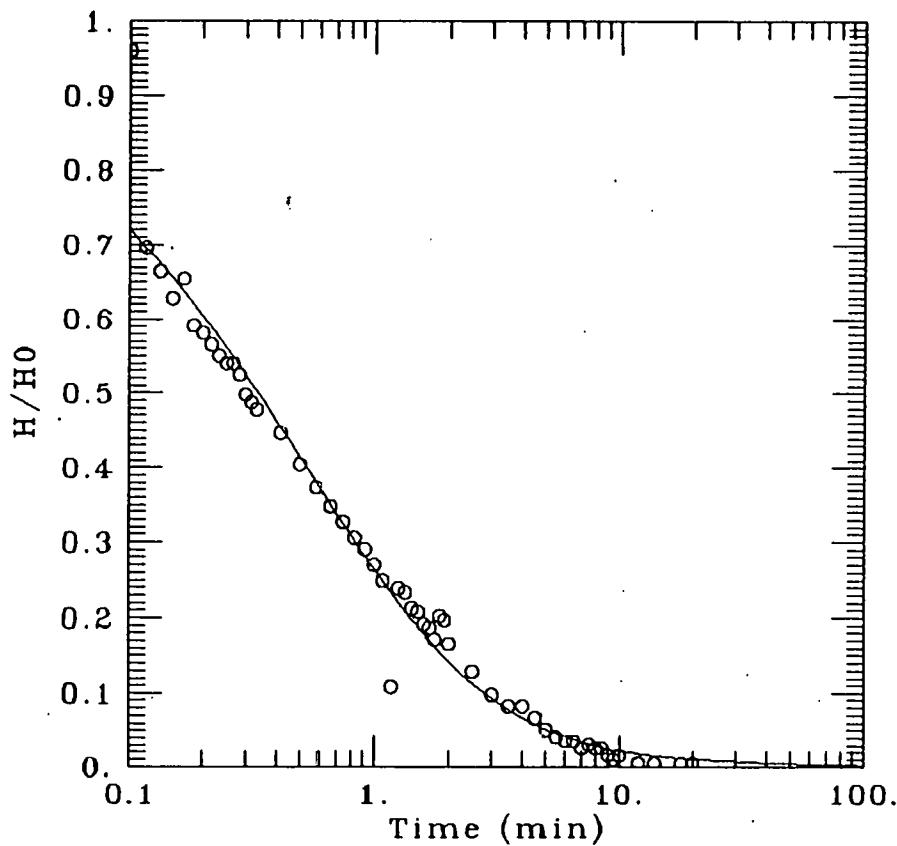
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W06D RISING HEAD TEST



DATA SET:

b53w06dr.dat

01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

11/30/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06D

ESTIMATED PARAMETERS:

$T = 0.008255 \text{ ft}^2/\text{min}$

$S = 0.004035$

TEST DATA:

$H_0 = 0.9 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

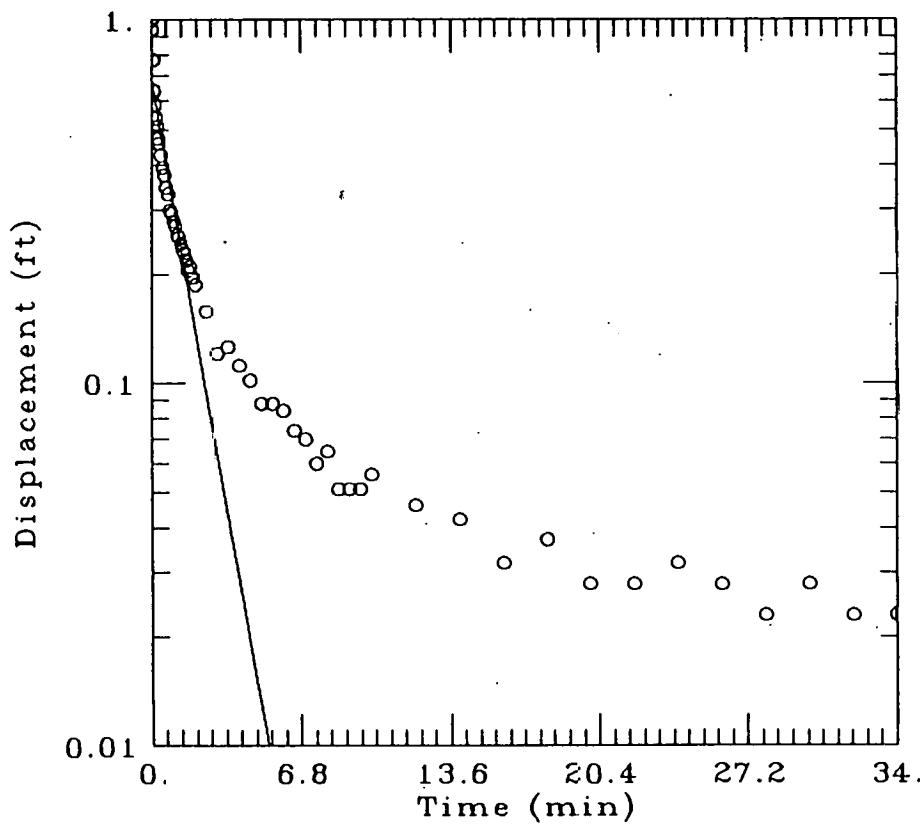
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W06S FALLING HEAD TEST



DATA SET:

a:b53w06sf.dat

01/07/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/30/93

TEST WELL:

B53W06S

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$K = 0.001304 \text{ ft/min}$

$y_0 = 0.6856 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 18.71 \text{ ft}$

$H = 18.71 \text{ ft}$

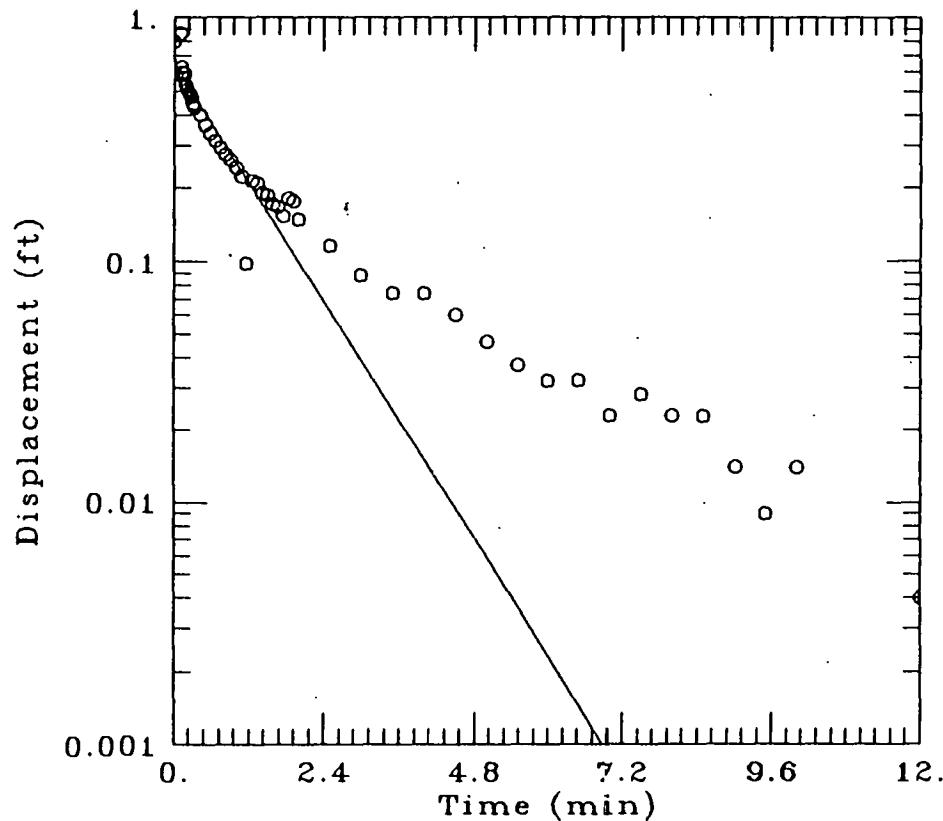
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W06S RISING HEAD TEST



DATA SET:

b53w06sr.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/30/93

TEST WELL:

B53W06S

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$K = 0.001539 \text{ ft/min}$

$y_0 = 0.6526 \text{ ft}$

TEST DATA:

$H_0 = 0.8 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 18.71 \text{ ft}$

$H = 18.71 \text{ ft}$

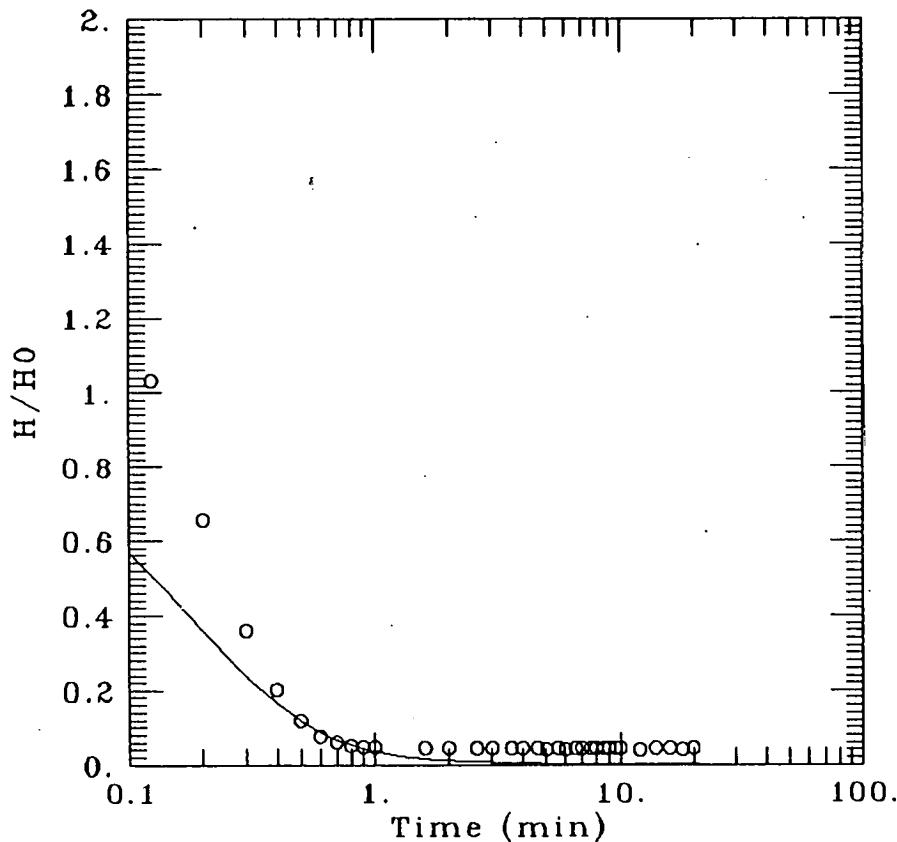
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W08D FALLING HEAD TEST



DATA SET:

b53w08df.dat

01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/01/93

TEST WELL:

B53W08D

OBS. WELL:

B53W08D

ESTIMATED PARAMETERS:

$T = 0.08722 \text{ ft}^2/\text{min}$

$S = 5.E-06$

TEST DATA:

$H_0 = 1. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

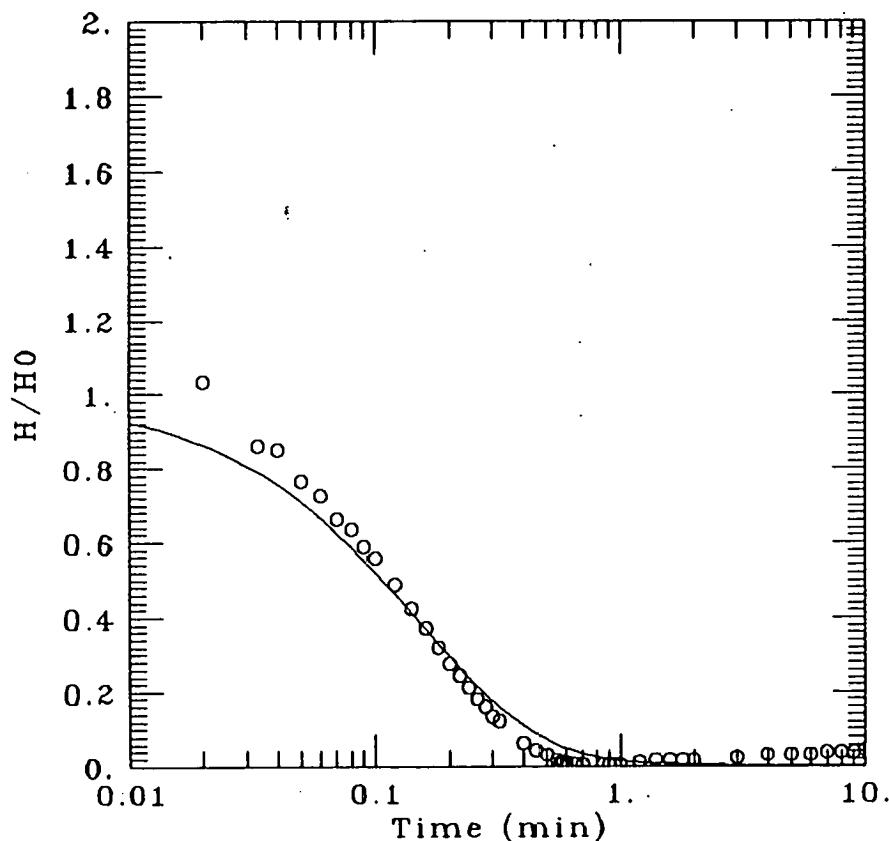
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W08D RISING HEAD TEST



DATA SET:

A:B53W08DR.DAT

01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/01/93

TEST WELL:

B53W08D

OBS. WELL:

B53W08D

ESTIMATED PARAMETERS:

$T = 0.1722 \text{ ft}^2/\text{min}$

$S = 1.E-08$

TEST DATA:

$H_0 = 0.5 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

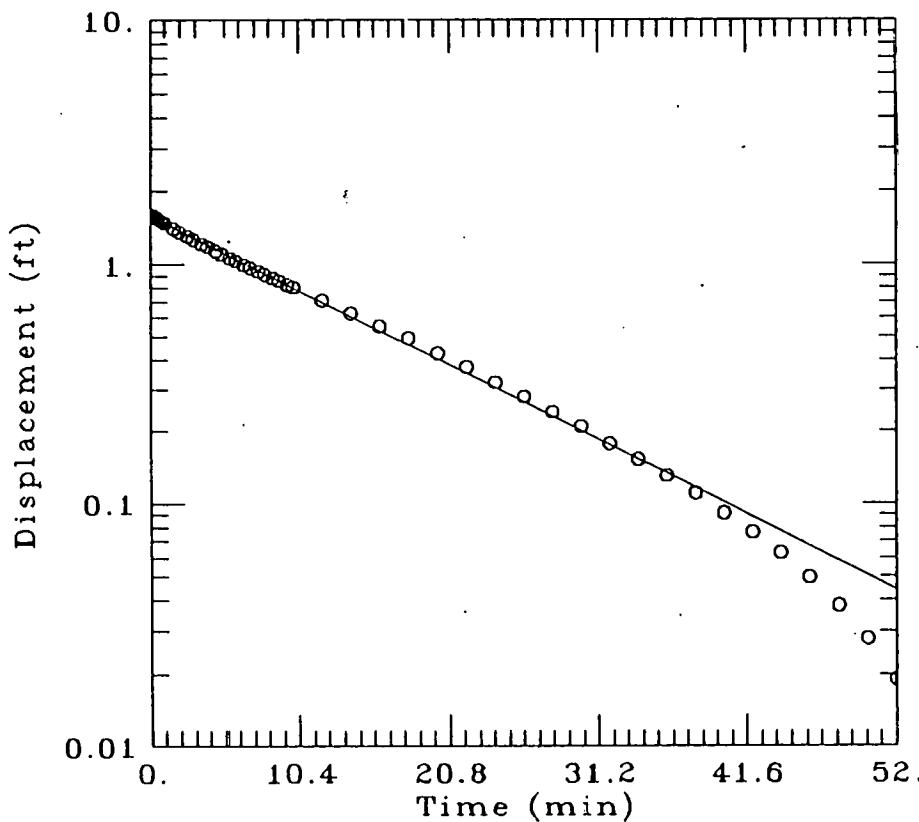
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W08S FALLING HEAD TEST



DATA SET:

b53w08sf.dat
01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/01/93

TEST WELL:

B53W08S

OBS. WELL:

B53W08S

ESTIMATED PARAMETERS:

$K = 0.0001181 \text{ ft/min}$
 $y_0 = 1.585 \text{ ft}$

TEST DATA:

$H_0 = 1.6 \text{ ft}$
 $r_C = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$
 $L = 5. \text{ ft}$
 $b = 24.45 \text{ ft}$
 $H = 24.45 \text{ ft}$

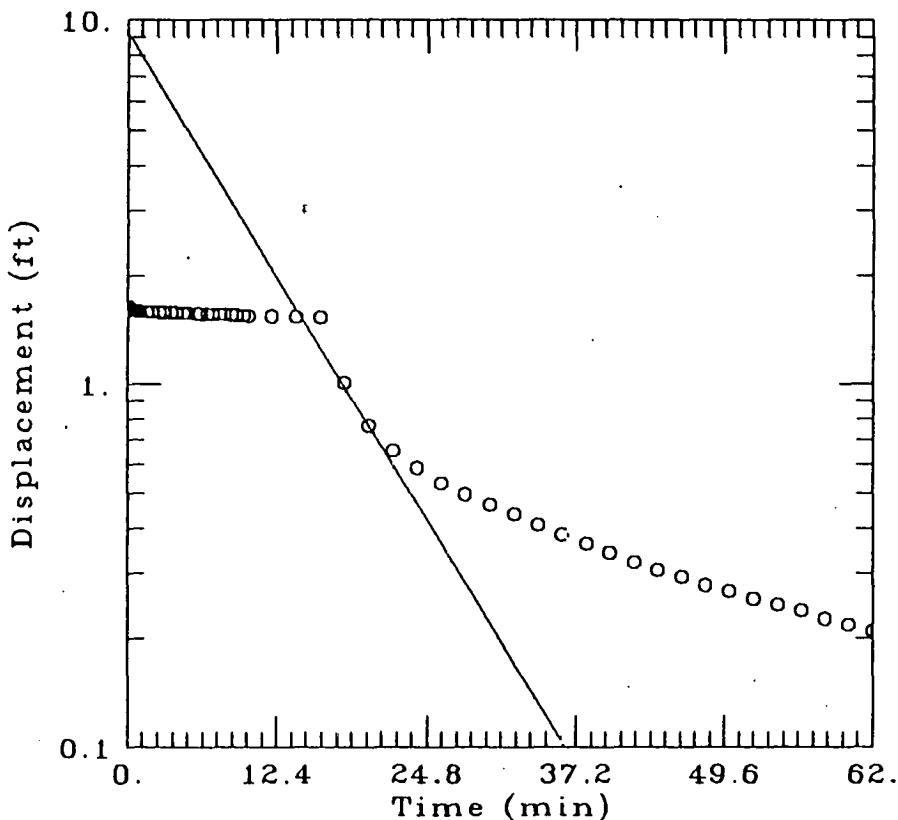
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W08S RISING HEAD TEST



DATA SET:

b53w08sr.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/01/93

TEST WELL:

B53W08S

OBS. WELL:

B53W08S

ESTIMATED PARAMETERS:

$K = 0.0002137 \text{ ft/min}$

$y_0 = 9.234 \text{ ft}$

TEST DATA:

$H_0 = 1.6 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 24.45 \text{ ft}$

$H = 24.45 \text{ ft}$

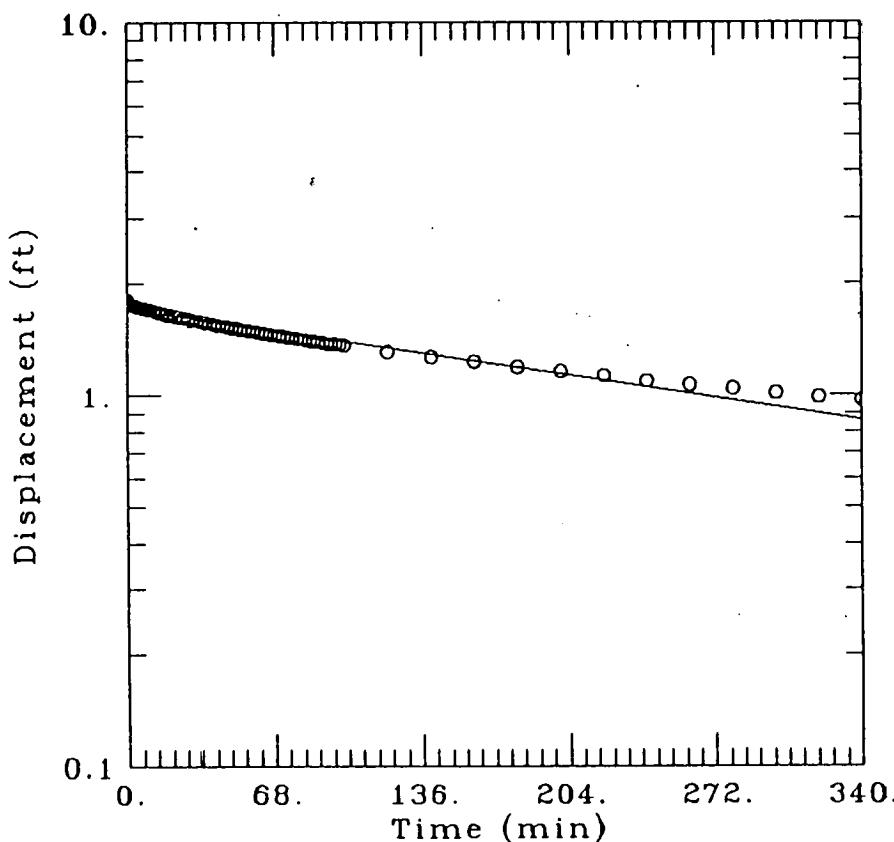
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W09D FALLING HEAD TEST



DATA SET:

b53w09df.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/29/93

TEST WELL:

B53W09D

OBS. WELL:

B53W09D

ESTIMATED PARAMETERS:

$K = 1.5937E-06 \text{ ft/min}$

$y_0 = 1.713 \text{ ft}$

TEST DATA:

$H_0 = 1.8 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 10. \text{ ft}$

$b = 10. \text{ ft}$

$H = 10. \text{ ft}$

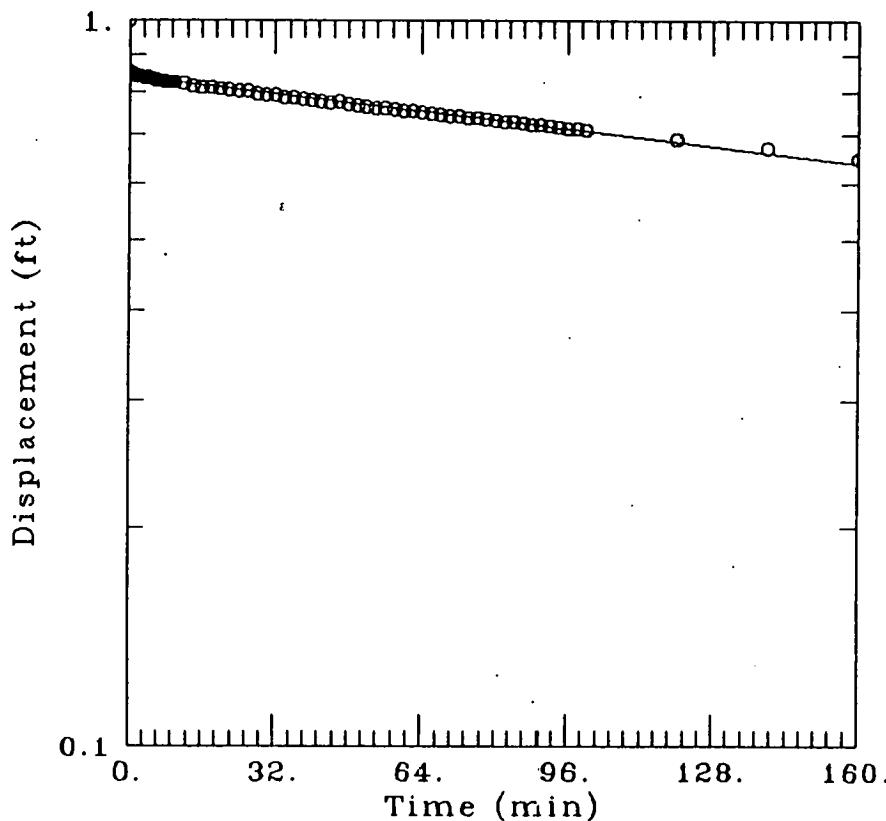
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W09D RISING HEAD TEST



DATA SET:

a:b53w09dr.dat

01/07/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/29/93

TEST WELL:

B53W09D

OBS. WELL:

B53W09D

ESTIMATED PARAMETERS:

$K = 1.3462E-06 \text{ ft/min}$

$y_0 = 0.8388 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 10. \text{ ft}$

$b = 10. \text{ ft}$

$H = 10. \text{ ft}$

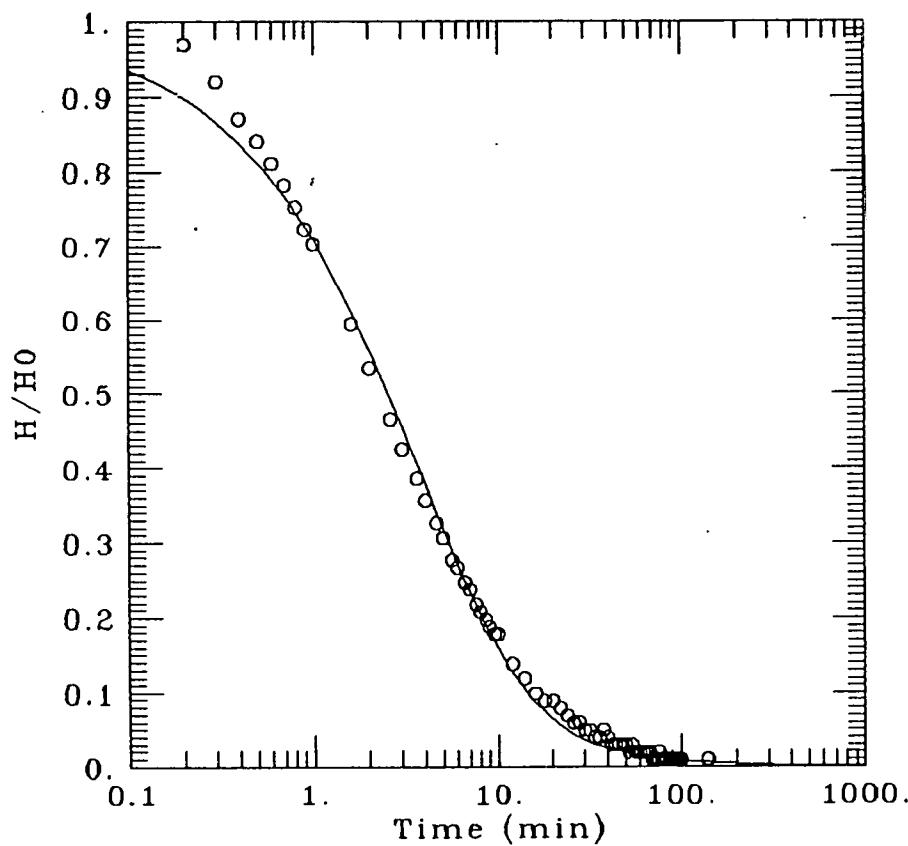
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W10D FALLING HEAD TEST



DATA SET:

A:B53W10DF.DAT
01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/12/93

TEST WELL:

B53W10D

OBS. WELL:

B53W10D

ESTIMATED PARAMETERS:

$T = 0.002241 \text{ ft}^2/\text{min}$
 $S = 0.0003752$

TEST DATA:

$H_0 = 1.6 \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$

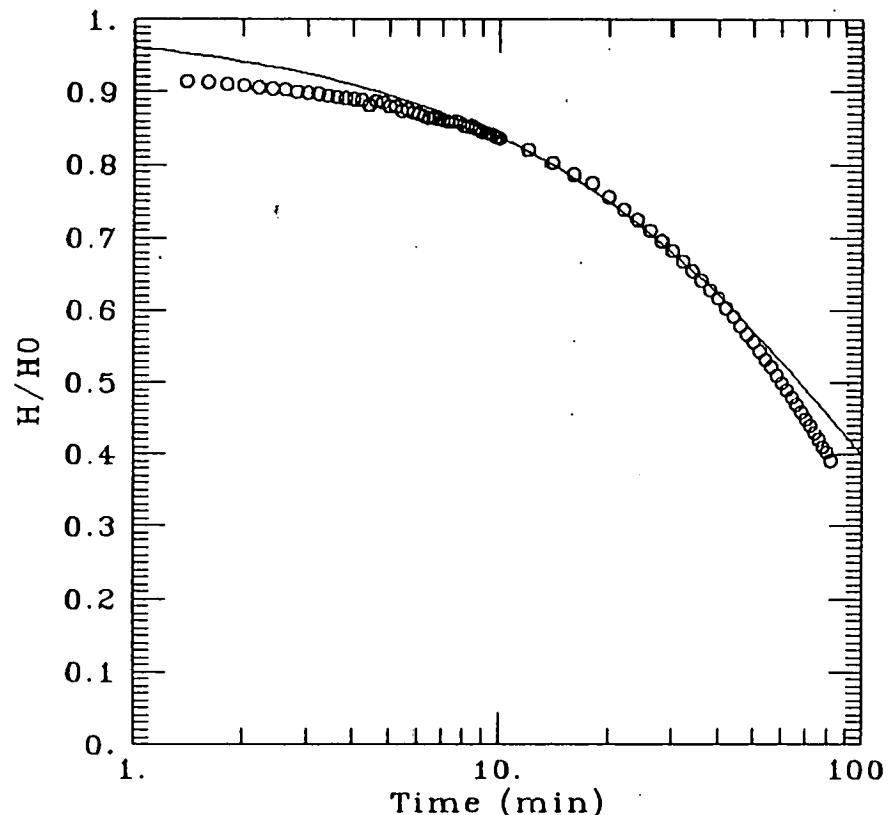
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W10D RISING HEAD TEST



DATA SET:

a:b53w10dr.dat

01/19/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/12/93

TEST WELL:

B53W10D

OBS. WELL:

B53W10D

ESTIMATED PARAMETERS:

$T = 7.502E-05 \text{ ft}^2/\text{min}$

$S = 0.0006202$

TEST DATA:

$H_0 = 2.2 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

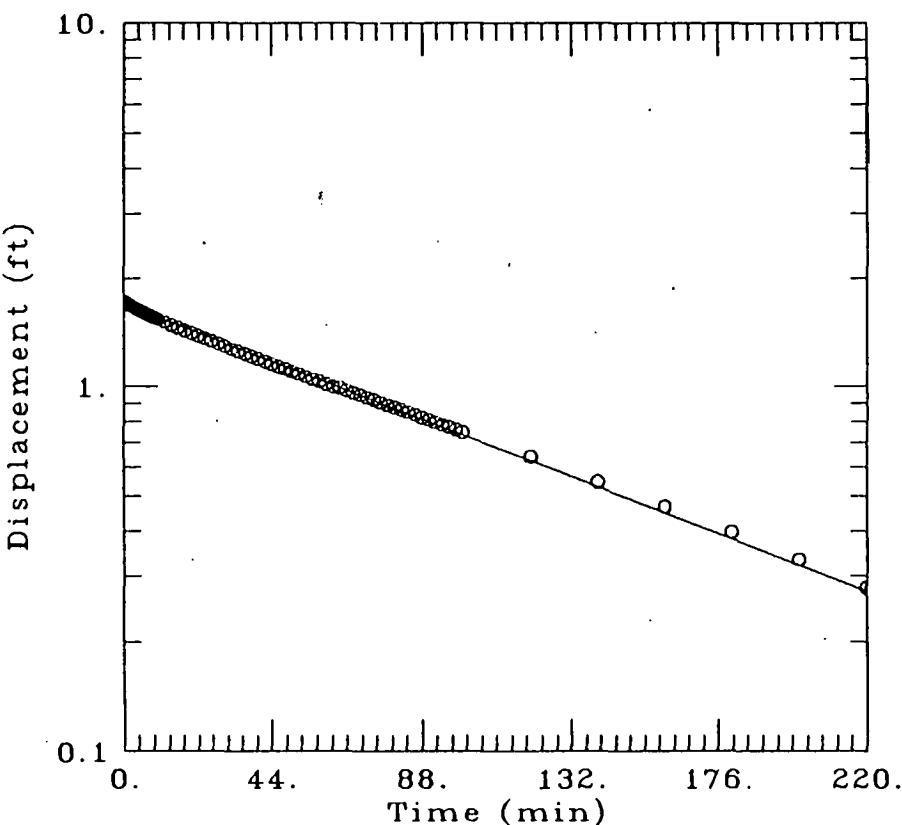
Bechtel National Inc.

CLIENT: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W10S FALLING HEAD TEST



DATA SET:
b53w10sf.dat
01/12/94

AQUIFER TYPE:
Unconfined
SOLUTION METHOD:
Bouwer-Rice
TEST DATE:
12/04/93
TEST WELL:
B53W10S
OBS. WELL:
B53W10S

ESTIMATED PARAMETERS:
 $K = 1.5375E-05 \text{ ft/min}$
 $y_0 = 1.688 \text{ ft}$

TEST DATA:
 $H_0 = 1.7 \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$
 $L = 5. \text{ ft}$
 $b = 39.37 \text{ ft}$
 $H = 39.37 \text{ ft}$

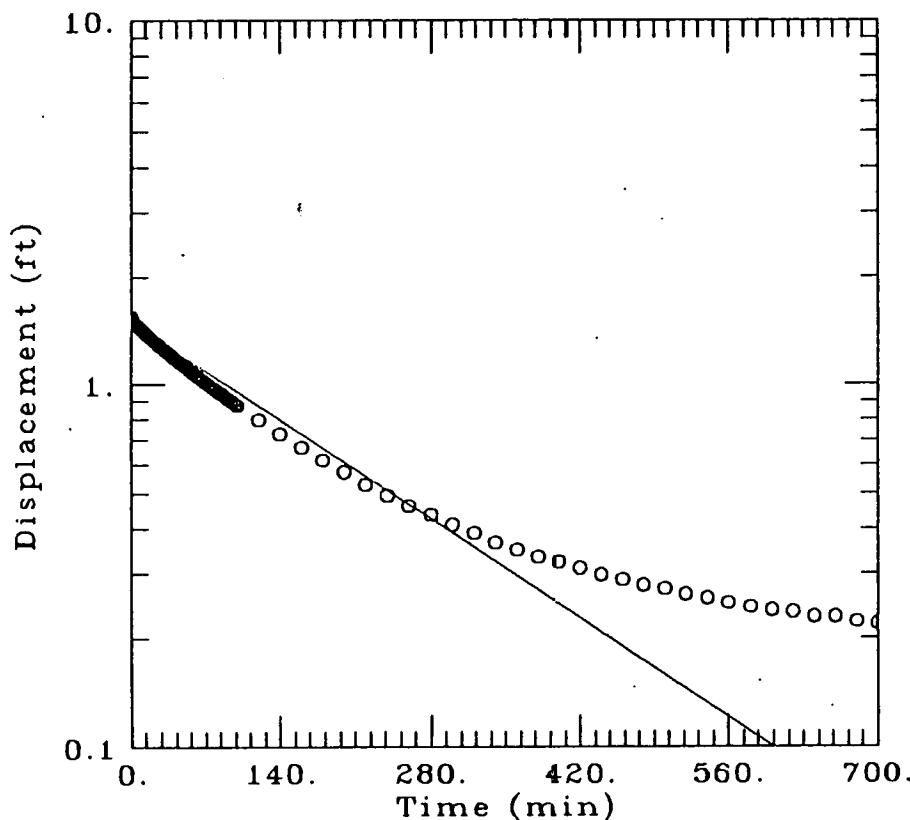
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W10S RISING HEAD TEST



DATA SET:

b53w10sr.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/05/93

TEST WELL:

B53W10S

OBS. WELL:

B53W10S

ESTIMATED PARAMETERS:

$K = 8.3218E-06 \text{ ft/min}$

$y_0 = 1.5 \text{ ft}$

TEST DATA:

$H_0 = 1.5 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 39.37 \text{ ft}$

$H = 39.37 \text{ ft}$

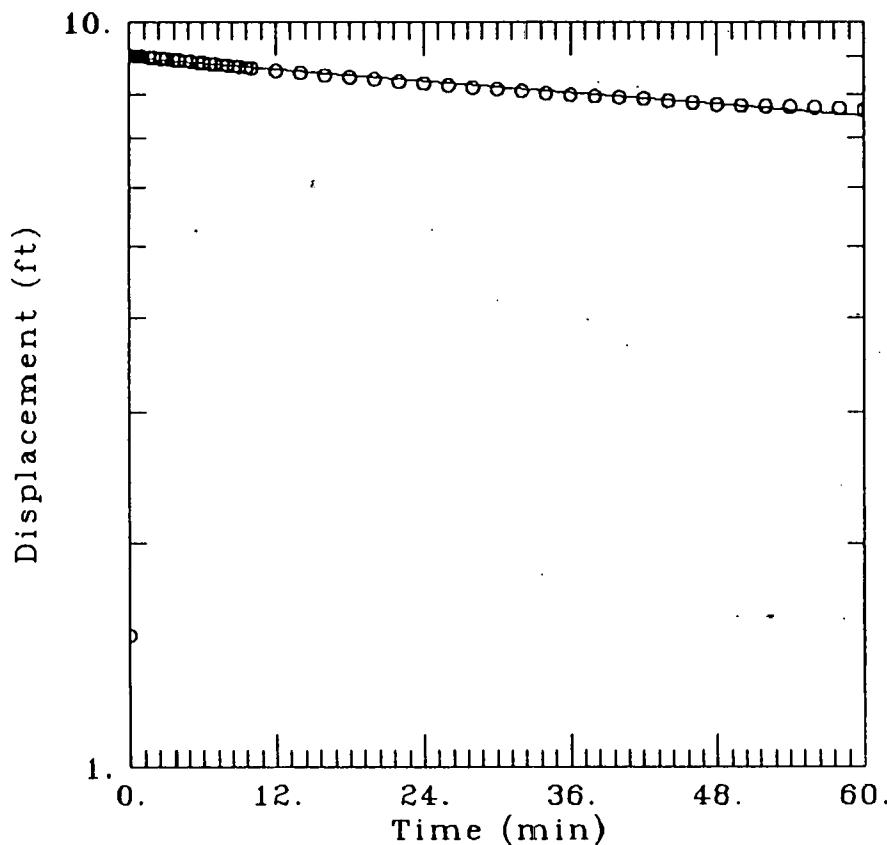
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W11D FALLING HEAD TEST



DATA SET:

b53w11df.dat
01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/03/93

TEST WELL:

B53W11D

OBS. WELL:

B53W11O

ESTIMATED PARAMETERS:

$K = 2.3709E-05 \text{ ft/min}$
 $y_0 = 8.983 \text{ ft}$

TEST DATA:

$H_0 = 1.5 \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$
 $L = 10. \text{ ft}$
 $b = 10. \text{ ft}$
 $H = 10. \text{ ft}$

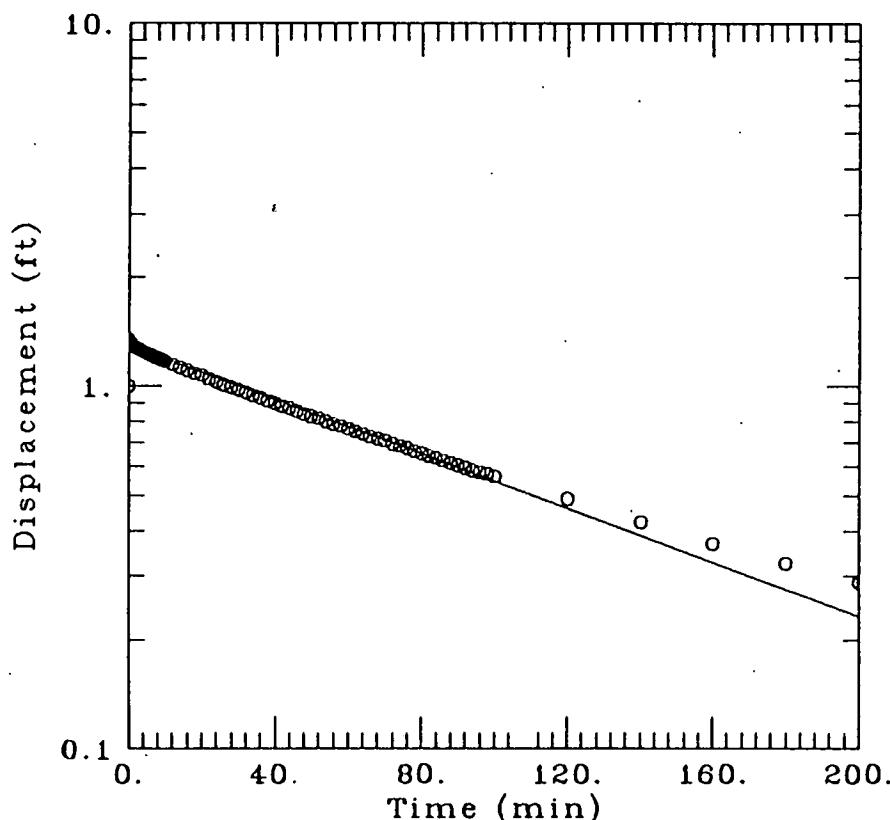
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W11D RISING HEAD TEST



DATA SET:

a:b53w11dr.dat

01/13/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12

TEST WELL:

B53W11D

OBS. WELL:

B53W11D

ESTIMATED PARAMETERS:

$K = 6.7591E-06 \text{ ft/min}$

$y_0 = 1.292 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$

$r_c = .0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 10. \text{ ft}$

$b = 10. \text{ ft}$

$H = 10. \text{ ft}$

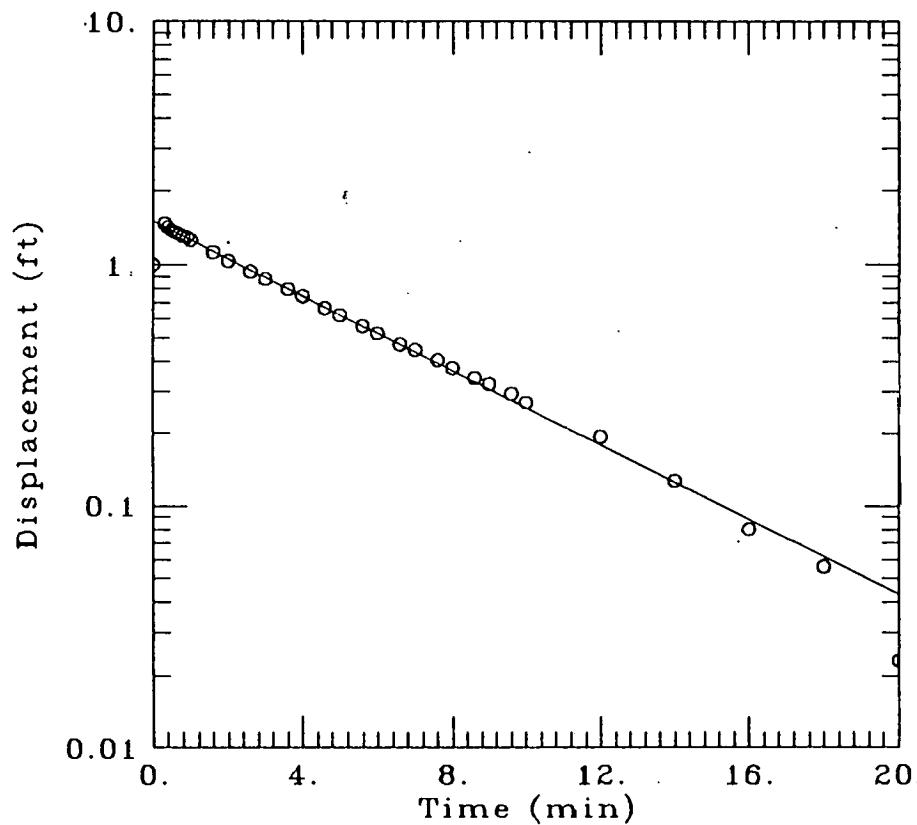
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W11S FALLING HEAD TEST



DATA SET:

b53w11sf.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/29/93

TEST WELL:

B53W11S

OBS. WELL:

B53W11S

ESTIMATED PARAMETERS:

$K = 0.000284 \text{ ft/min}$

$y_0 = 1.514 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 16.5 \text{ ft}$

$H = 16.5 \text{ ft}$

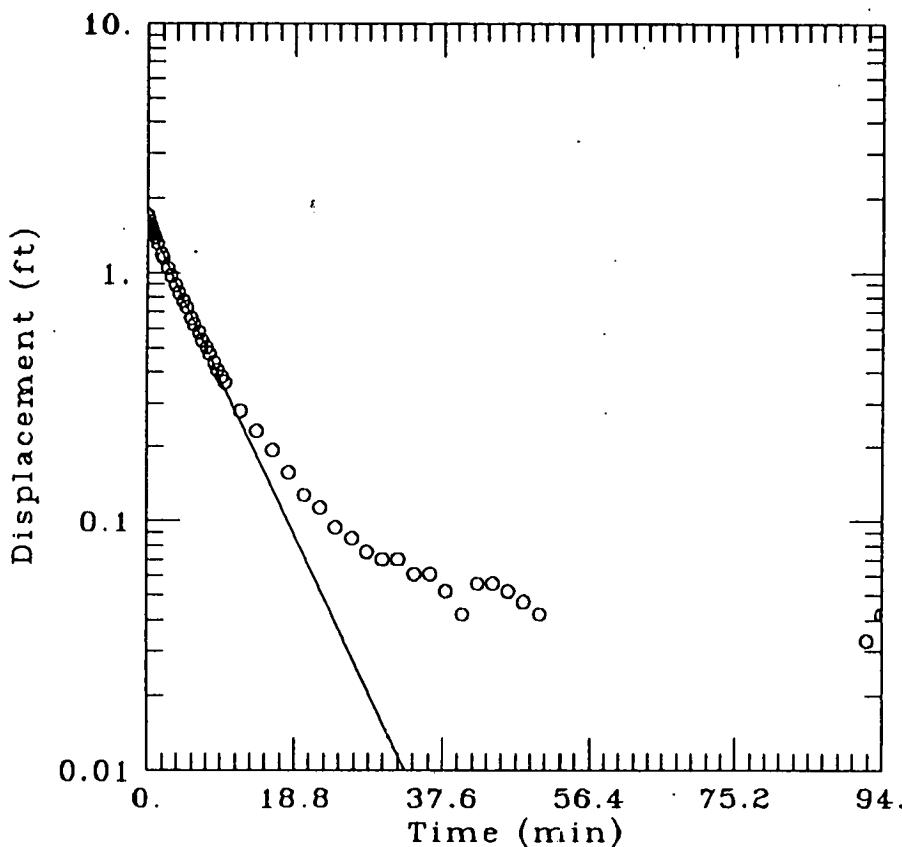
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W11S RISING HEAD TEST



DATA SET:

b53w11sr.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/28/83

TEST WELL:

B53W11S

OBS. WELL:

B53W11S

ESTIMATED PARAMETERS:

$K = 0.0002471 \text{ ft/min}$

$y_0 = 1.613 \text{ ft}$

TEST DATA:

$H_0 = 1.7 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 5. \text{ ft}$

$b = 16.5 \text{ ft}$

$H = 16.5 \text{ ft}$

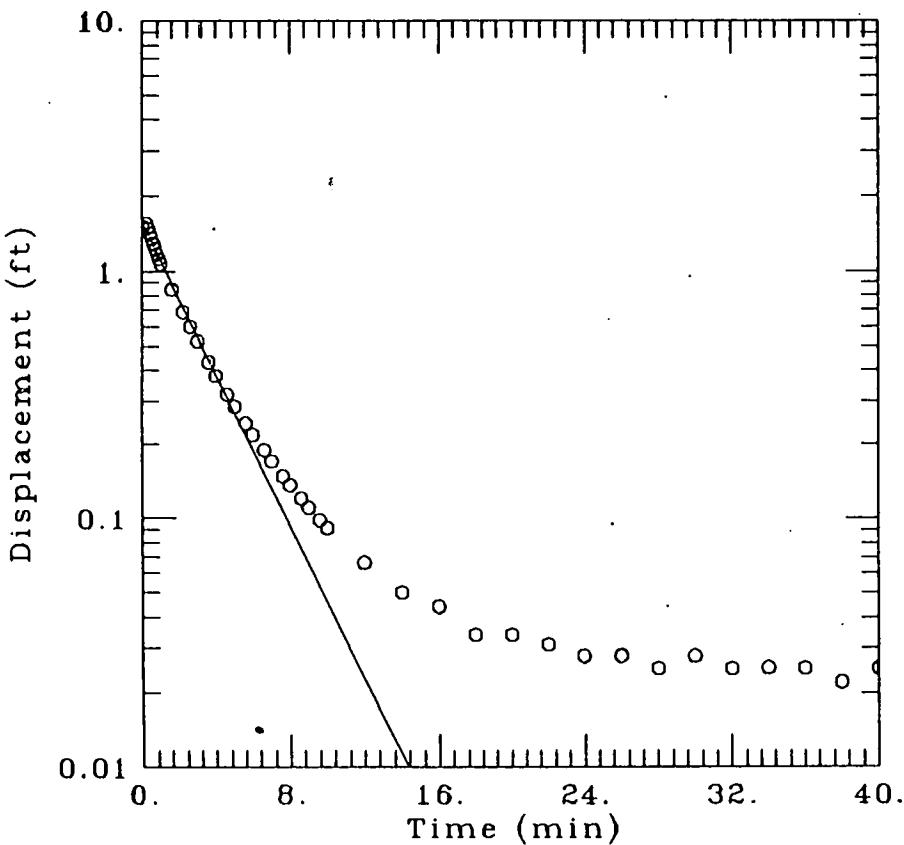
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W12S FALLING HEAD TEST



DATA SET:

a:b53w12sf.dat
01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/12/93

TEST WELL:

B53W12S

OBS. WELL:

B53W12S

ESTIMATED PARAMETERS:

K = 0.0006051 ft/min
y0 = 1.589 ft

TEST DATA:

H0 = 1.5 ft
rc = 0.08 ft
rw = 0.38 ft
L = 5. ft
b = 23.7 ft
H = 23.7 ft

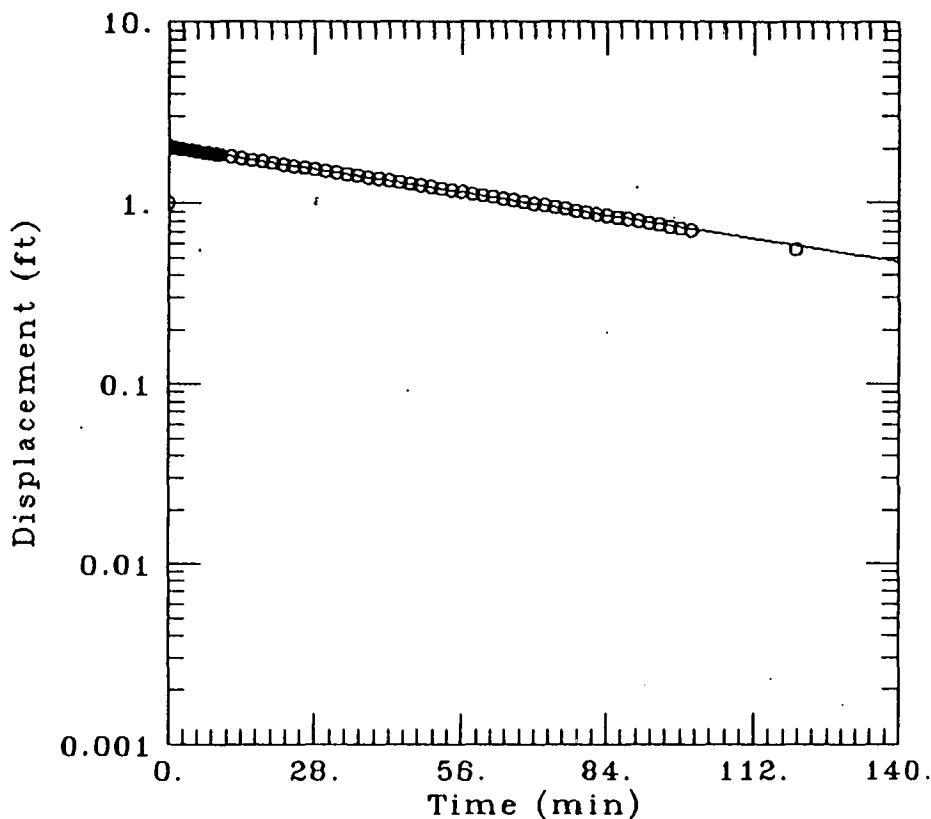
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

B53W12S RISING HEAD TEST



DATA SET:

a:b53w12sr.dat
01/18/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12

TEST WELL:

B53W11D

OBS. WELL:

B53W11D

ESTIMATED PARAMETERS:

$K = 1.3905E-05 \text{ ft/min}$
 $y_0 = 2.047 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.75 \text{ ft}$
 $L = 5. \text{ ft}$
 $b = 22.2 \text{ ft}$
 $H = 22.2 \text{ ft}$

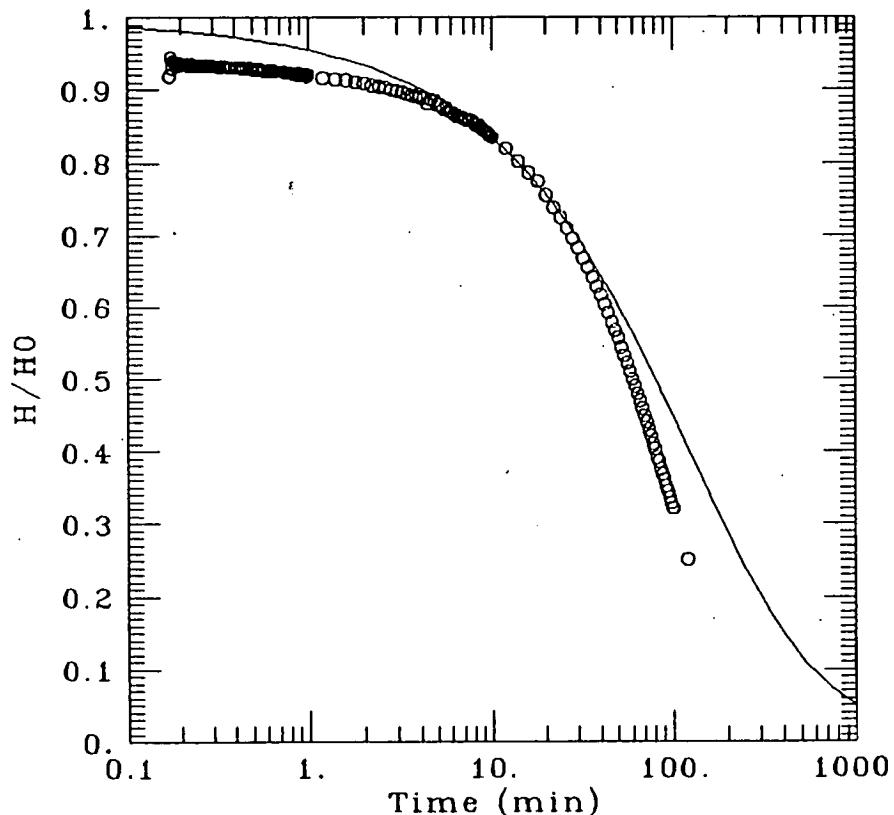
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-15D FALLING HEAD TEST



DATA SET:

m10-15df.dat

01/20/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12

TEST WELL:

B53W11D

OBS. WELL:

B53W11D

ESTIMATED PARAMETERS:

$T = 4.4996 \times 10^{-5} \text{ ft}^2/\text{min}$

$S = 0.0005102$

TEST DATA:

$H_0 = 2.2 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.75 \text{ ft}$

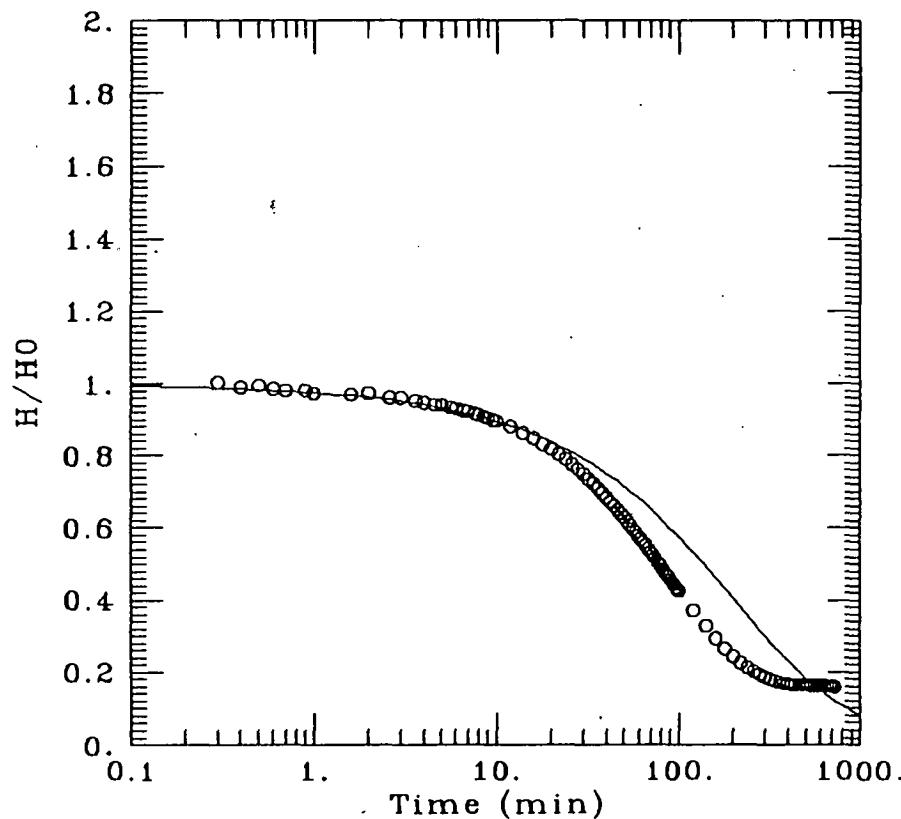
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-15D RISING HEAD TEST



DATA SET:

a:m10-15dr.dat
01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/02/93

TEST WELL:

M10-15D

OBS. WELL:

M10-15D

ESTIMATED PARAMETERS:

$T = 3.6166E-05 \text{ ft}^2/\text{min}$
 $S = 0.0006696$

TEST DATA:

$H_0 = 1.8 \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$

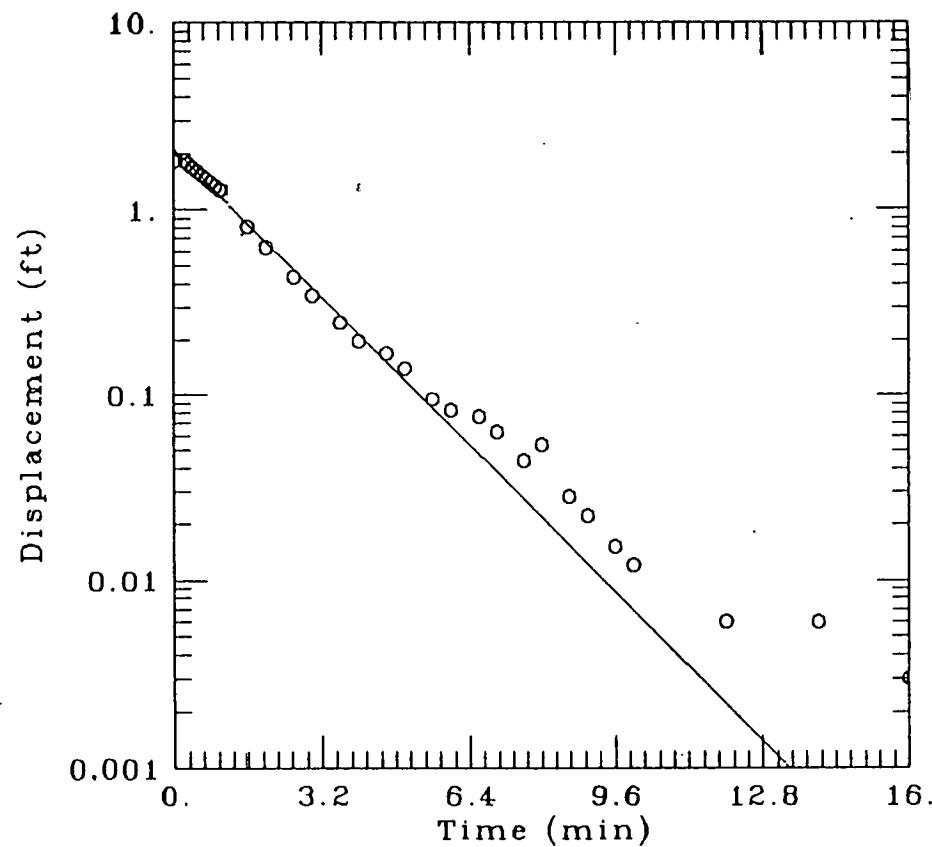
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-15S FALLING HEAD TEST



DATA SET:

a:m10-15sf.dat
01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/02/93

TEST WELL:

M10-15S

OBS. WELL:

M10-15S

ESTIMATED PARAMETERS:

$K = 0.0005432 \text{ ft/min}$
 $y_0 = 2.12 \text{ ft}$

TEST DATA:

$H_0 = 1.8 \text{ ft}$
 $r_c = 0.08 \text{ ft}$
 $r_w = 0.38 \text{ ft}$
 $L = 10. \text{ ft}$
 $b = 23.41 \text{ ft}$
 $H = 23.41 \text{ ft}$

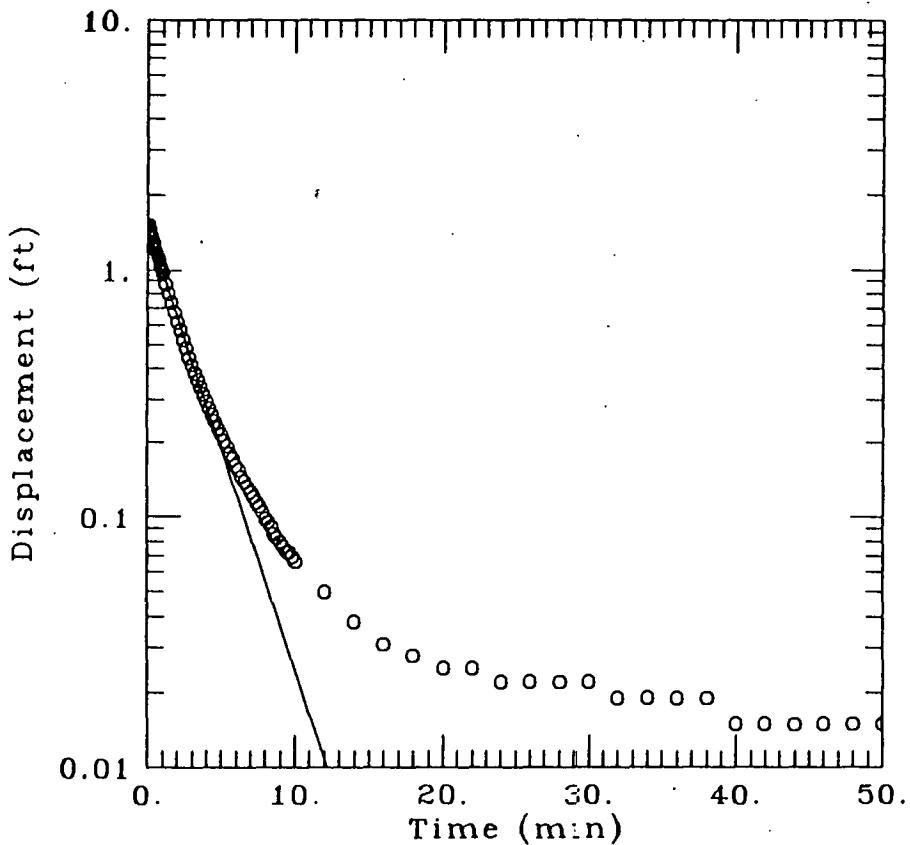
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-15S RISING HEAD TEST



DATA SET:

a:m10-15sr.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/02/93

TEST WELL:

M10-15S

OBS. WELL:

M10-15S

ESTIMATED PARAMETERS:

K = 0.000389 ft/min

y0 = 1.496 ft

TEST DATA:

H0 = 1.5 ft

rc = 0.08 ft

rw = 0.38 ft

L = 10. ft

b = 23.41 ft

H = 23.41 ft

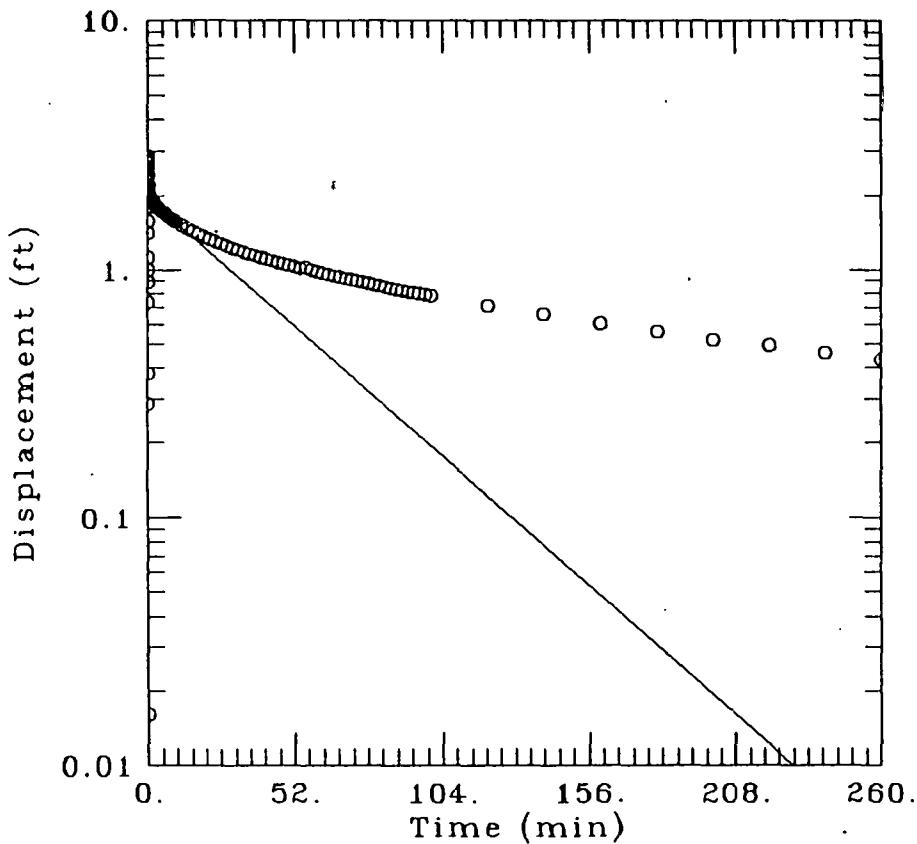
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-25D FALLING HEAD TEST



DATA SET:

a:m10-25df.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/02/93

TEST WELL:

M10-15S

OBS. WELL:

M10-15S

ESTIMATED PARAMETERS:

K = 3.3808E-05 ft/min

y0 = 1.973 ft

TEST DATA:

H0 = 1. ft

rc = 0.08 ft

rw = 0.75 ft

L = 5. ft

b = 37.78 ft

H = 37.78 ft

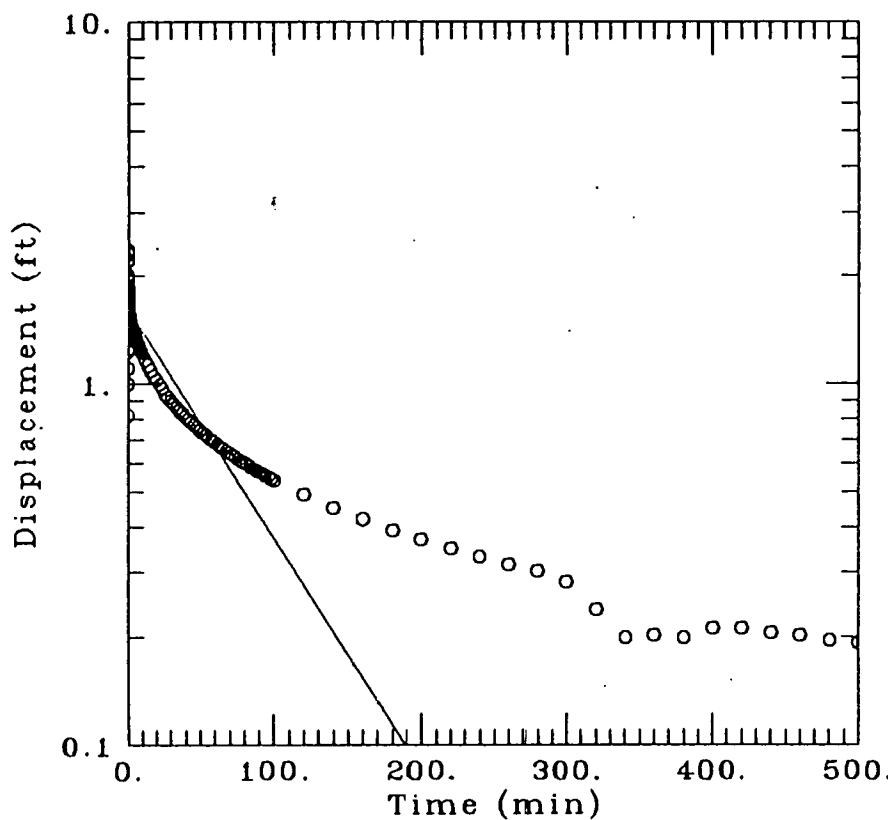
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M10-25D RISING HEAD TEST



DATA SET:

a:m10-25dr.dat

01/07/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

11/29/93

TEST WELL:

B53W09D

OBS. WELL:

B53W09D

ESTIMATED PARAMETERS:

$K = 2.1624E-05 \text{ ft/min}$

$y_0 = 1.626 \text{ ft}$

TEST DATA:

$H_0 = 1. \text{ ft}$

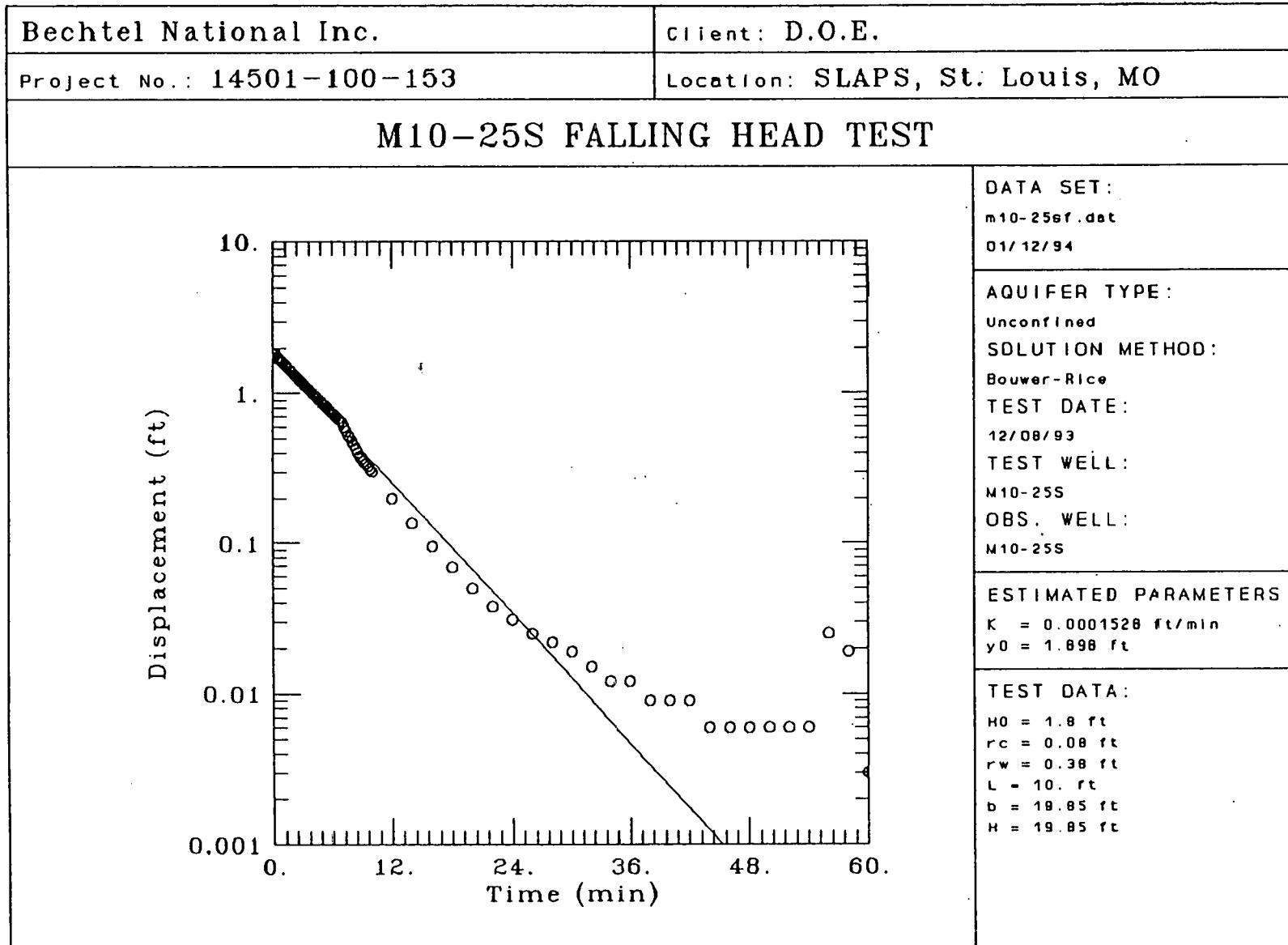
$r_c = 0.08 \text{ ft}$

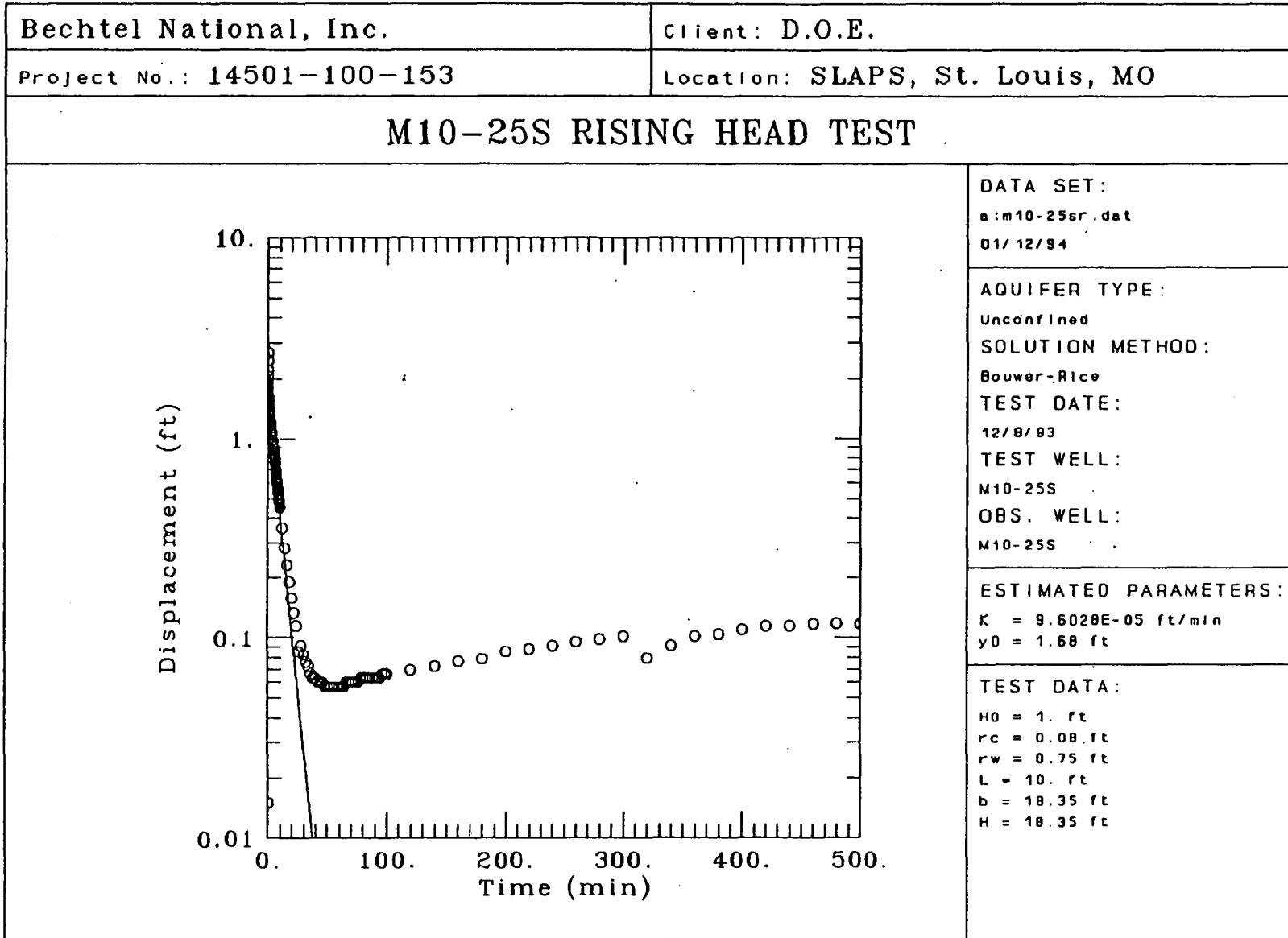
$r_w = 0.75 \text{ ft}$

$L = 5. \text{ ft}$

$b = 37.78 \text{ ft}$

$H = 37.78 \text{ ft}$





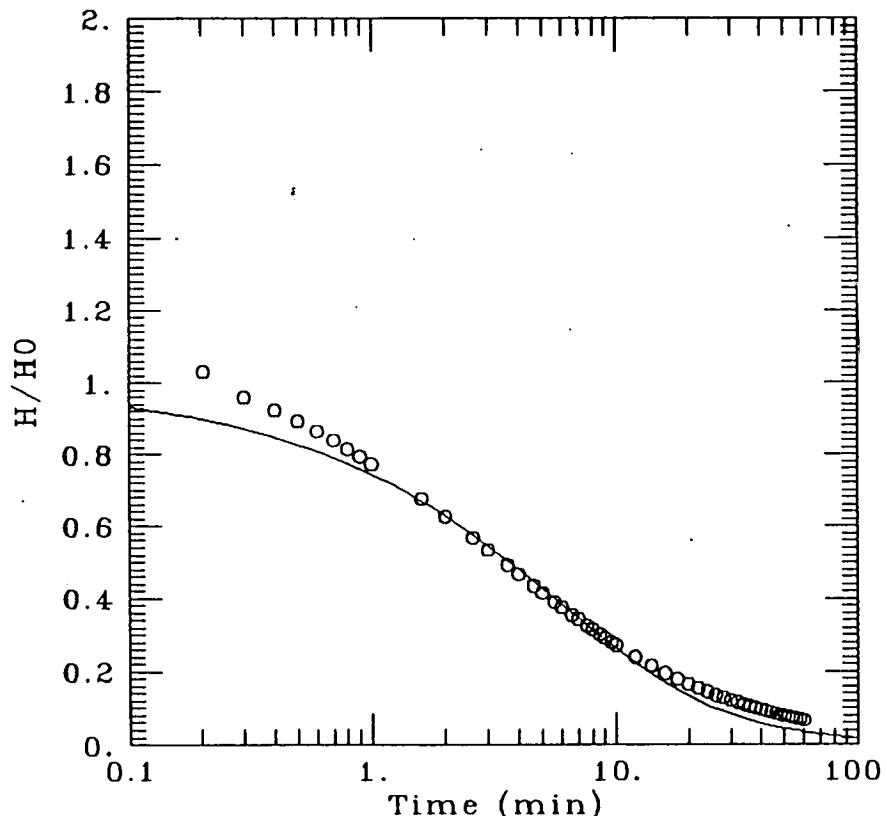
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M13.5-8.5D FALLING HEAD TEST



DATA SET:

a:m13-85df.dat

01/13/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/02/93

TEST WELL:

M13.5-8.5D

OBS. WELL:

M13.5-8.5D

ESTIMATED PARAMETERS:

$T = 0.001017 \text{ ft}^2/\text{min}$

$S = 0.00182$

TEST DATA:

$H_0 = 2. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

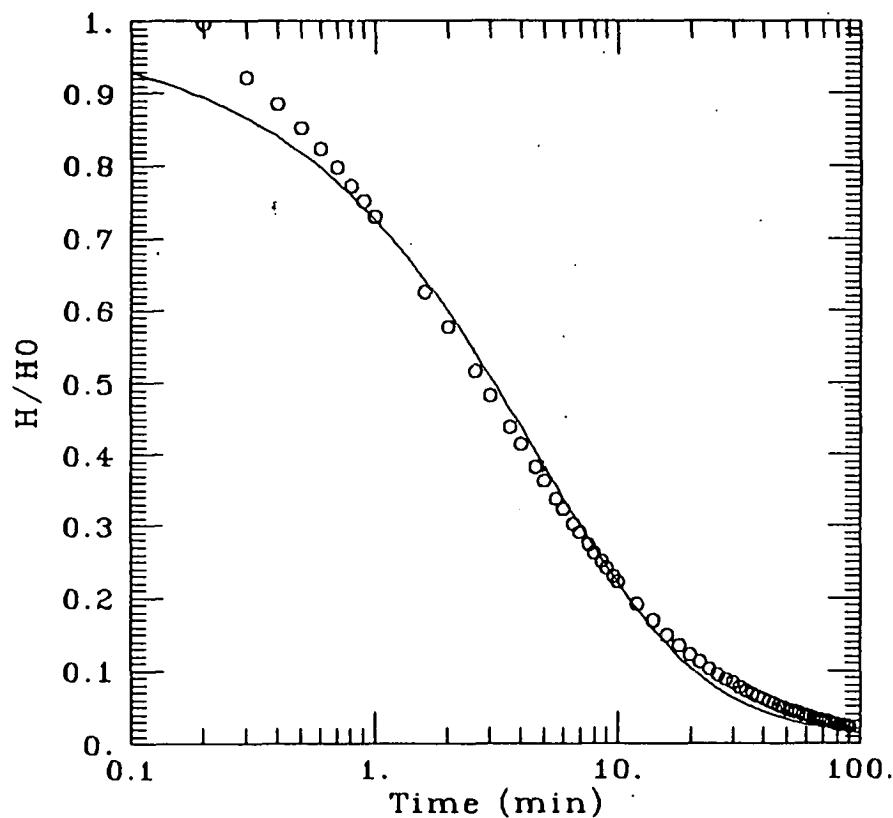
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M13.5-8.5D RISING HEAD TEST



DATA SET:

m13-85dr.dat

01/19/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper et al.

TEST DATE:

12/08/93

TEST WELL:

M13.5-8.5D

OBS. WELL:

M13.5-8.5D

ESTIMATED PARAMETERS:

$T = 0.001333 \text{ ft}^2/\text{min}$

$S = 0.001297$

TEST DATA:

$H_0 = 2. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

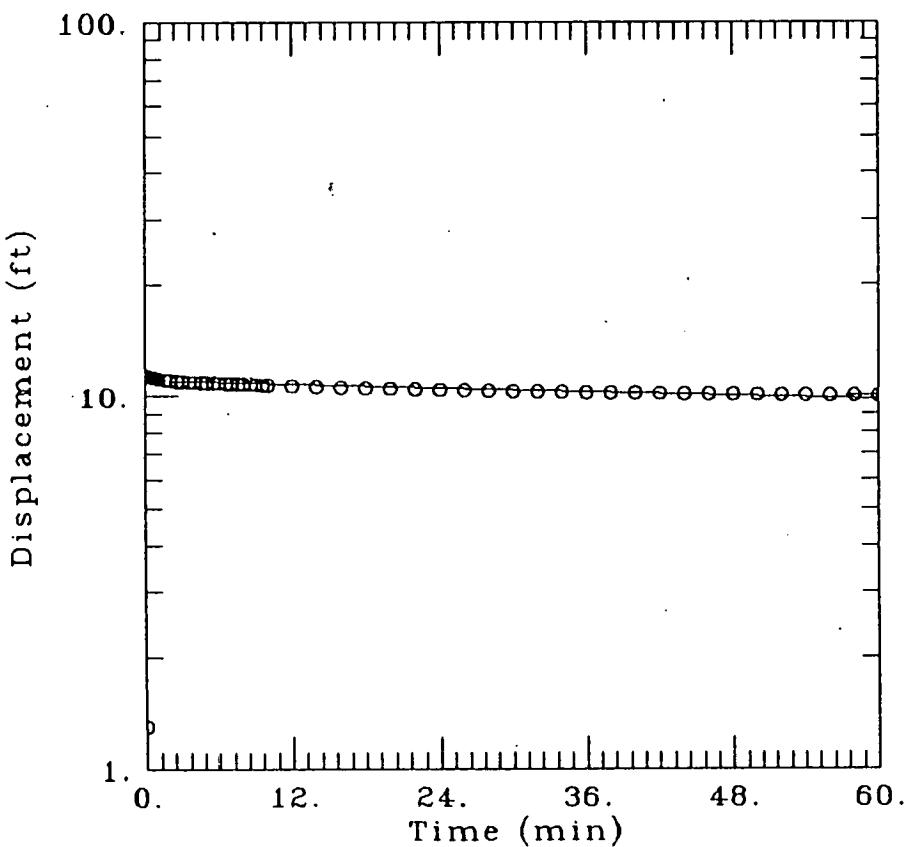
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: SLAPS, St. Louis, MO

M13.5-8.5S FALLING HEAD TEST



DATA SET:

m13-85sf.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/02/93

TEST WELL:

M13.5-8.5S

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

K = 1.8446E-06 ft/min

y0 = 11.05 ft

TEST DATA:

H0 = 1.3 ft

rc = 0.08 ft

rw = 0.38 ft

L = 10. ft

b = 20.72 ft

H = 20.72 ft

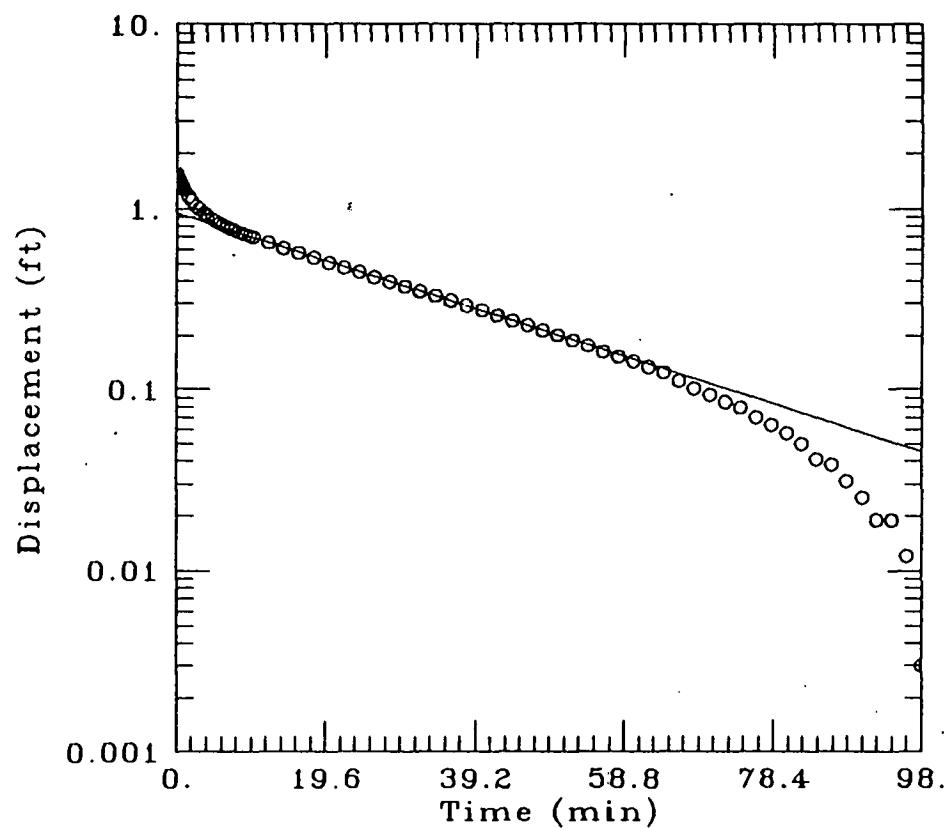
Bechtel National Inc.

Client: D.O.E.

Project No.: 14501-100-153

Location: "SLAPS, St. Louis, MO"

M13.5-8.5S RISING HEAD TEST



DATA SET:

m13-85sx.dat

01/12/94

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bouwer-Rice

TEST DATE:

12/12/93

TEST WELL:

M13.5-8.5S

DBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$K = 2.8818E-05 \text{ ft/min}$

$y_0 = 0.9523 \text{ ft}$

TEST DATA:

$H_0 = 1.5 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.38 \text{ ft}$

$L = 10. \text{ ft}$

$b = 20.72 \text{ ft}$

$H = 20.72 \text{ ft}$

ATTACHMENT E-B: Pump Test Data with Plots

1. Introduction

Five constant discharge pumping tests were conducted from December 3 through December 16, 1993, at the FUSRAP St. Louis Airport Site (SLAPS) and Ball Fields adjacent to SLAPS. The site is immediately adjacent to the St. Louis International Airport, near St. Louis, Missouri. (see Figure 1)

Each of the pumping wells was completed into a confined or semi-confined water-bearing interval. All but two of the observation wells were completed into a shallower water-bearing interval and were located 10 to 15 feet away from the pumping wells.

Tables 1 through 6 in Attachment 1 list the drawdown and recovery data for the pumping tests. Figures 1 through 7 in Appendix A show the drawdown and recovery curves. The geologic drill logs are included as Attachment 2. The well construction logs are included as Attachment 3.

All the wells are 2-inch inside diameter with stainless steel casing.

Tests 1 and 2: B53W06D pumping: B53W06S, B53W07S, B53W07D, B53W04S and B53W04D observation.

B53W06D has a total depth of 71.3 feet and is screened from 60.3 to 70.3 feet.
B53W06S has a total depth of 36.3 feet and is screened from 30.3 to 35.3 feet.
B53W04D has a total depth of 78.8 feet and is screened from 67.8 to 77.8 feet.
B53W04S has a total depth of 48.8 feet and is screened from 42.8 to 47.8 feet.
B53W07D has a total depth of 87.5 feet and is screened from 76.0 to 86.0 feet.
B53W07S has a total depth of 34.9 feet and is screened from 28.9 to 33.9 feet.

Test 3: B53W09D pumping: B53W11S observation.

B53W09D has a total depth of 72.6 feet and is screened from 61.1 to 71.1 feet.
B53W11S has a total depth of 22.4 feet and is screened from 15.9 to 20.9 feet.

Test 4: M10-25D pumping: M10-25S observation.

M10-25D has a total depth of 46.3 feet and is screened from 39.3 to 44.3 feet.
M10-25S has a total depth of 26.0 feet and is screened from 14.0 to 24.0 feet.

Test 5: M13.5-8.5D pumping: M13.5-8.5S and M13.5-8.5C observation.

M13.5-8.5D has a total depth of 71.8 feet and is screened from 64.4 to 69.4 feet.
M13.5-8.5S has a total depth of 31.3 feet and is screened from 19.3 to 29.3 feet.
M13.5-8.5C has unknown construction details but is likely screened similar to M13.5-8.5S.

1.1. Purpose

To determine the horizontal transmissivity in the water-bearing intervals of the pumping wells and to determine the vertical transmissivity of the overlying material.

1.2. Hydrogeology

The following description was taken from the "Site Suitability Study for the St. Louis Airport Site" report (Ref. 1, page 92).

Based on the hydrogeologic properties of the soils, the sediments underlying SLAPS have been subdivided into three hydrostratigraphic units. The first unit, a zone referred to as the upper ground water system, consists of stratigraphic units: Unit 1, Unit 2, and subunit 3T. The second hydrostratigraphic unit, made up of subunits 3M and 3B, is a fine-grained zone that acts as an aquitard. The third hydrostratigraphic unit, a zone referred to as the lower ground water system, is made up of Unit 4 and bedrock. Figure 2 is a generalized stratigraphic column for the site.

Well B53W06D is completed into Unit 3B and possibly Unit 4.

Wells M10-25D is completed into Unit 3B.

Well M13.5-8.5D is completed into Unit 3M.

Well B53W09D is completed into shale (Unit 5).

The geologic drill logs are included as Attachment 2. The well construction logs are included in Attachment 3.

1.3. Methodology

Slug tests and step-drawdown tests were conducted before the constant-discharge tests. The analyses of these tests have not been included in this calculation.

The data were analyzed using the computer program AQTESOLV (Ref. 2) and also by manual calculations. The recovery data from each test were analyzed by the Theis Recovery method using AQTESOLV. The drawdown data from the tests in B53W06D and M13.5-8.5D were analyzed by various methods. The drawdown data from the test in B53W09D were determined to be invalid because the water pumped out was from casing storage. The drawdown data from the test in M10-25D was also determined to be invalid because casing storage accounted for the majority of the water pumped from the well.

For each test the drawdown data were first analyzed to estimate any casing storage effects. All the tests were determined to have some casing storage effects therefore, the later time-drawdown data were used for type-curve matching.

Based on the geologic drill logs, well construction logs, and the water level measurements in the wells it was determined that the pumping wells were completed in confined or semi-confined water-bearing intervals and the observation (shallow) wells were completed into either the overlying aquitard or the overlying water-bearing interval. For the analysis of the drawdown data from wells B53W06D and M13.5-8.5D methods were selected for confined and semi-confined (leaky) aquifers. These methods are discussed briefly in Section 2.

The data from the observation wells were analyzed to determine if the wells showed any response to pumping in the deeper wells.

SOURCES OF DESIGN CRITERIA:

- Aquifer pumping test data
- Geologic drill logs
- Well construction logs
- Barometric pressure data

Groundfos Ready Flo 2 submersible pumps were used for all the tests except in well M13.5-8.5D. In this well a bladder pump was used because degassing effects during pumping with the Grundfos pump air-locked the pump and caused either intermittent discharge or stopped the discharge entirely.

The water levels in the wells were monitored using Hermit Data Loggers along with, redundant, manual readings using Solinst water level indicators.

TEST DETAILS:

Test 1:

Pumping well:	B53W06D
Observation wells:	B53W06S, B53W07S, B53W07D, B53W04S and B53W04D
Length of test:	2880 minutes (2 days) pumping 1180 minutes recovery
Pumping rate:	3.0 gpm initial, 1.5 gpm final

Test 2:

Pumping well:	B53W06D
Observation wells:	B53W06S, B53W07S, B53W07D, B53W04S and B53W04D
Length of test:	10,095 minutes (7 days) pumping 1180 minutes recovery
Pumping rate:	1.0 gpm

Test 3:

Pumping well:	M10-25D
Observation wells:	M10-25S
Length of test:	800 minutes pumping 3580 minutes recovery
Pumping rate:	0.05 gpm initial, 0.025 gpm final

Test 4:

Pumping well:	M13.5-8.5D
Observation wells:	M13.5-8.5S and M13.5-8.5C
Length of test:	2880 minutes (2 days) pumping 1420 minutes recovery
Pumping rate:	0.25 gpm initial, 0.20 gpm final

Test 5:

Pumping well:	B53W09D
Observation wells:	B53W11S
Length of test:	105 minutes pumping 2380 minutes recovery
Pumping rate:	0.1 gpm

1.4. Results

SUMMARY OF TRANSMISSIVITY VALUES

(ft²/min)

Well Number	Theis Recovery	Empirical Method	Theis Drawdown	Papadopoulos-Cooper	Moench	Hantush	Jacob / Cooper-Jacob
BS3W06D 2-day test	4.4E-3	6.2E-3	1.9E-3	8.0E-3	2.8E-3	1.8E-3	2.4E-3
BS3W06D 7-day test	4.5E-3	1.1E-2	3.7E-3	4.2E-3	1.9E-3	3.3E-3	2.9E-3
M10-25D	2.6E-4	1.5E-4					
M13.5-8.5D	8.4E-4	1.6E-3	7.5E-4	9.0E-4	6.0E-4	7.1E-4	6.1E-4/7.1E-4
BS3W09D	6.6E-6	3.6E-4					

(gpd/ft)

Well Number	Theis Recovery	Empirical Method	Theis Drawdown	Papadopoulos-Cooper	Moench	Hantush	Jacob / Cooper-Jacob
BS3W06D 2-day test	47.4	66.8	20.5	86.2	30.2	19.4	25.9
BS3W06D 7-day test	48.5	113.6	39.9	45.2	20.5	35.5	31.1
M10-25D	2.8	1.6					
M13.5-8.5D	9.1	17.2	8.1	9.7	6.5	7.7	6.6 / 7.7
BS3W09D	0.071	3.9					

(cm²/sec)

Well Number	Theis Recovery	Empirical Method	Theis Drawdown	Papadopoulos-Cooper	Moench	Hantush	Jacob / Cooper-Jacob
BS3W06D 2-day test	6.8E-2	9.6E-2	2.9E-2	1.2E-1	4.3E-2	2.8E-2	3.7E-2
BS3W06D 7-day test	7.0E-2	1.6E-1	5.7E-2	6.5E-2	2.9E-2	5.1E-2	4.5E-2
M10-25D	4.0E-3	2.3E-3					
M13.5-8.5D	1.3E-2	2.5E-2	1.2E-2	1.4E-2	9.3E-3	1.1E-2	9.3E-3/1.1E-2
BS3W09D	1.0E-4	5.6E-3					

The transmissivity calculated for Unit 3B using drawdown data in observation wells B53W04D and B53W07D is provided in the following table:

Well Number	Papadopoulos -Cooper (ft ² /min)	Moench (ft ² /min)	Papadopoulos -Cooper (gpd/ft)	Moench (gpd/ft)	Papadopoulos -Cooper (cm ² /sec)	Moench (cm ² /sec)
B53W04D	1.8E-2	1.4E-2	1.9E+2	1.5E+2	2.8E-1	2.2E-1
B53W07D	1.7E-2	2.1E-2	1.8E+2	2.3E+2	2.6E-1	3.3E-1

The vertical permeability for Unit 3M in the vicinity of well B53W06D and B53W06S was determined to be on the order of 9.8×10^{-8} cm/sec. The vertical permeability for the aquitard overlying Unit 3B (which is Unit 3M if it is present at this location) in the vicinity of well M10-25D was determined to be on the order of 1.1×10^{-7} cm/sec.

1.5. Conclusions

The recovery tests in each of the wells provided good results. The drawdown data was only analyzed for the tests in wells B53W06D and M13.5-8.5D and provided results that were very similar to the recovery test results. Several methods were used to analyze the drawdown data and as a comparison. The method developed by Moench appears to be the most appropriate method given that the pumped zones are leaky with storage in the aquitards and well bore storage is taken into account.

The apparent response in well B53W06S was determined to be due to barometric effects, therefore, a vertical permeability was not calculated for the aquitard overlying the zone B53W06D is completed into. The response in well M10-25S was determined to be due to pumping in well M10-25D and provided a vertical permeability that was comparable to values determined from laboratory analysis of soil samples collected during drilling of the wells.

Given the low pumping rates for these tests any other influences during the tests may have some significance and, therefore, these results should be used as order of magnitude values only.

The recovery tests gave the best responses and, therefore, the results from these tests provide the best estimates of the actual transmissivities. Due to the low pumping rates it was difficult to maintain constant rates and any slight variations tended to be significant.

Several methods were used to analyze the drawdown data in wells B53W06D and M13.5-8.5D. The method that appears to be most appropriate is that developed by Moench. This method takes into account a leaky aquifer, casing storage and aquitard storage.

The data for the drawdown test in well B53W06D also included measurements in 2 wells, B53W04D and B53W07D, completed in the same aquifer. The results from the analyses of the drawdown data from these two wells provided transmissivity values that were an order of magnitude greater than the values calculated from the pumping well, B53W06D. These higher values are due to leakage from the aquitards and Neuman and Witherspoon (Ref. 5) further suggest that as the distance from the pumping well increases the magnitude of the transmissivity becomes more and more exaggerated.

1.6. References

1. "Site Suitability Study for the St. Louis Airport Site", July 1993, prepared for the U.S. Department of Energy by Bechtel National, Inc., Oak Ridge, Tennessee.
2. Duffield, G.M. and Rumbaugh, J.D.III, "AQTESOLV - A program for automatic estimation of aquifer coefficients from aquifer test data", Geraghty and Miller Modeling Group.
3. Driscoll, F.G., 1989, "Groundwater and Wells", Johnson Filtration Systems, St. Paul, MN.
4. Dawson, J.D. and Istok, K.J., 1991, "Aquifer Testing: Design and Analysis of Pumping and Slug Tests", Lewis Publishers, Chelsea, MI.
5. Neuman, S.P. and Witherspoon, P.A., 1972, "Field determination of the hydraulic properties of leaky multiple aquifer systems", Water Resources Research, vol. 8, no. 5, pp. 1284-1298.
6. Walton, W.C., 1988, "Practical aspects of ground water modeling", 3rd ed.

2. Calculation

The recovery data from each test was analyzed using the Theis Recovery method. The drawdown data was first analyzed to determine any casing storage effects using the two methods described below. Then as an estimate for transmissivity an Empirical method was used. The tests that showed aquifer responses were analyzed using AQTESOLV with the following methods: Theis, Papadopoulos-Cooper, Moench, Hantush and Cooper-Jacob. Some of the tests were manually analyzed with the Jacob Straight-Line method.

Schafer casing storage method:

In an attempt to determine if the initial portion of the curve used in analyzing the data was effected by casing storage, a method developed by Schafer (Ref. 3, pp. 233-234) was applied which provides an estimated time after which any casing storage effect becomes negligible.

$$t_c = \frac{0.6(d_c^2 - d_p^2)}{Q/s}$$

where:

- t_c = time, in minutes, when casing storage effect becomes negligible
- d_c = inside diameter of well casing, in inches
- d_p = outside diameter of pump column pipe, in inches
- Q/s = specific capacity of the well in gpm/ft of drawdown at time t_c

Alternative casing storage method:

This is just an estimate of the volume of water in the casing and filter pack above the pump intake. Given this volume and the pumping rate provides the minimum amount of time before pumping the well dry.

Casing volume:

$$v_c = \pi \left[\left(\frac{d_w ID}{2} \right)^2 - \left(\frac{d_i OD}{2} \right)^2 \right] (TI - H)$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{d_h}{2} \right)^2 - \left(\frac{d_w OD}{2} \right)^2 \right] (TI - S) P$$

Where:

d_h = hole diameter
 d_{wID} = well casing inside diameter
 d_{wOD} = well casing outside diameter
 d_{tOD} = pump tubing outside diameter
H = depth to water, below ground surface
S = depth to base of seal
TI = depth to pump intake
P = estimated filter pack porosity

Empirical method (modified from Jacob method):

A transmissivity value can be estimated by using an empirical equation developed from the modified non equilibrium Jacob method (Ref. 3, p.1021). This method is provided purely as an estimate.

For confined aquifers:

$$T = \frac{Q}{s} \times 2000$$

where:

T is in gpd/ft
Q is in gpm
s is in ft

Jacob Straight-Line Method: (Time-Drawdown)

Another method of analysis that was selected was that developed by Jacob (Ref. 3, pp. 255-257) which is a modification of the Theis nonequilibrium equation.

$$T = \frac{264Q}{\Delta s}$$

where: T = transmissivity (gpd/ft)
Q = pumping rate (gpm)
 Δs = slope of time-drawdown curve per log cycle (ft)

2.1. B53W06D

A 48-hour pumping test was initially conducted in this well. This test began as a constant-discharge test but the discharge rate estimated from the step-drawdown tests was too high and the pumping rate had to be decreased several times during the test while maintaining a constant-drawdown level.

After allowing the well to recover another constant-discharge test was conducted based on the results of the first test. This test ran for 7 days of pumping and 1 day of recovery.

Table 1 shows the data from the 2-day test. Table 2 show the data from the 7-day test.

2.1.1. 2-Day Test

Theis Recovery method:

The data was analyzed with the Theis residual drawdown method using AQTESOLV (Ref. 2). Figure 3.1 is a semi-log plot of the recovery data with the residual drawdown, s' , plotted against the ratio, t/t' . The time increases towards the left, therefore, that portion of the curve was used for the best-fit line.

This yielded a value of $4.4 \times 10^{-3} \text{ ft}^2/\text{min}$.

Schafer casing storage method:

First iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{3.0 \text{ gpm} / 30 \text{ ft}} = 20.6 \text{ min}$$

From time-drawdown curve (Figure 3.2) @ 21 min. $s = 32.5 \text{ ft}$.

Second iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{3.0 \text{ gpm} / 32.5 \text{ ft}} = 22.3 \text{ min}$$

From time-drawdown curve @ 22 min. $s = 32.6 \text{ ft}$.

Third iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{3.0 \text{ gpm} / 32.6 \text{ ft}} = 22.4 \text{ min}$$

From time-drawdown curve @ 22 min. $s = 32.6 \text{ ft}$.

Thus, the three iterations using Schafer's equation suggest that the casing storage effect would have become negligible at approximately 22 minutes. This indicates the initial slope provides an incorrect transmissivity value and the latter part of the curve should be used to determine transmissivity.

Alternative casing storage method

Casing volume:

$$v_c = \pi \left[\left(\frac{0.17}{2} \right)^2 - \left(\frac{0.063}{2} \right)^2 \right] (59 - 10.66) = 0.95$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{0.75}{2} \right)^2 - \left(\frac{0.20}{2} \right)^2 \right] (59 - 56.7) 0.20 = 0.19$$

Total volume above pump intake = $v_c + v_f = 0.95 + 0.19 = 1.14 \text{ ft}^3 \times 7.48 = 8.5 \text{ gallons}$

Pumping at rate of 3.0 gpm $\Rightarrow 8.5 / 3.0 = 2.8 \text{ minutes}$ to pump out casing volume above pump intake.

If this time were valid there should be a break in the drawdown curve at this point in time. There is no change in slope at 2.8 minutes and the well did not pump dry in 3 minutes. Therefore, the water pumped out during the test was not only from casing storage.

Empirical method (modified from Jacob method):

Using the initial pumping rate and the maximum amount of drawdown before the pump started to cavitate, the estimated transmissivity would be:

$$T = \frac{3.0}{45} \times 2000 = 133 \text{ gpd} / \text{ft} \approx 1.2 \times 10^{-2} \text{ ft}^2 / \text{min}$$

Using the final pumping rate and the drawdown at the end of the test, the estimated transmissivity would be:

$$T = \frac{1.5}{45} \times 2000 = 67 \text{ gpd} / \text{ft} \approx 6.2 \times 10^{-3} \text{ ft}^2 / \text{min}$$

The following results are from using AQTESOLV.

Theis method:

This yields a transmissivity of 1.9×10^{-3} ft²/min. (Figure 3.2)

Papadopoulos-Cooper method:

This yields a transmissivity of 8.0×10^{-3} ft²/min. (Figure 3.3)

Moench method:

This yields a transmissivity of 2.8×10^{-3} ft²/min. (Figure 3.4)

Hantush method:

This yields a transmissivity of 1.8×10^{-3} ft²/min. (Figure 3.5)

Cooper-Jacob method:

This yields a transmissivity of 2.4×10^{-3} ft²/min. (Figure 3.6)

2.1.2. 7-Day Test

Theis Recovery method:

The data was analyzed with the Theis residual drawdown method using AQTESOLV (Ref. 2). Figure 4.1 is a semi-log plot of the recovery data with the residual drawdown, s' , plotted against the ratio, t/t' . The time increases towards the left, therefore, that portion of the curve was used for the best-fit line.

This yielded a value of $4.5 \times 10^{-3} \text{ ft}^2/\text{min}$.

Schafer casing storage method:

First iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{1.0 \text{gpm} / 14 \text{ft}} = 28.9 \text{ min}$$

From time-drawdown curve (Figure 4.2) @ 29 min. $s = 8.0 \text{ ft}$.

Second iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{1.0 \text{gpm} / 8.0 \text{ ft}} = 16.5 \text{ min}$$

From time-drawdown curve @ 17 min. $s = 7.6 \text{ ft}$.

Third iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{1.0 \text{gpm} / 7.6 \text{ ft}} = 15.7 \text{ min}$$

From time-drawdown curve @ 16 min. $s = 7.5 \text{ ft}$.

Thus, the three iterations using Schafer's equation suggest that the casing storage effect would have become negligible at approximately 16 minutes. This indicates the initial slope provides an incorrect transmissivity value and the latter part of the curve should be used to determine transmissivity. There is a break in the slope at 30 minutes which maybe when the casing storage effect actually becomes negligible. Either way, the curve after 30 minutes should be used for further analysis.

Alternative casing storage method

Casing volume:

$$v_c = \pi \left[\left(\frac{0.17}{2} \right)^2 - \left(\frac{0.063}{2} \right)^2 \right] (59 - 10.66) = 0.95$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{0.75}{2} \right)^2 - \left(\frac{0.20}{2} \right)^2 \right] (59 - 56.7) 0.20 = 0.19$$

Total volume above pump intake = $v_c + v_f = 0.95 + 0.19 = 1.14 \text{ ft}^3 \times 7.48 = 8.5 \text{ gallons}$

Pumping at rate of 1.0 gpm => $8.5 / 1.0 = 8.5 \text{ minutes}$ to pump out casing volume above pump intake.

If this time were valid there should be a break in the drawdown curve at this point in time. There is a slight change in slope at 8.5 minutes but the significant change in slope occurs at 30 minutes, so this method does not appear to provide useful results for this test.

Empirical method (modified from Jacob method):

Using the drawdown at the end of the test, the estimated transmissivity would be:

$$T = \frac{1.5}{26.4} \times 2000 = 113.6 \text{ gpd} / \text{ft} \approx 1.1 \times 10^{-2} \text{ ft}^2 / \text{min}$$

Jacob Straight-Line method:

Applying the Jacob equation yields the following:

Using the later portion of the curve (Figure 4.2):

$$T = \frac{264 \times 1.0 \text{ gpm}}{8.5 \text{ ft}} = 31.1 \text{ gpd} / \text{ft} \cong 2.9 \times 10^{-3} \text{ ft}^2 / \text{min}$$

The following methods are from using AQTESOLV

Theis method:

This yields a transmissivity of $3.7 \times 10^{-3} \text{ ft}^2/\text{min}$. (Figure 4.3)

Papadopoulos-Cooper method:

This yields a transmissivity of $4.2 \times 10^{-3} \text{ ft}^2/\text{min}$. (Figure 4.4)

Moench method:

This yields a transmissivity of $1.9 \times 10^{-3} \text{ ft}^2/\text{min}$. (Figure 4.5)

Hantush method:

This yields a transmissivity of 3.3×10^{-3} ft²/min. (Figure 4.6)

Cooper-Jacob method:

Not analyzed due to drawdown response.

The following two methods use data from observation wells completed in the same unit as the pumping well, B53W06D.

Papadopoulos-Cooper method: (using data from B53W04D)

This yields a transmissivity of 1.8×10^{-2} ft²/min. (Figure 4.7)

Moench method: (using data from B53W04D)

This yields a transmissivity of 1.4×10^{-2} ft²/min. (Figure 4.8)

Papadopoulos-Cooper method: (using data from B53W07D)

This yields a transmissivity of 1.7×10^{-2} ft²/min. (Figure 4.9)

Moench method: (using data from B53W07D)

This yields a transmissivity of 2.1×10^{-2} ft²/min. (Figure 4.10)

2.1.3. Vertical Permeability

The first step in analyzing the drawdown data in well B53W06S was to determine if any changes in the water level could be attributed to barometric effects. The second step was to correct the water level readings if barometric effects were present. Figure 4.11 is a plot of the barometric pressure readings from the St. Louis Airport. Figure 4.12 is a plot of the water level readings in well B53W06S during the pumping and recovery cycles of well B53W06D. The water level in well B53W06S appears to fluctuate with the barometric pressure. The barometric efficiency was then calculated for the well using a method described by Dawson and Istok (Ref. 4). The equation is as follows:

$$BE = \frac{\Delta h}{\Delta(p_a / \lambda_w)} \times 100\%$$

where:

BE = barometric efficiency

Δh = change in head due to change in atmospheric pressure

p_a = atmospheric pressure

λ_w = unit weight of water

Figure 4.13 is a plot of the barometric efficiency of well B53W06S. A straight line was fitted through the data which resulted in a barometric efficiency of 56 percent. Using this value the water level readings in well B53W06S were corrected using the equation below and are shown in Figure 4.14.

$$\Delta h = \frac{BE}{100\%} \Delta \left(\frac{p_a}{\lambda_w} \right)$$

The plot shows the water levels recorded during both pumping tests and recovery cycles. During both tests when the pump was turned on the water level increased. This appears to be in response to a reduction in pore pressure resulting in a buoyancy effect which caused the water levels to rise. There appears to be no measurable response in well B53W06S due to pumping in well B53W06D. Therefore, the vertical permeability of the aquitard, Unit 3M, which overlies Unit 3B in the vicinity of wells B53W06D and B53W06S is approximately 9.8×10^{-8} cm/s. This is the value determined by laboratory analysis from samples collected when the wells were drilled (Ref. 1).

2.2. M10-25D

Theis Recovery method:

The data was analyzed with the Theis residual drawdown method using AQTESOLV (Ref. 2). Figure 5.1 is a semi-log plot of the recovery data with the residual drawdown, s' , plotted against the ratio, t/t' . The time increases towards the left, therefore, that portion of the curve was used for the best-fit line.

This yielded a value of $2.6 \times 10^{-4} \text{ ft}^2/\text{min}$.

Schafer casing storage method:

First iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.05 \text{ gpm} / 20 \text{ ft}} = 825 \text{ min}$$

From time-drawdown curve @ 825 min. $s = 30.5 \text{ ft}$.

Second iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.05 \text{ gpm} / 30.5 \text{ ft}} = 1258 \text{ min}$$

Using this method gives an unreasonable length of time before casing storage effects would be negligible and therefore does not provide any meaningful data.

Alternative casing storage method

Casing volume:

$$v_c = \pi \left[\left(\frac{0.17}{2} \right)^2 - \left(\frac{0.063}{2} \right)^2 \right] (39 - 8.5) = 0.60$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{0.75}{2} \right)^2 - \left(\frac{0.20}{2} \right)^2 \right] (39 - 35.5) 0.20 = 0.29$$

Total volume above pump intake = $v_c + v_f = 0.60 + 0.29 = 0.89 \text{ ft}^3 \times 7.48 = 6.7 \text{ gallons}$

Pumping at rate of 0.05 gpm => $6.7 / 0.05 = 133$ minutes to pump out casing volume above pump intake.

If this time were valid there should be a break in the drawdown curve at this point in time. There is only a slight change in slope at 133 minutes so the initial drawdown is only partially due to casing storage. Therefore, this method does appear to provide some useful results for this test.

Empirical method (modified from Jacob method):

Using the initial pumping rate and the maximum amount of drawdown before the pump started to cavitate, the estimated transmissivity would be:

$$T = \frac{0.05}{30.5} \times 2000 = 3.3 \text{ gpd / ft} \approx 3.0 \times 10^{-4} \text{ ft}^2 / \text{min}$$

Using the final pumping rate and the drawdown at the end of the test, the estimated transmissivity would be:

$$T = \frac{0.025}{30.5} \times 2000 = 1.6 \text{ gpd / ft} \approx 1.5 \times 10^{-4} \text{ ft}^2 / \text{min}$$

The following methods are from using AQTESOLV

Theis method:

Not analyzed due to drawdown response.

Papadopoulos-Cooper method:

Not analyzed due to drawdown response.

Mococh method:

Not analyzed due to drawdown response.

Hantush method:

Not analyzed due to drawdown response.

Cooper-Jacob method:

Not analyzed due to drawdown response.

2.2.1. Vertical Permeability

Well M10-25S shows no fluctuations in water levels corresponding to barometric pressure changes so the drawdown measured in the well can be attributed to pumping in well M10-25D. The method of analysis selected was that developed by Neuman and Witherspoon (Ref. 5).

First the "effective" leakage through the aquitard is estimated using the ratio method, which is the ratio of drawdowns in both the aquitard and the aquifer at the same time and distance from the pumping well. From Figure 5.2 the observed drawdown (s') in well M10-25S at 800 minutes was approximately 0.065 feet. The drawdown in the aquifer (s) at the same time and distance was calculated as follows using the distance-drawdown method:

$$s = \frac{264Q}{T} \log \frac{0.3Tr}{r^2S} = \frac{264(0.025)}{2.8} \log \frac{0.3(2.8)(0.56)}{(8.5)^2(1 \times 10^{-5})} \approx 6.6 \text{ ft.}$$

$$s'/s = 0.065/6.6 = 9.85 \times 10^{-3}$$

Using the transmissivity calculated in Section 2.3: $T=2.8 \text{ gpd/ft}$, assuming a storage coefficient of 1×10^{-5} , and the distance between wells of 8.5 feet, a non-dimensional time factor for the analysis is defined as:

$$t_D = 9.28 \times 10^{-5} \left(\frac{Tr}{Sr^2} \right) = 9.28 \times 10^{-5} \left(\frac{2.8(800)}{(8.5)^2(1 \times 10^{-5})} \right) = 2.88 \times 10^2$$

From Figure 3 (Ref. 5) and using $t_D = 2.9 \times 10^2$ and $s'/s = 9.9 \times 10^{-3}$ gives the following value $t'_D = 8.5 \times 10^{-2}$.

The diffusivity of the aquitard if given by:

$$\alpha' = 1.077 \times 10^4 t_D \frac{z^2}{t} = (1.077 \times 10^4)(8.5 \times 10^{-2}) \frac{(14.1)^2}{800} = 228 \text{ gpd/ft}$$

where: $z = 14.1 \text{ feet}$ (the vertical separation between the well screens)

Then the effective hydraulic conductivity of the aquitard is given as:

$$K' = \alpha' \frac{s'}{b'} = 228 \left(\frac{1 \times 10^{-4}}{10} \right) = 2.28 \times 10^{-3} \text{ gpd/ft} \approx 2.1 \times 10^{-7} \text{ ft/min} \approx 1.1 \times 10^{-7} \text{ cm/sec}$$

where:

K' = permeability of aquitard

α' = hydraulic diffusivity of aquitard

s' = storage coefficient of aquitard (assumed 1×10^{-4} from Walton (Ref. 6))

b' = thickness of aquitard

For the aquifer:

$$K = \frac{T}{b} = \frac{2.8 \text{ gpd}/\text{ft}}{18.7 \text{ ft}} = 1.5 \times 10^{-1} \text{ gpd}/\text{ft}^2$$

This is 2 orders of magnitude greater than for the aquitard. The value for the aquitard compares favorably with the laboratory analysis (Ref. 1) which gives a geometric mean value of 9.8×10^{-8} cm/sec.

2.3. M13.5-8.5D

Theis Recovery method:

The data was analyzed with the Theis residual drawdown method using AQTESOLV (Ref. 2). Figure 6.1 is a semi-log plot of the recovery data with the residual drawdown, s' , plotted against the ratio, t/t' . The time increases towards the left, therefore, that portion of the curve was used for the best-fit line.

This yielded a value of $8.4 \times 10^{-4} \text{ ft}^2/\text{min}$:

Schafer casing storage method:

First iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.25 \text{gpm} / 10 \text{ft}} = 82.5 \text{ min}$$

From time-drawdown curve @ 83 min. $s = 12 \text{ ft}$.

Second iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.25 \text{gpm} / 12 \text{ft}} = 99 \text{ min}$$

From time-drawdown curve @ 99 min. $s = 12.5 \text{ ft}$.

Third iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.25 \text{gpm} / 12.5 \text{ft}} = 103 \text{ min}$$

From time-drawdown curve @ 103 min. $s = 12.5 \text{ ft}$.

Thus, the three iterations using Schafer's equation suggest that the casing storage effect would have become negligible at approximately 100 minutes. This indicates the initial slope provides an incorrect transmissivity value and the latter part of the curve should be used to determine transmissivity.

Alternative casing storage method

Casing volume:

$$v_c = \pi \left[\left(\frac{0.17}{2} \right)^2 - \left(\frac{0.063}{2} \right)^2 \right] (37.5 - 12) = 0.50$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{0.75}{2} \right)^2 - \left(\frac{0.20}{2} \right)^2 \right] (37.5 - 60) 0.20 = \emptyset$$

Total volume above pump intake = $v_c + v_f = 0.50 + 0 = 5.0 \text{ ft}^3 \times 7.48 = 3.7 \text{ gallons}$

Pumping at rate of 0.25 gpm $\Rightarrow 3.7 / 0.25 = 15 \text{ minutes to pump out casing volume above pump intake.}$

If this time were valid there should be a break in the drawdown curve at this point in time. There is no change in slope at 15 minutes. This does support the argument that the early drawdown data may be influenced by casing storage and should not be used. In addition, the water pumped out during the test was not only from casing storage.

Empirical method (modified from Jacob method):

Using the initial pumping rate and the maximum amount of drawdown before the pump started to cavitate, the estimated transmissivity would be:

$$T = \frac{0.25}{22.5} \times 2000 = 22.2 \text{ gpd} / \text{ft} \approx 2.1 \times 10^{-3} \text{ ft}^2 / \text{min}$$

Using the final pumping rate and the drawdown at the end of the test, the estimated transmissivity would be:

$$T = \frac{0.20}{23} \times 2000 = 17.4 \text{ gpd} / \text{ft} \approx 1.6 \times 10^{-3} \text{ ft}^2 / \text{min}$$

Jacob Straight-Line method:

Applying the Jacob equation yields the following:

Using the later portion of the curve (Figure 6.2):

$$T = \frac{264 \times 0.25 \text{ gpm}}{10 \text{ ft}} = 6.6 \text{ gpd} / \text{ft} \equiv 6.1 \times 10^{-4} \text{ ft}^2 / \text{min}$$

The following methods are from using AQTESOLV

Theis method:

Using the early drawdown portion of the curve the type curve best fit yields a transmissivity of $7.5 \times 10^{-4} \text{ ft}^2/\text{min}$. (Figure 6.3)

Papadopoulos-Cooper method:

Again using the early time drawdown data the best fit of the type curve yields a transmissivity of $9.0 \times 10^{-4} \text{ ft}^2/\text{min}$. (Figure 6.4)

Moench method:

This yields a transmissivity of $6.0 \times 10^{-4} \text{ ft}^2/\text{min}$. (Figure 6.5)

Hantush method:

This yields a transmissivity of 7.1×10^{-4} ft²/min. (Figure 6.6)

Cooper-Jacob method:

This yields a transmissivity of 7.1×10^{-4} ft²/min. (Figure 6.7)

2.4. B53W09D

Theis Recovery method:

The data was analyzed with the Theis residual drawdown method using AQTESOLV (Ref. 2). Figure 7 is a semi-log plot of the recovery data with the residual drawdown, s' , plotted against the ratio, t/t' . The time increases towards the left, therefore, that portion of the curve was used for the best-fit line.

This yielded a value of $6.6 \times 10^{-6} \text{ ft}^2/\text{min}$.

Schafer casing storage method:

First iteration:

$$t_c = \frac{0.6(2.0^2 - 0.75^2)}{0.1 \text{ gpm} / 20 \text{ ft}} = 413 \text{ min}$$

The pumping portion of the test was completed around 105 minutes, so this method does not provide a valid estimation of casing storage effects when the water is basically all from casing storage.

Alternative casing storage method

Casing volume:

$$v_c = \pi \left[\left(\frac{0.17}{2} \right)^2 - \left(\frac{0.063}{2} \right)^2 \right] (58.5 - 5.25) = 1.04$$

Filter pack pore volume:

$$v_f = \pi \left[\left(\frac{0.75}{2} \right)^2 - \left(\frac{0.20}{2} \right)^2 \right] (58.5 - 57.5) 0.20 = 0.41$$

Total volume above pump intake = $v_c + v_f = 1.04 + 0.41 = 1.45 \text{ ft}^3 \times 7.48 = 10.9 \text{ gallons}$

Pumping at rate of 0.1 gpm $\Rightarrow 10.9 / 0.1 = 109$ minutes to pump out casing volume above pump intake.

This is approximately how long the test was conducted before the pump started to cavitate and the test was stopped. All the water that was discharged can be attributed to casing storage and no pumping test analyses can be done using the drawdown data.

Empirical method (modified from Jacob method):

Using the maximum amount of drawdown before the pump started to cavitate, the estimated transmissivity would be:

$$T = \frac{0.1}{52} \times 2000 = 3.85 \text{ gpd} / \text{ft} \approx 3.6 \times 10^{-4} \text{ ft}^2 / \text{min}$$

The following methods are from using AQTESOLV

Theis method:

Not analyzed due to drawdown response.

Papadopoulos-Cooper method:

Not analyzed due to drawdown response.

Moench method:

Not analyzed due to drawdown response.

Hantush method:

Not analyzed due to drawdown response.

Cooper-Jacob method:

Not analyzed due to drawdown response.

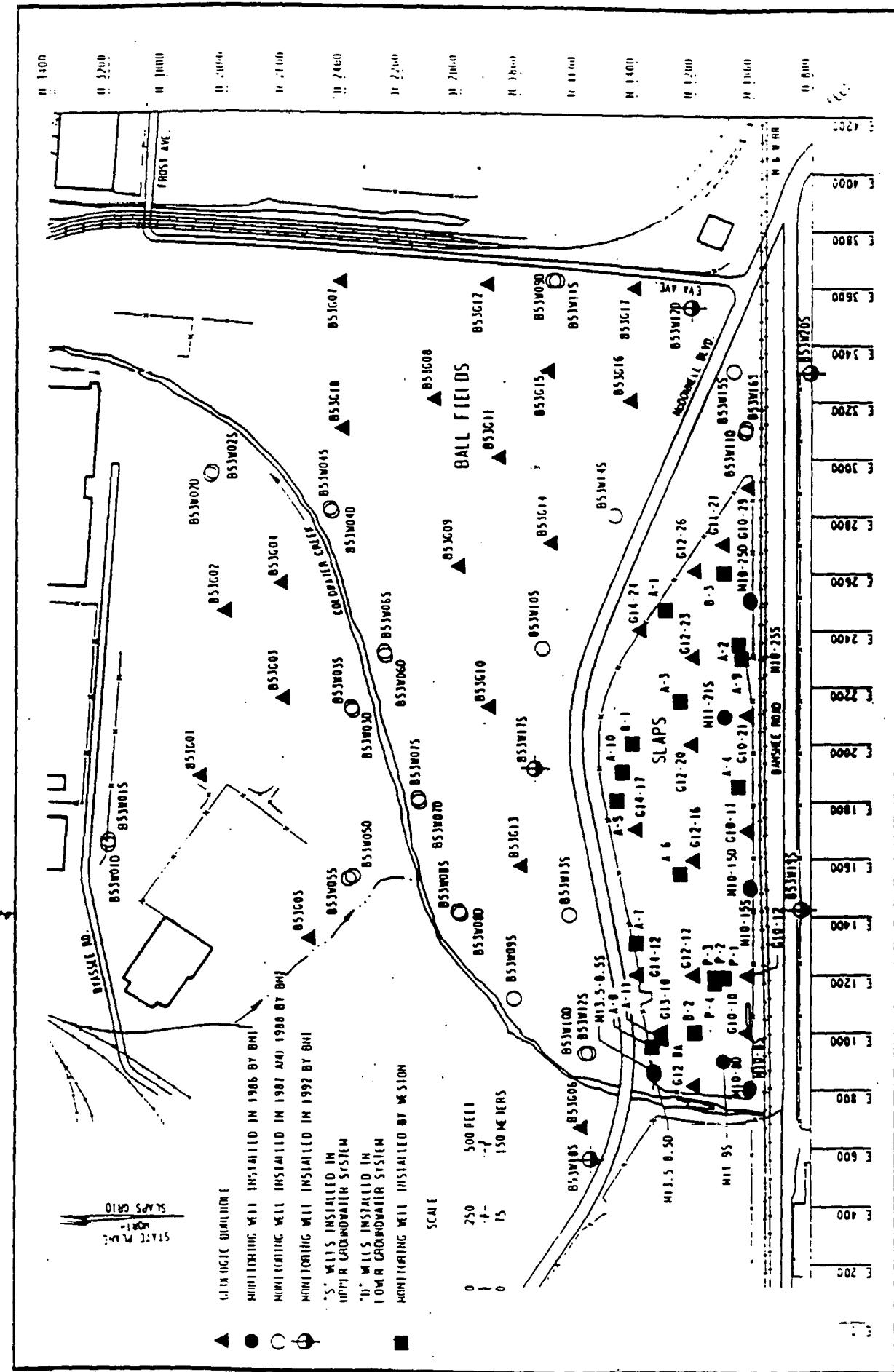


Figure 1 Monitoring Well Locations

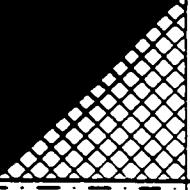
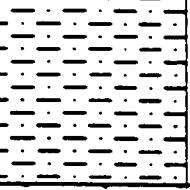
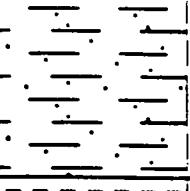
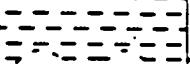
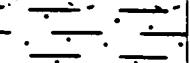
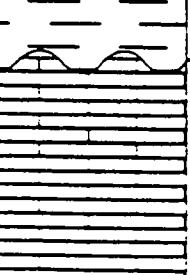
Period	Epoch	Stratigraphic Unit	Columnar Section	Thickness (ft)	Description
	Holocene	FILL/TOPSOIL		0-14	UNIT 1 Fill – Sand, silt, clay, concrete, rubble. Topsoil – Organic silts, clayey silts, wood, fine sand.
Quaternary	Pleistocene	LOESS (CLAYEY SILT)		11-32	UNIT 2 Clayey silts, fine sands, commonly mottled with iron oxide staining. Scattered roots and organic material, and a few fossils.
		GLACIO-LACUSTRINE SERIES:		19-75 (3)	UNIT 3 Silty clay with scattered organic blebs and peat stringers. Moderate plasticity. Moist to saturated. (3T)
		SILTY CLAY		9-27 (3T)	
		VARVED CLAY		0-8	Alternating layers of dark and light clay as much as 1/16 inch thick. (3M)
		CLAY		0-26	Dense, stiff, moist, highly plastic clay. (3M)
		SILTY CLAY		10-29	Similar to upper silty clay. Probable unconformable contact with highly plastic clay. (3B)
		BASAL CLAYEY & SANDY GRAVEL		0-6	UNIT 4 Glacial clayey gravels, sands, and sandy gravels. Mostly chert.
PENNSYLVANIAN		CHEROKEE (?) GROUP (undifferentiated)		0-35	UNIT 5 BEDROCK: Interbedded silty clay/shale, lignite/coal, sandstone, and siltstone. Erosionally truncated by glaciolacustrine sequences.
MISSISSIPPIAN		STE. GENEVIEVE (?) LIMESTONE		10+	UNIT 6 BEDROCK: Hard, white to olive, well-cemented, sandy limestone with interbedded shale laminations.

Figure 2 Generalized Stratigraphic Column

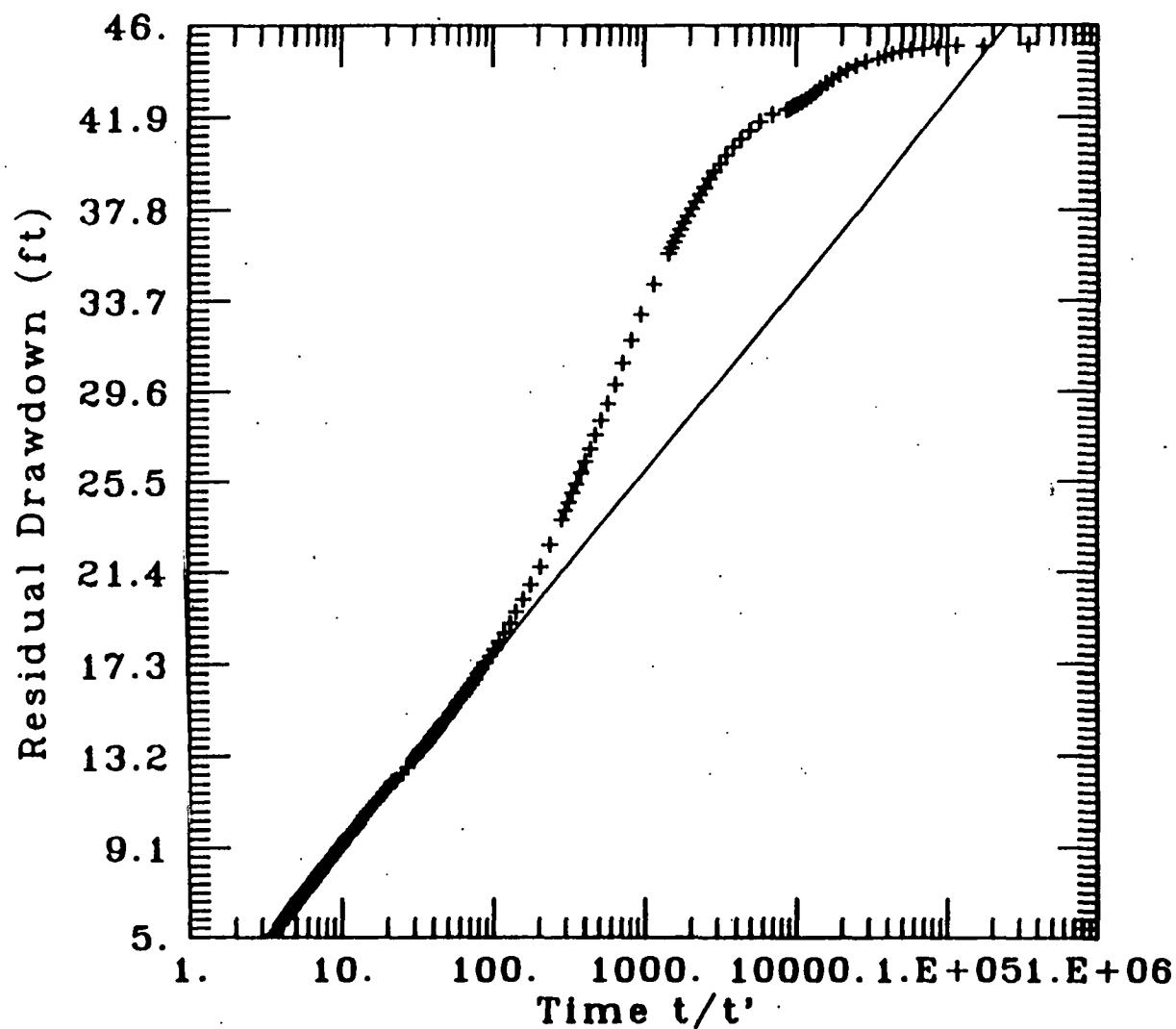
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Recovery Test -- 2-Day Test



DATA SET:

6s6d-r1.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis Recovery

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

853W06D

OBS. WELL:

853W06S

ESTIMATED PARAMETERS:

$T = 0.004391 \text{ ft}^2/\text{min}$

$S' = 0.8082$

TEST DATA:

$Q = 0.201 \text{ ft}^3/\text{min}$

$t_{\text{pumping}} = 2880. \text{ min}$

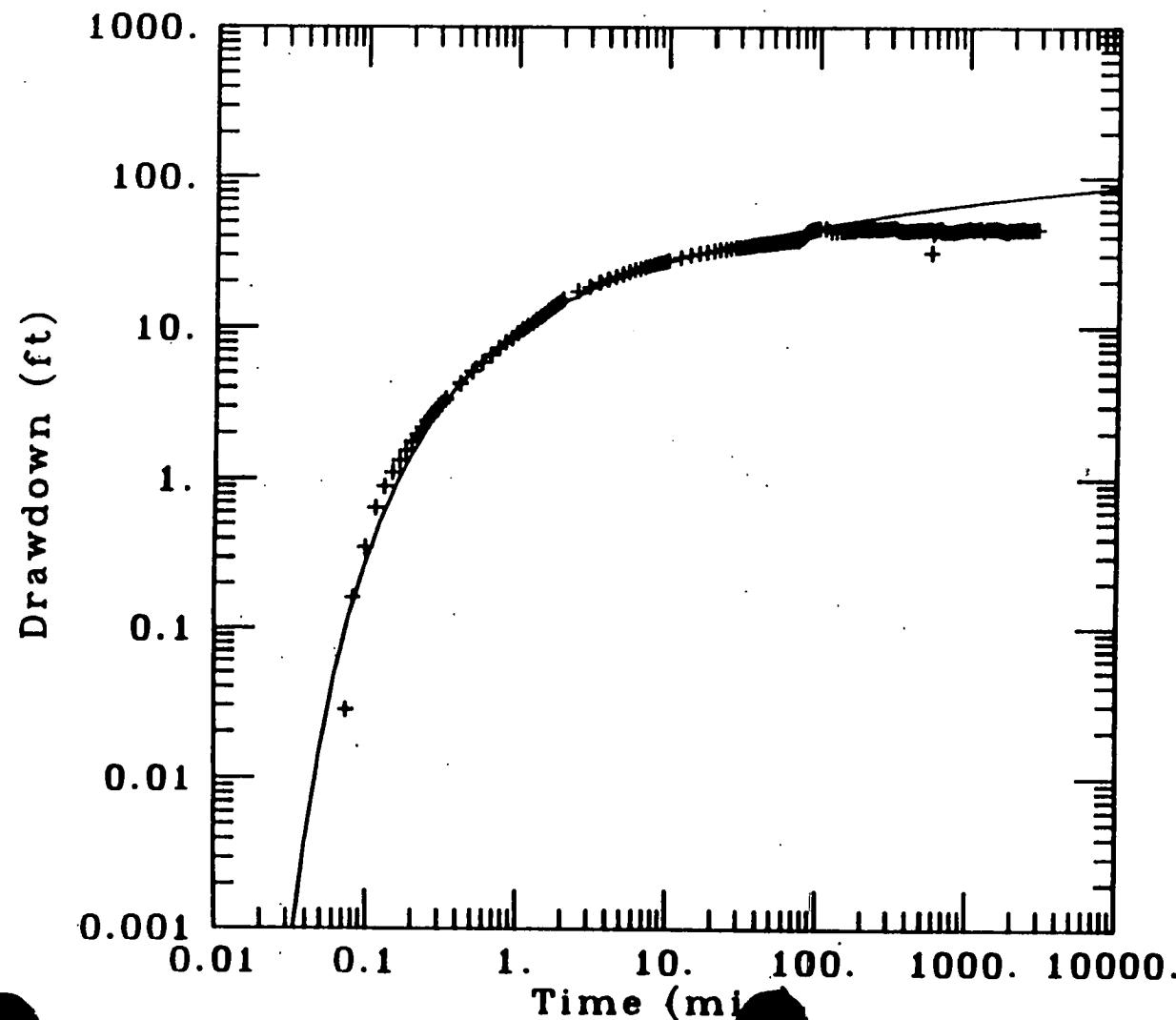
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 2-Day



DATA SET:

6s6d-p1.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.001893 \text{ ft}^2/\text{min}$

$S = 8.415E-06$

TEST DATA:

$Q = 0.201 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

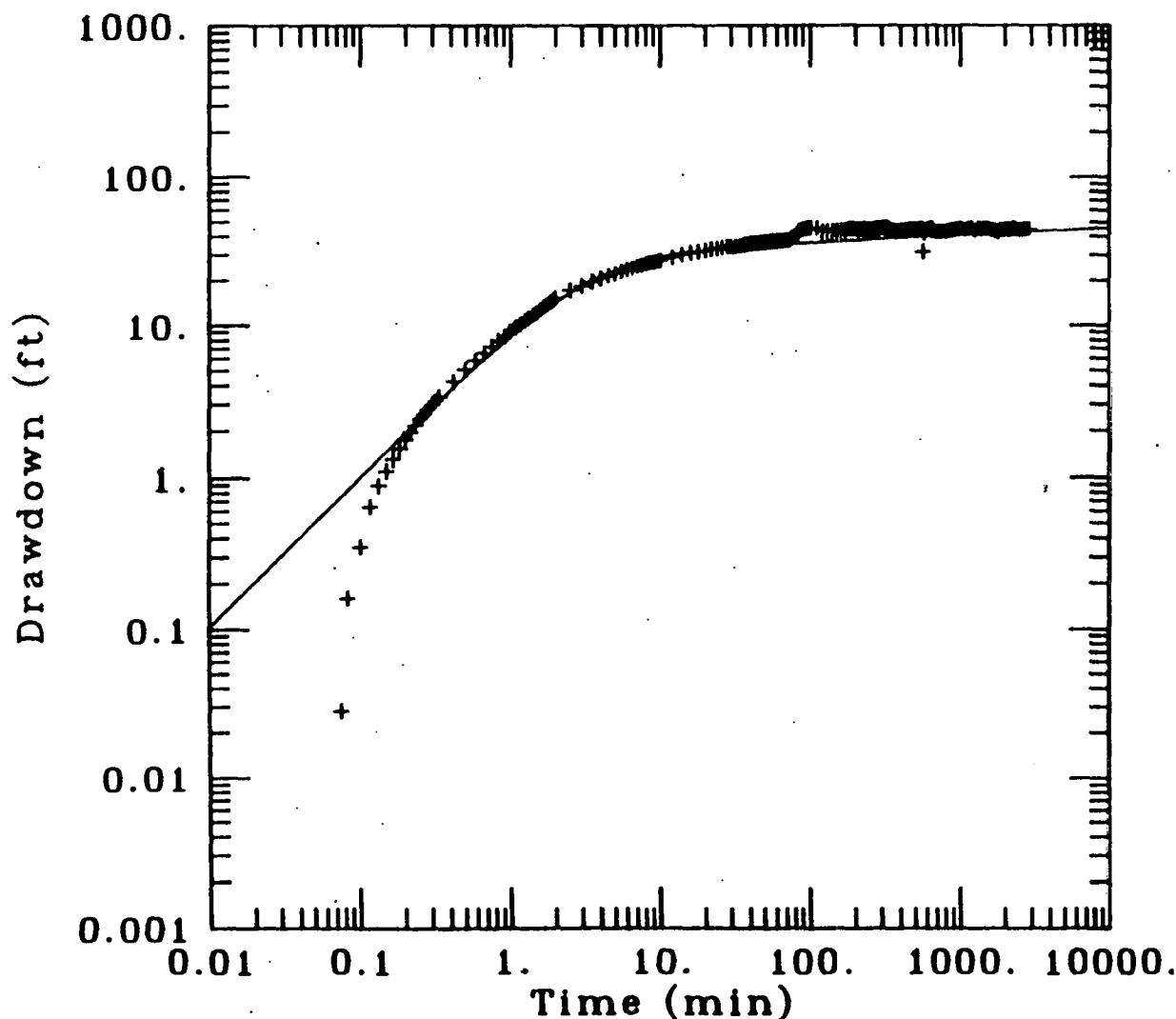
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 2-Day



DATA SET:

6s9d-p1.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Papadopoulos-Cooper

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.008002 \text{ ft}^2/\text{min}$

$S = 3.3664E-07$

$a = 3.3594E-06$

TEST DATA:

$Q = 0.201 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

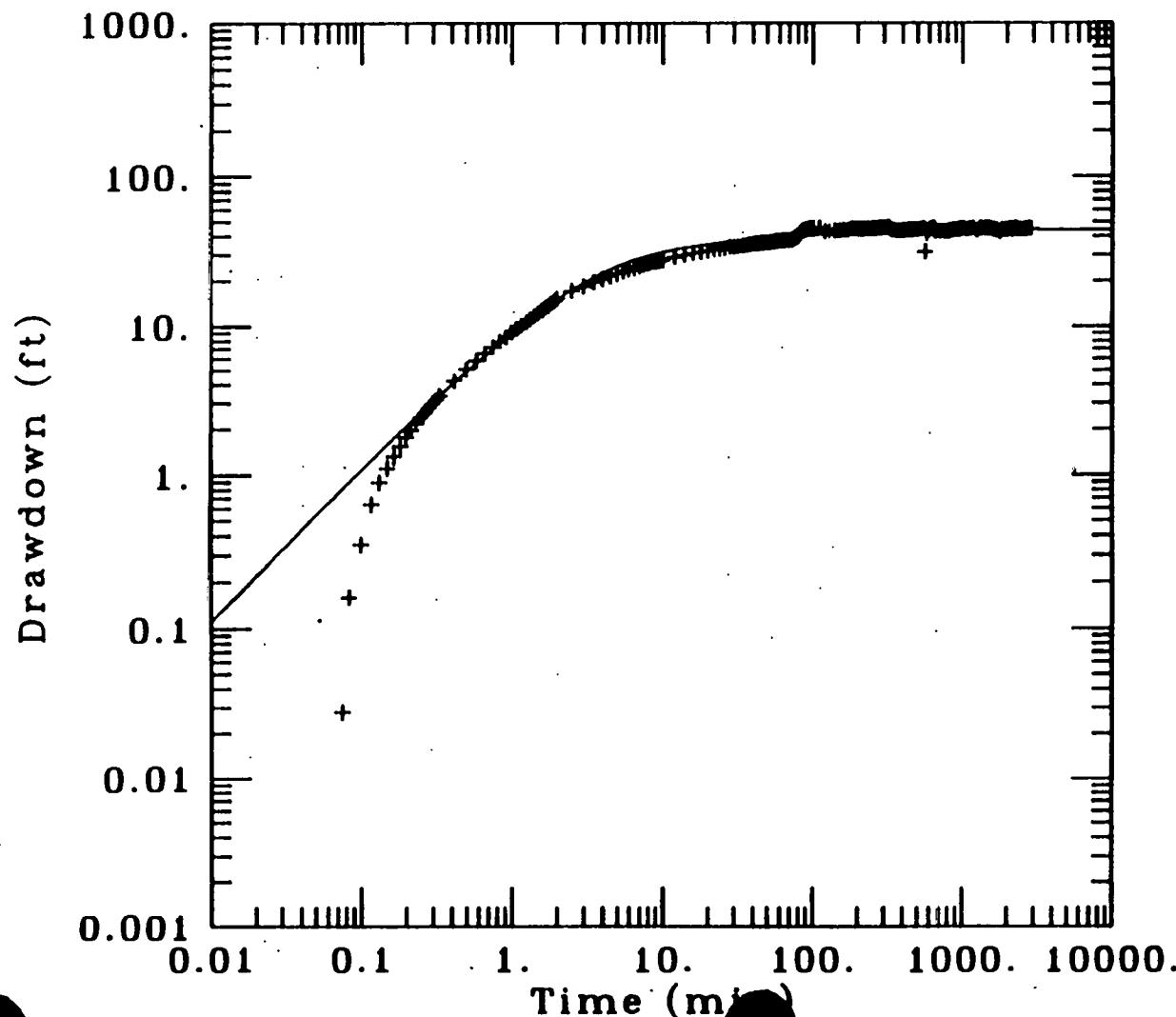
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 2-Day



DATA SET:

6s6d-p1.dat

01/03/94

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Moench

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$$T = 0.002797 \text{ ft}^2/\text{min}$$

$$S = 7.2594E-06$$

$$r/B = 0.02392$$

$$B = 0.2466$$

$$S_w = 0$$

$$a = 7.8014E-05$$

TEST DATA:

$$Q = 0.201 \text{ ft}^3/\text{min}$$

$$r = 14.4 \text{ ft}$$

$$r_c = 0.08 \text{ ft}$$

$$r_w = 0.25 \text{ ft}$$

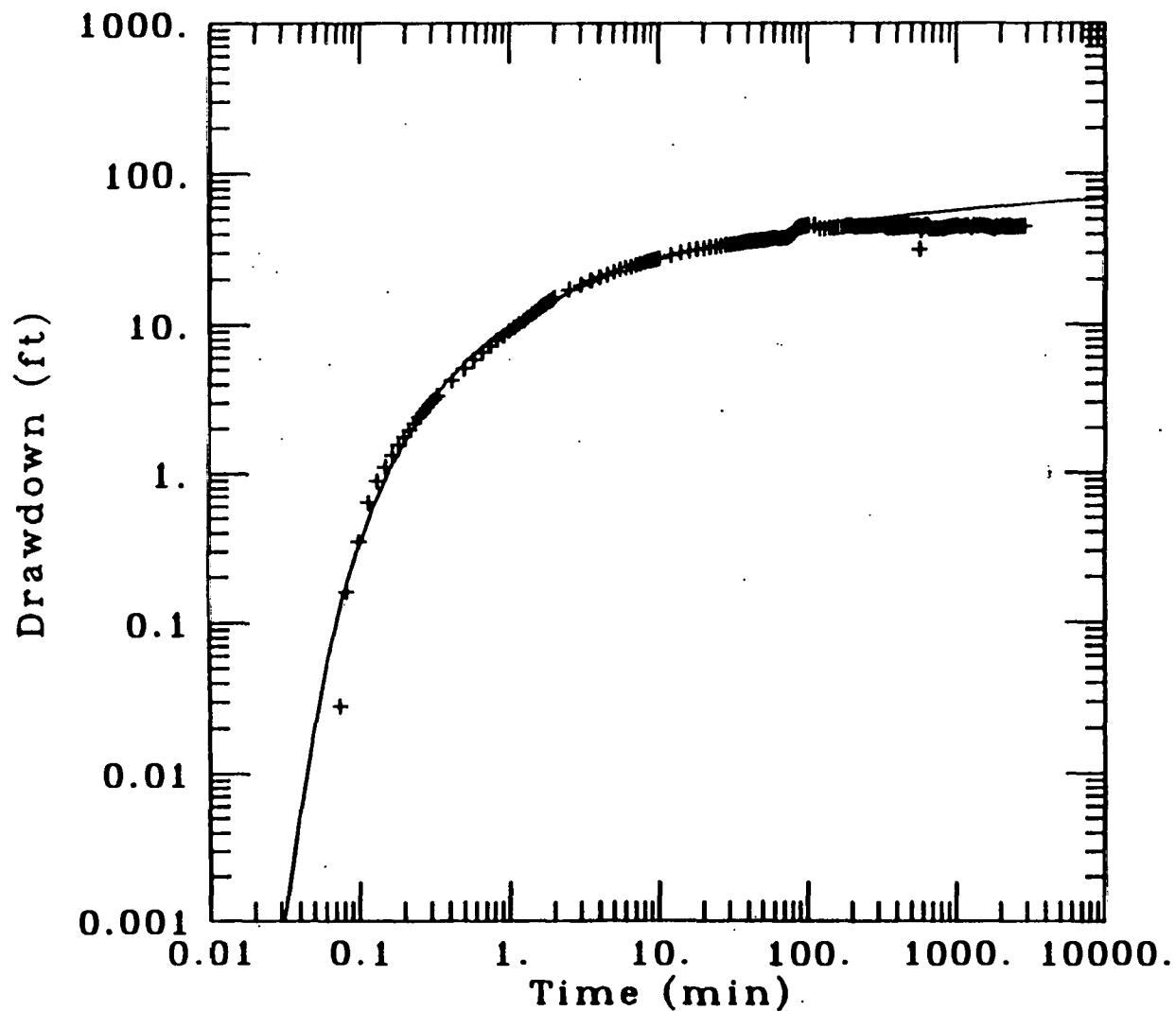
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 2-Day



DATA SET:

6s6d-p1.dat

01/03/94

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Hantush

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.001767 \text{ ft}^2/\text{min}$

$S = 7.4991E-06$

$\beta = 0.02058$

TEST DATA:

$Q = 0.201 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

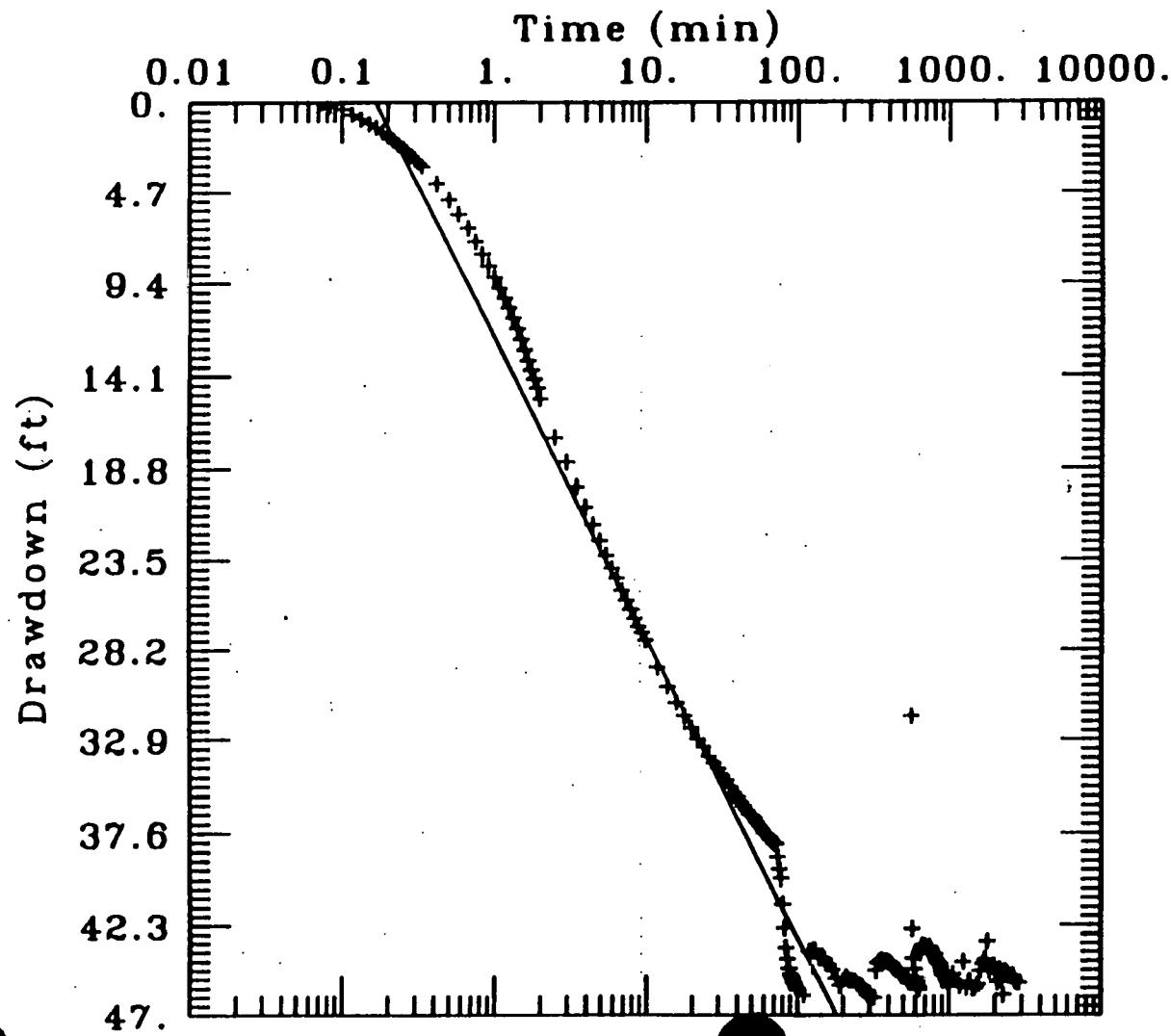
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 2-Day



E-B-32

DATA SET:

6s6d-p1.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper-Jacob

TEST DATE:

12/3/93 - 12/6/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.002384 \text{ ft}^2/\text{min}$

$S = 4.2496E-06$

TEST DATA:

$Q = 0.201 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

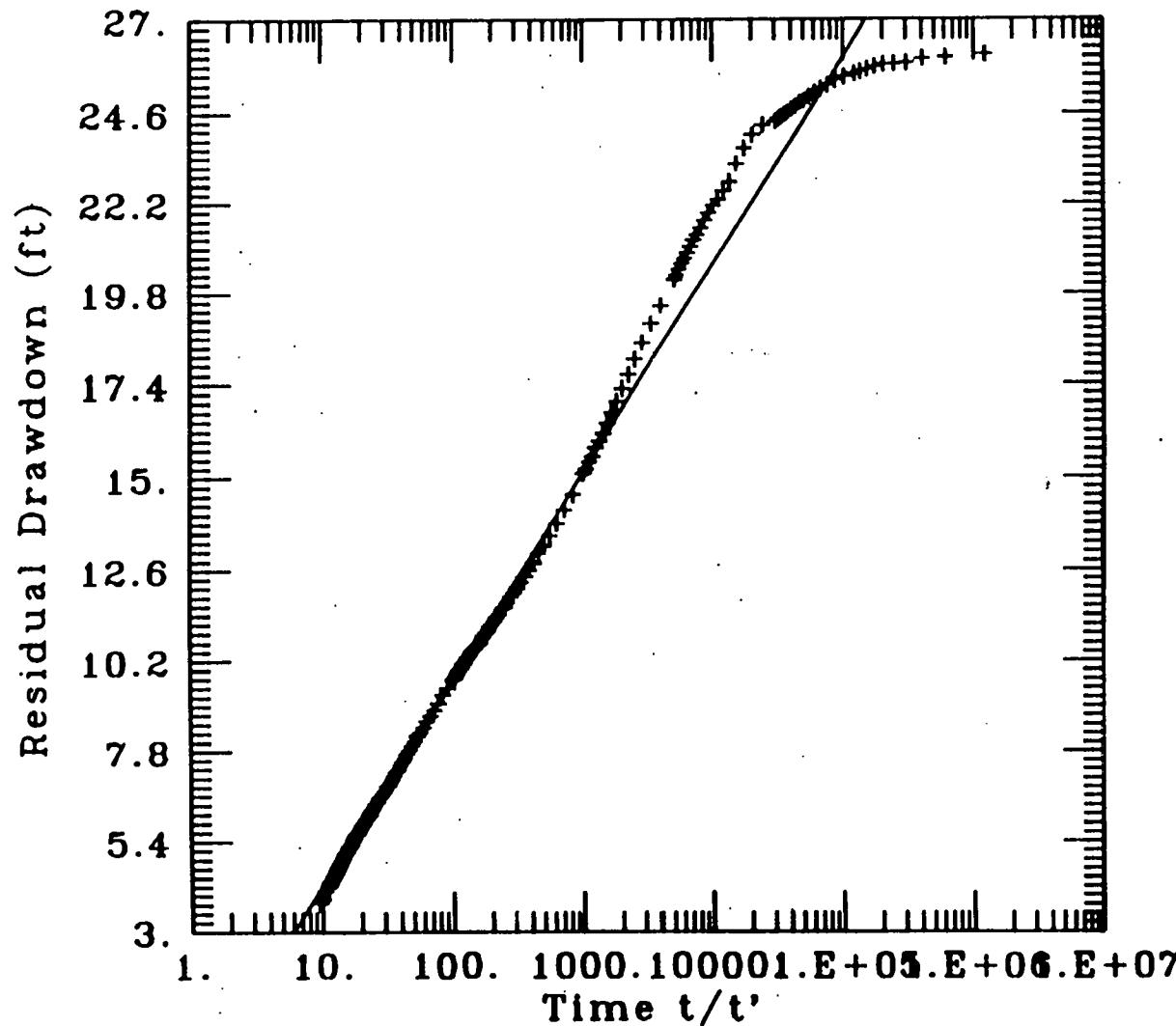
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Recovery Test



DATA SET:

6s6d-r2.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis Recovery

TEST DATE:

12/7/93 - 12/15/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.0045 \text{ ft}^2/\text{min}$

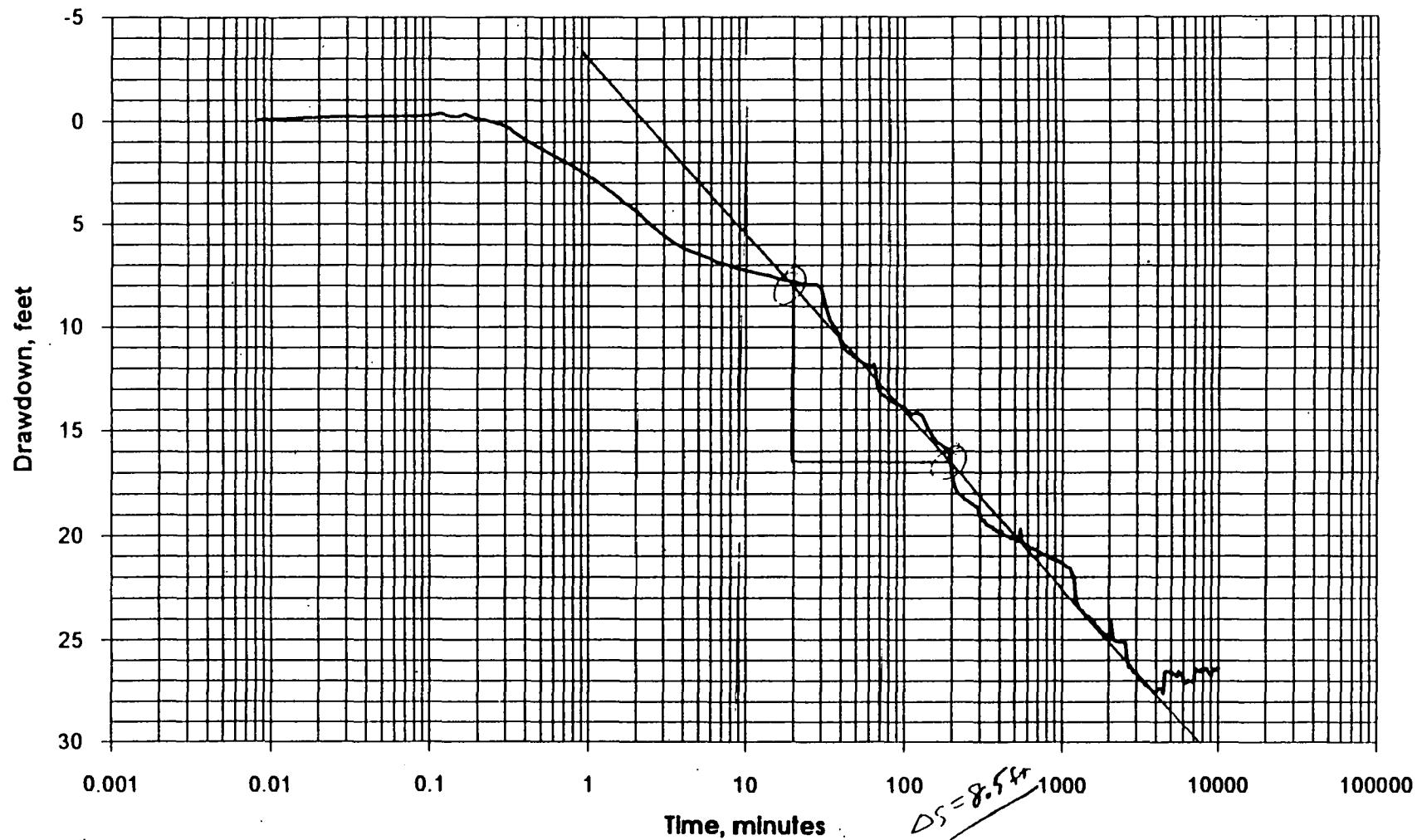
$S' = 1.687$

TEST DATA:

$Q = 0.134 \text{ ft}^3/\text{min}$

$t_{\text{pumping}} = 1.0095E+04 \text{ min}$

FIGURE 4.2 B53W06D: Jacob Straight-Line Method -- 7-Day Test



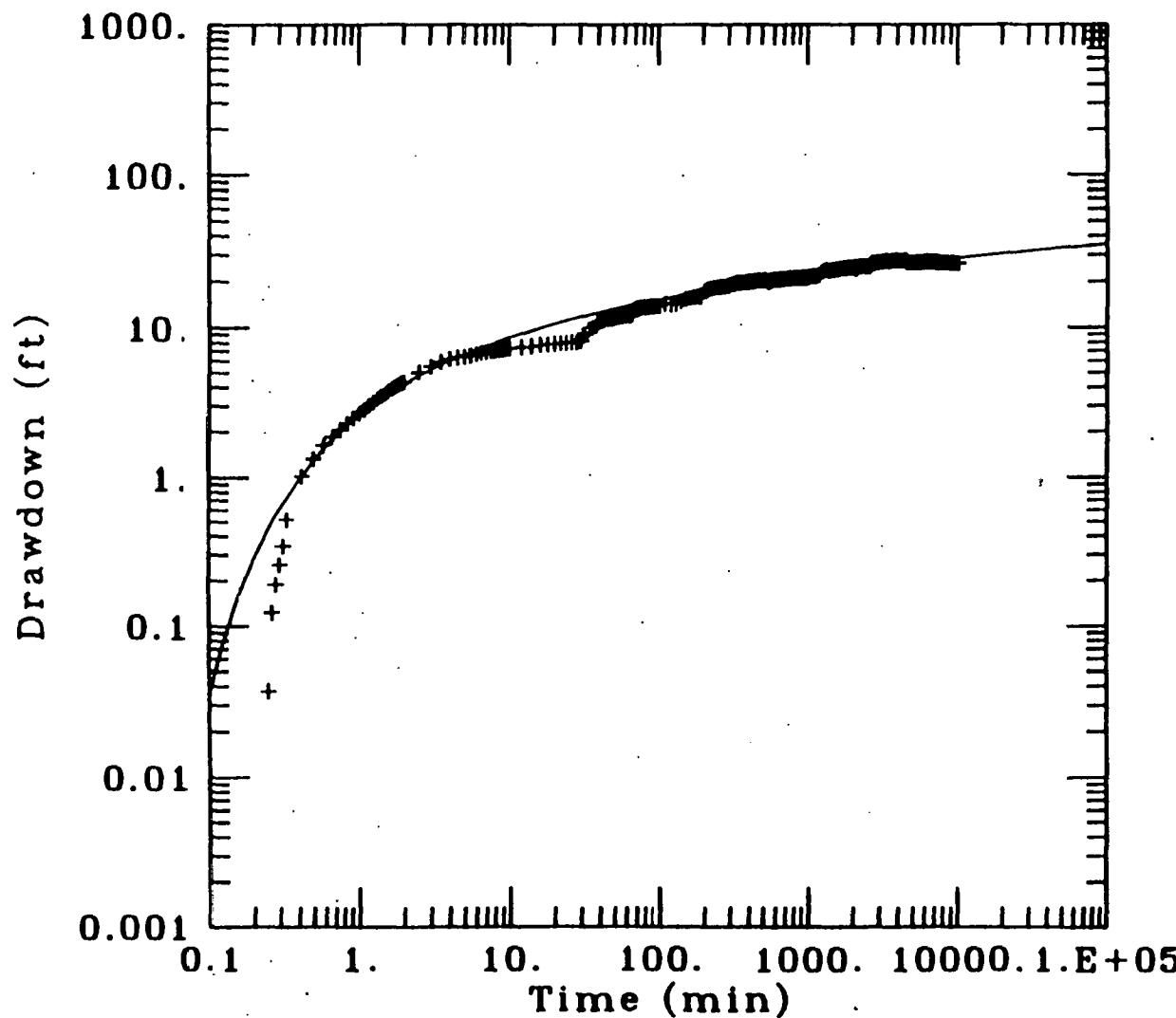
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 7-Day



DATA SET:

6s6d-p2.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis

TEST DATE:

12/7/93 - 12/15/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$$T = 0.003653 \text{ ft}^2/\text{min}$$

$$S = 2.1556E-05$$

TEST DATA:

$$Q = 0.134 \text{ ft}^3/\text{min}$$

$$r = 14.4 \text{ ft}$$

$$r_c = 0.08 \text{ ft}$$

$$r_w = 0.25 \text{ ft}$$

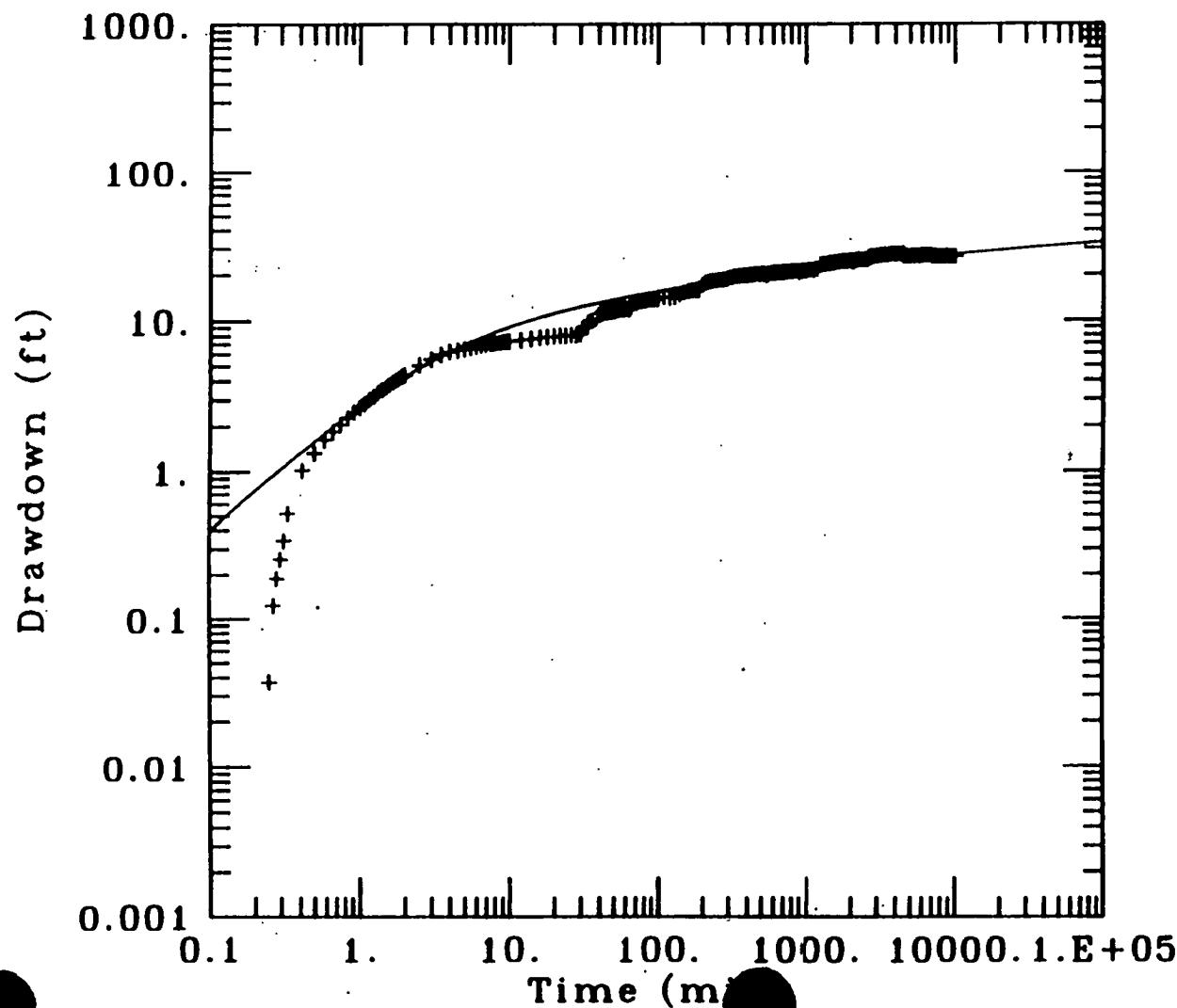
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 7-Day



DATA SET:

6s6d-p2.dat

01/03/94

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Papadopoulos-Cooper

TEST DATE:

12/7/93 - 12/15/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.004228 \text{ ft}^2/\text{min}$

$S = 0.03032$

$a = 0.2062$

TEST DATA:

$Q = 0.134 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$rc = 0.08 \text{ ft}$

$rw = 0.25 \text{ ft}$

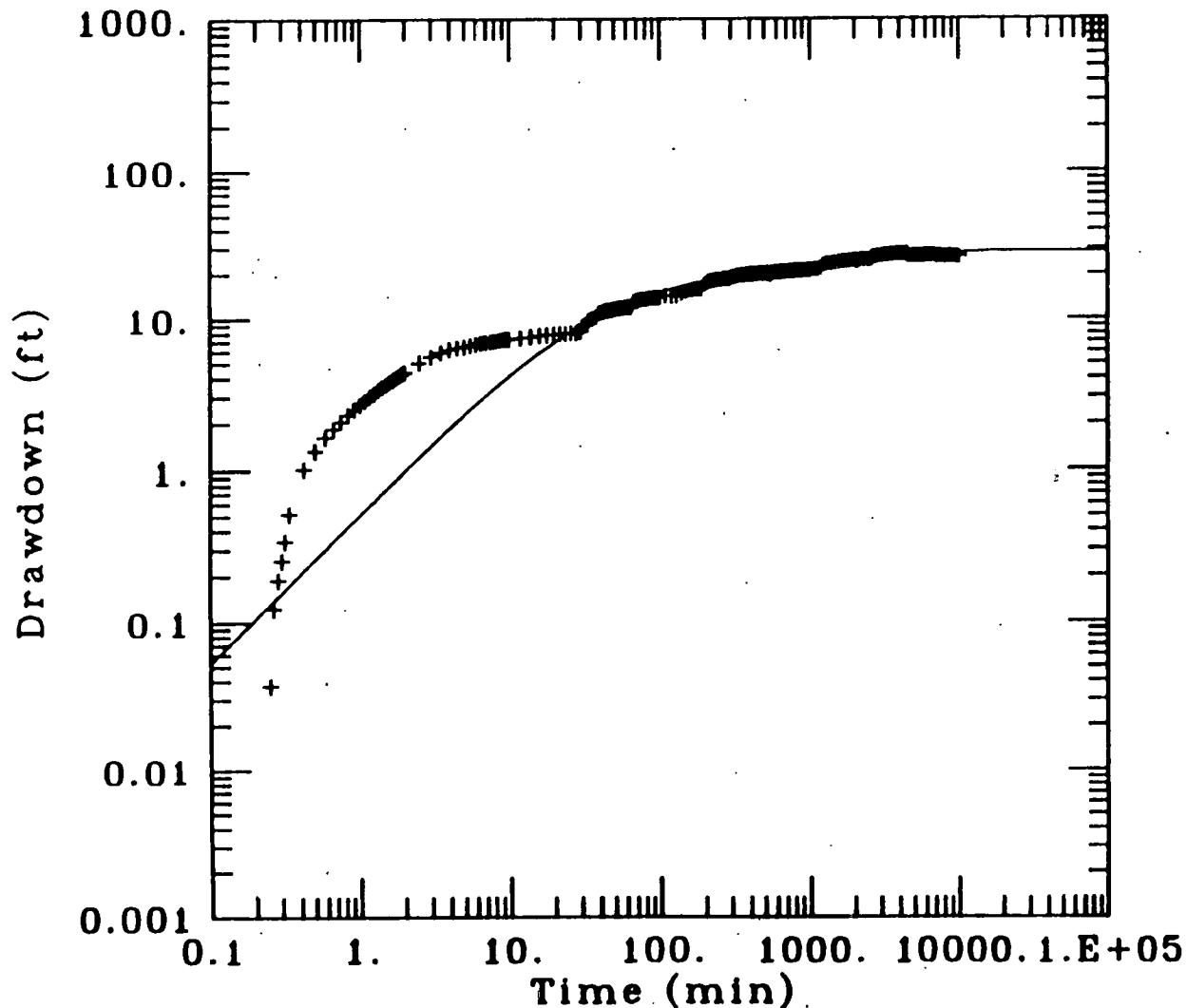
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 7-Day



DATA SET:

6s6d-p2.dat

01/03/94

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Moench

TEST DATE:

12/7/93 - 12/15/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.001884 \text{ ft}^2/\text{min}$

$S = 2.3084E-05$

$r/\theta = 0.09258$

$B = 10.$

$S_w = 0.$

$a = 1.7786E-05$

TEST DATA:

$Q = 0.134 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

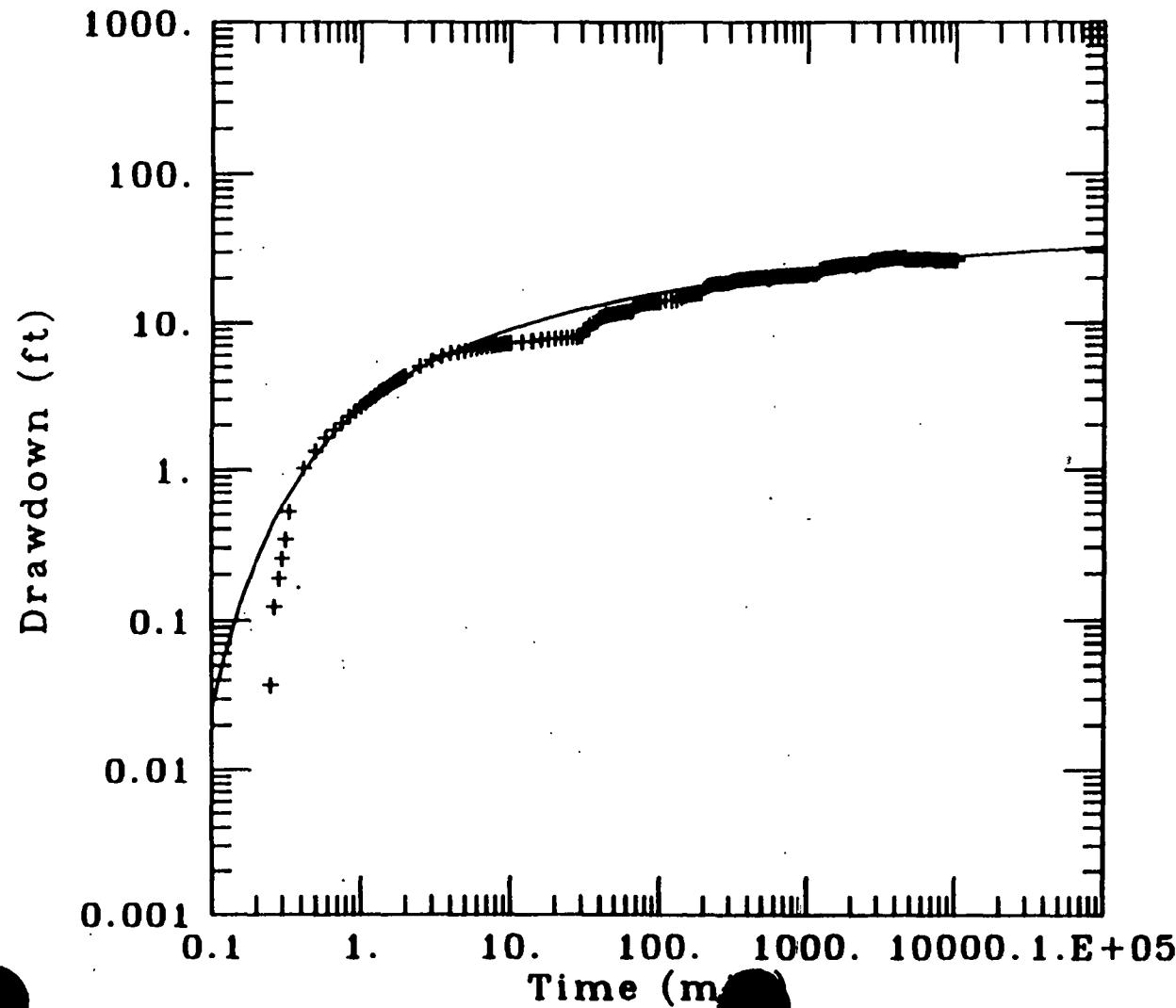
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W06D Pumping Test -- 7-Day



DATA SET:

6s6d-p2.dat

01/03/94

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Hantush

TEST DATE:

12/7/93 - 12/15/93

TEST WELL:

B53W06D

OBS. WELL:

B53W06S

ESTIMATED PARAMETERS:

$T = 0.003313 \text{ ft}^2/\text{min}$

$S = 2.1511E-05$

$\beta = 0.00427$

TEST DATA:

$Q = 0.134 \text{ ft}^3/\text{min}$

$r = 14.4 \text{ ft}$

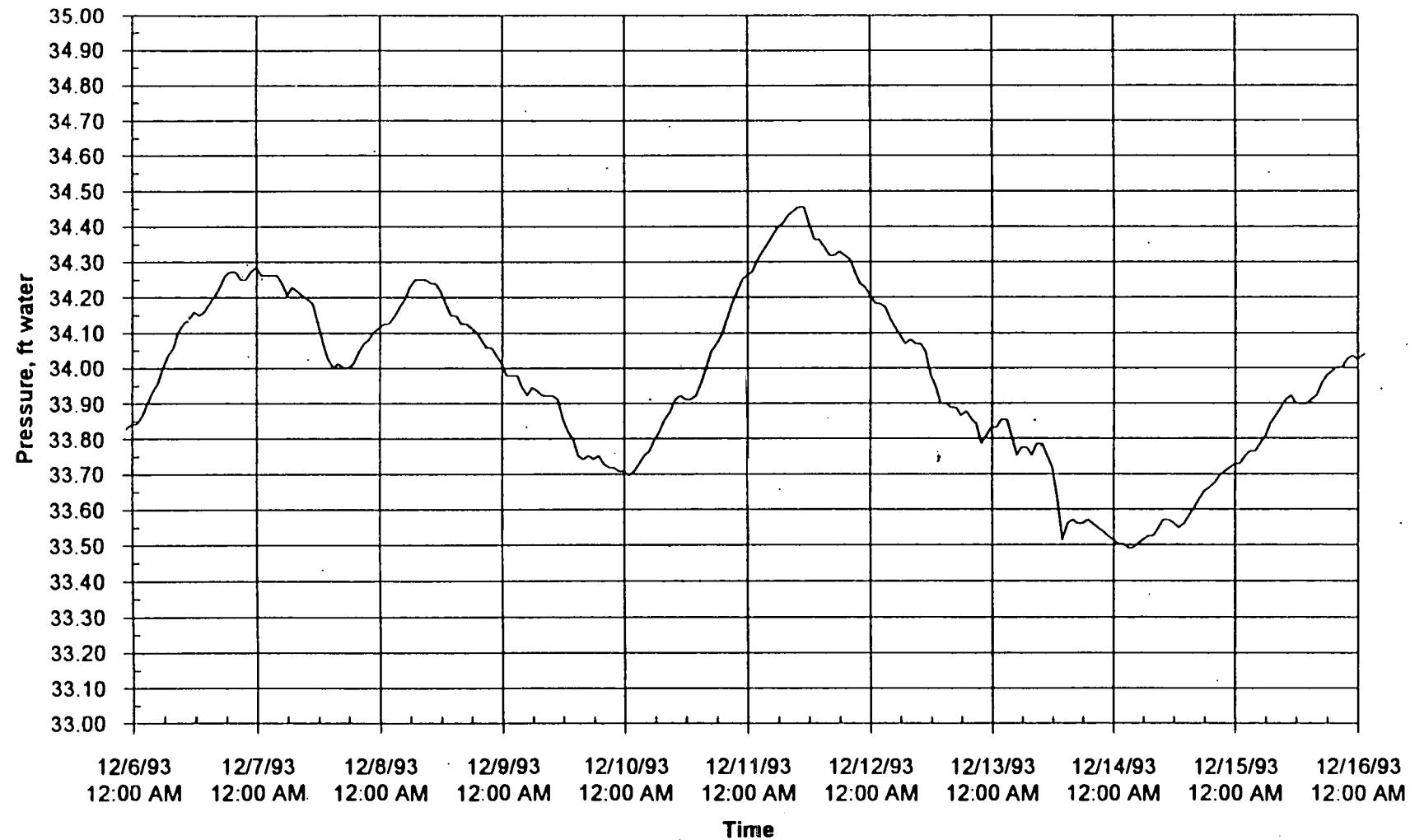
$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

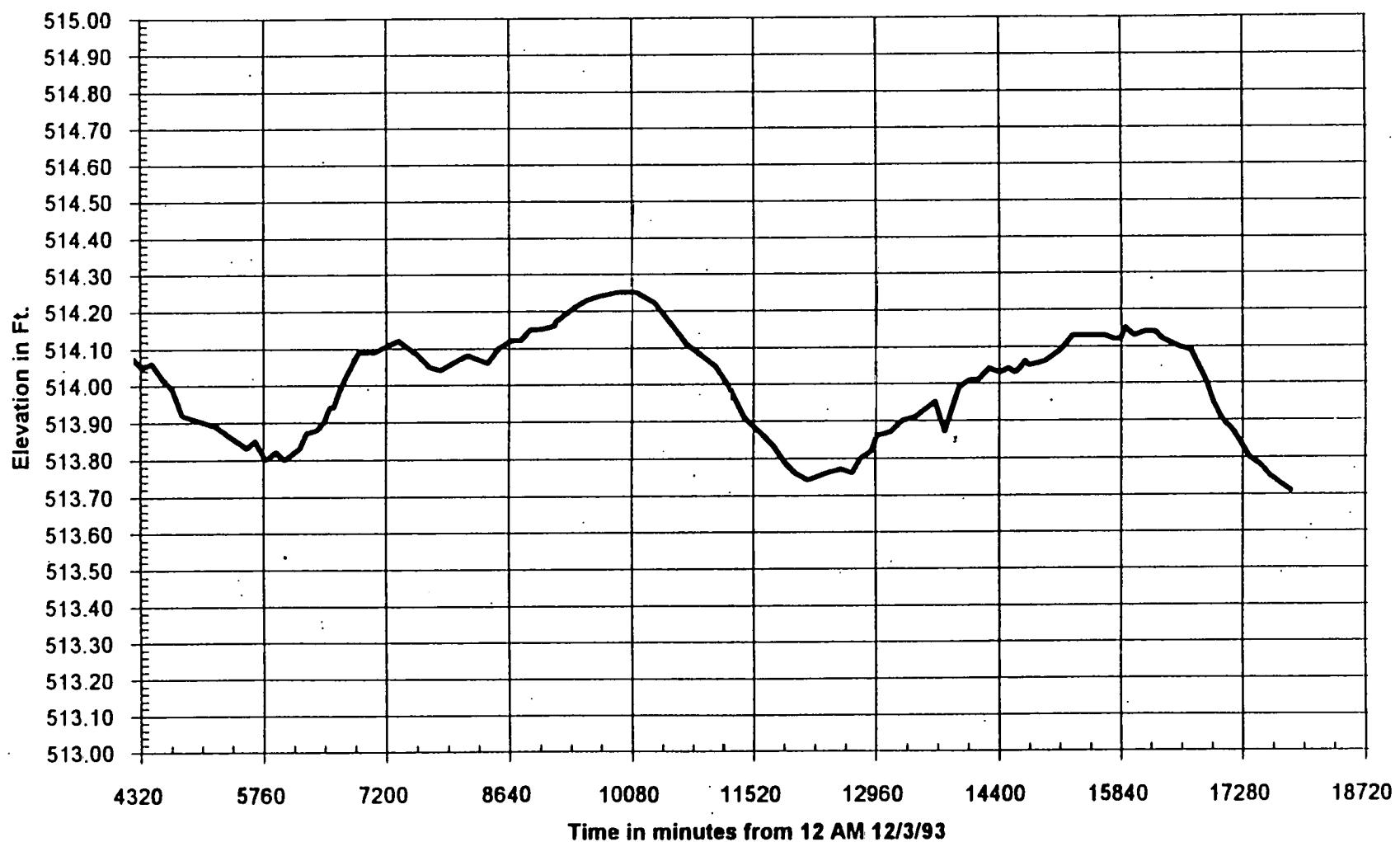
Figure 4.7 B53W04D: Papadopoulos-Cooper - Confined

Figure 4.9 B53W07D: Papadopoulos-Cooper - Confined

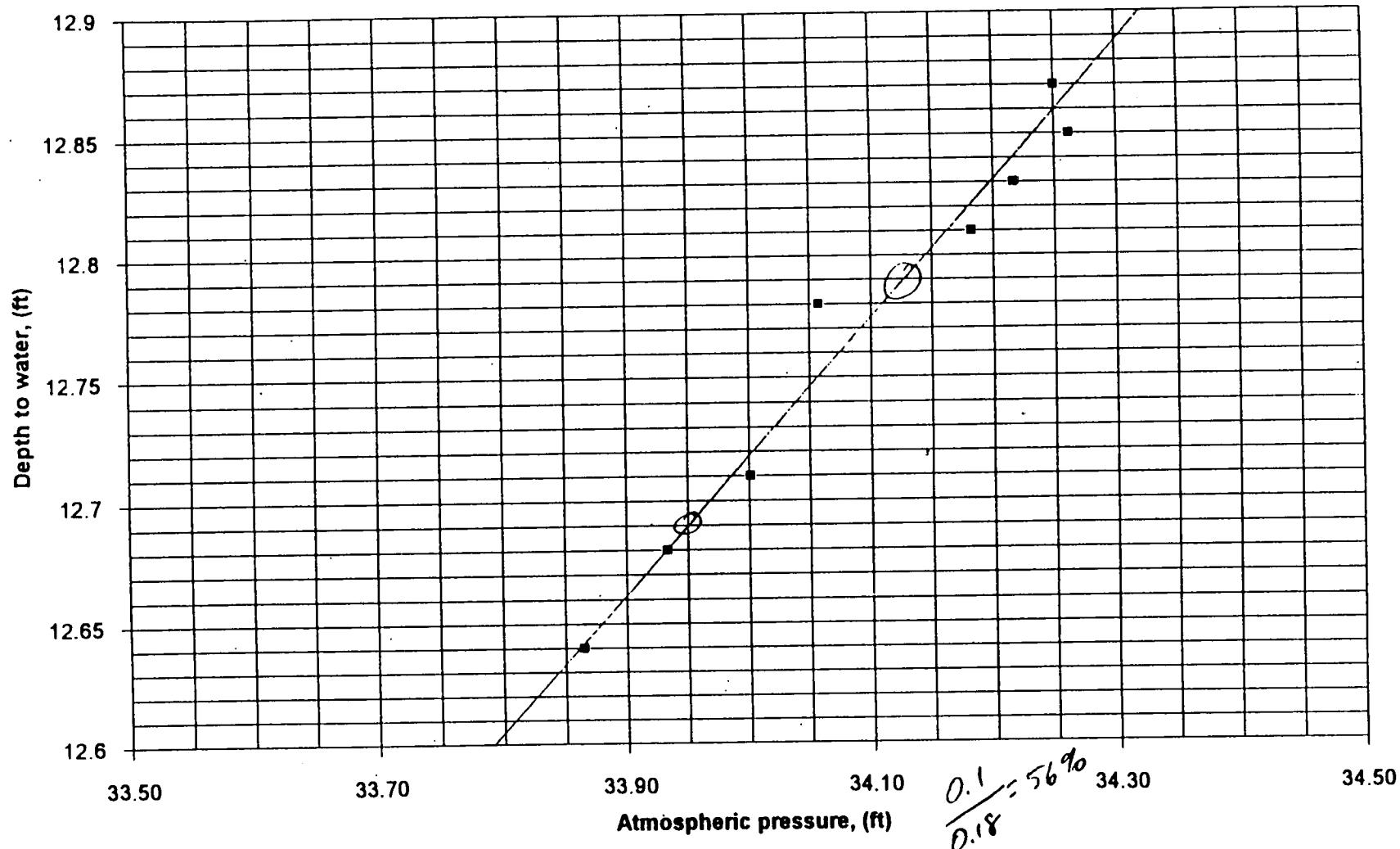
E-B-43

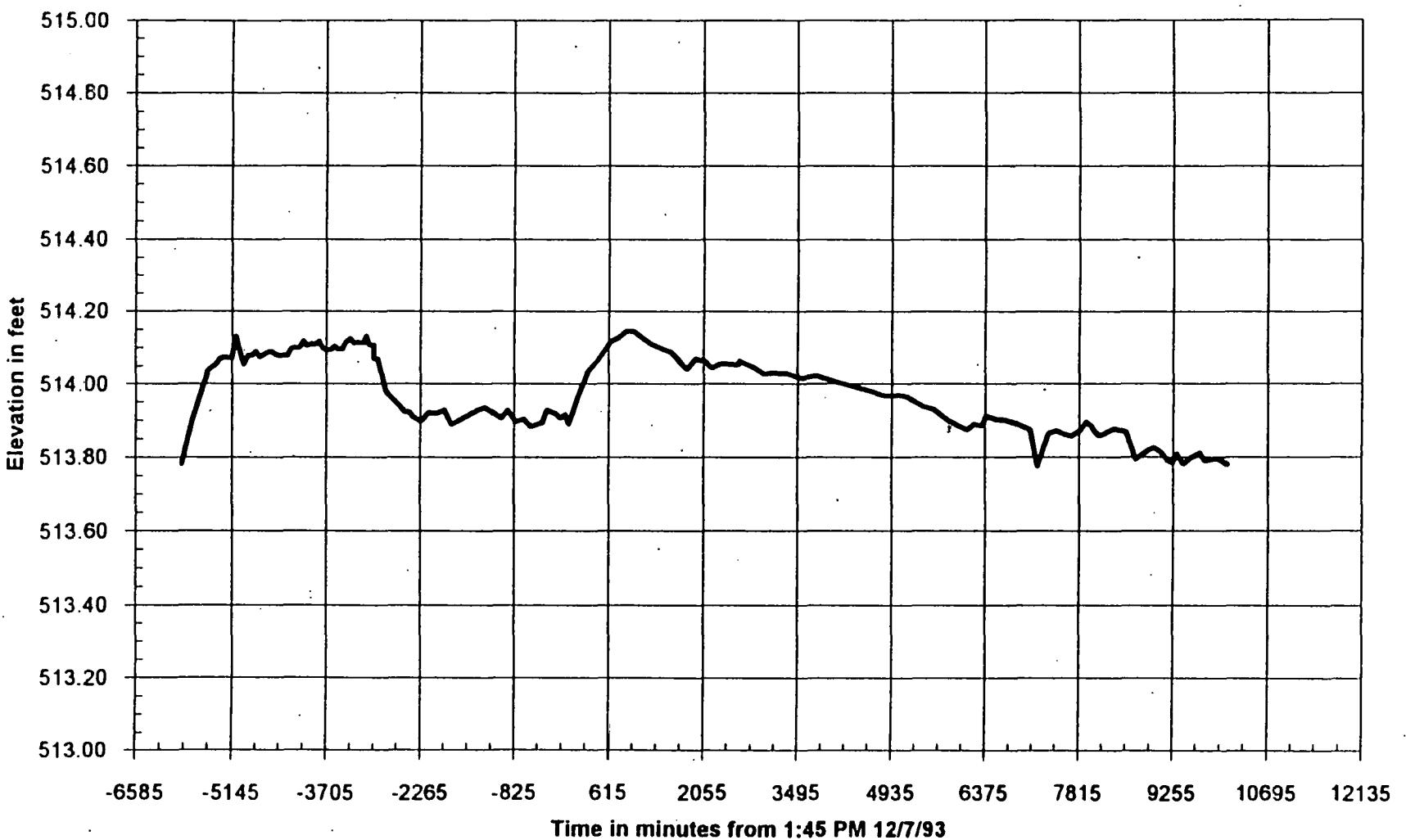


E-B-44



E-B-45





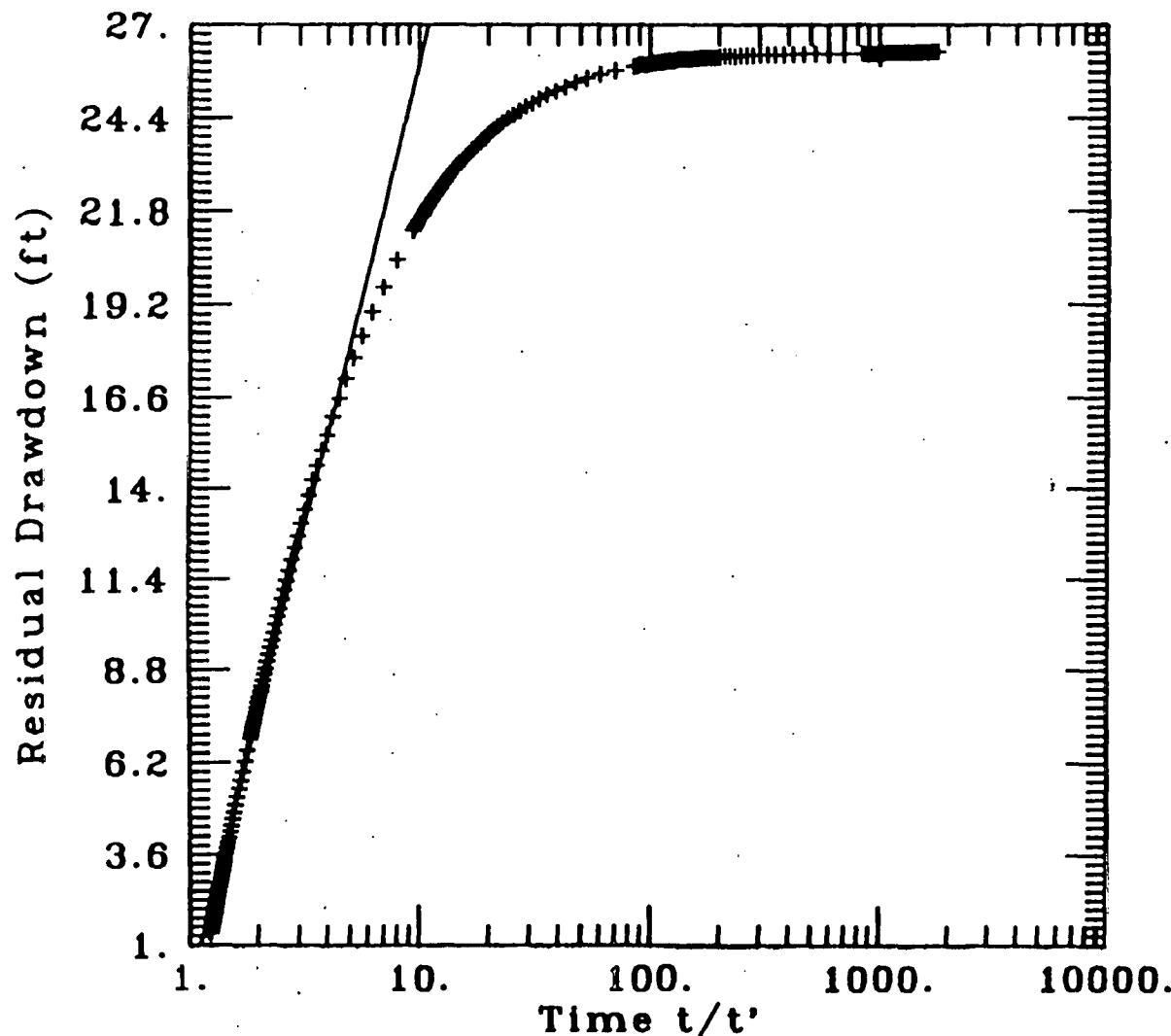
Bechtel National Inc.

Client: Fusrap - DOE

Project No.: 14501-100-153

Location: SLAPS

M10-25D Recovery Test 12/13/93



DATA SET:

1025-r2.dat

12/28/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis Recovery

TEST DATE:

12/12/93 - 12/13/93

TEST WELL:

M10-25D

OBS. WELL:

M10-25S

ESTIMATED PARAMETERS:

$T = 0.0002625 \text{ ft}^2/\text{min}$

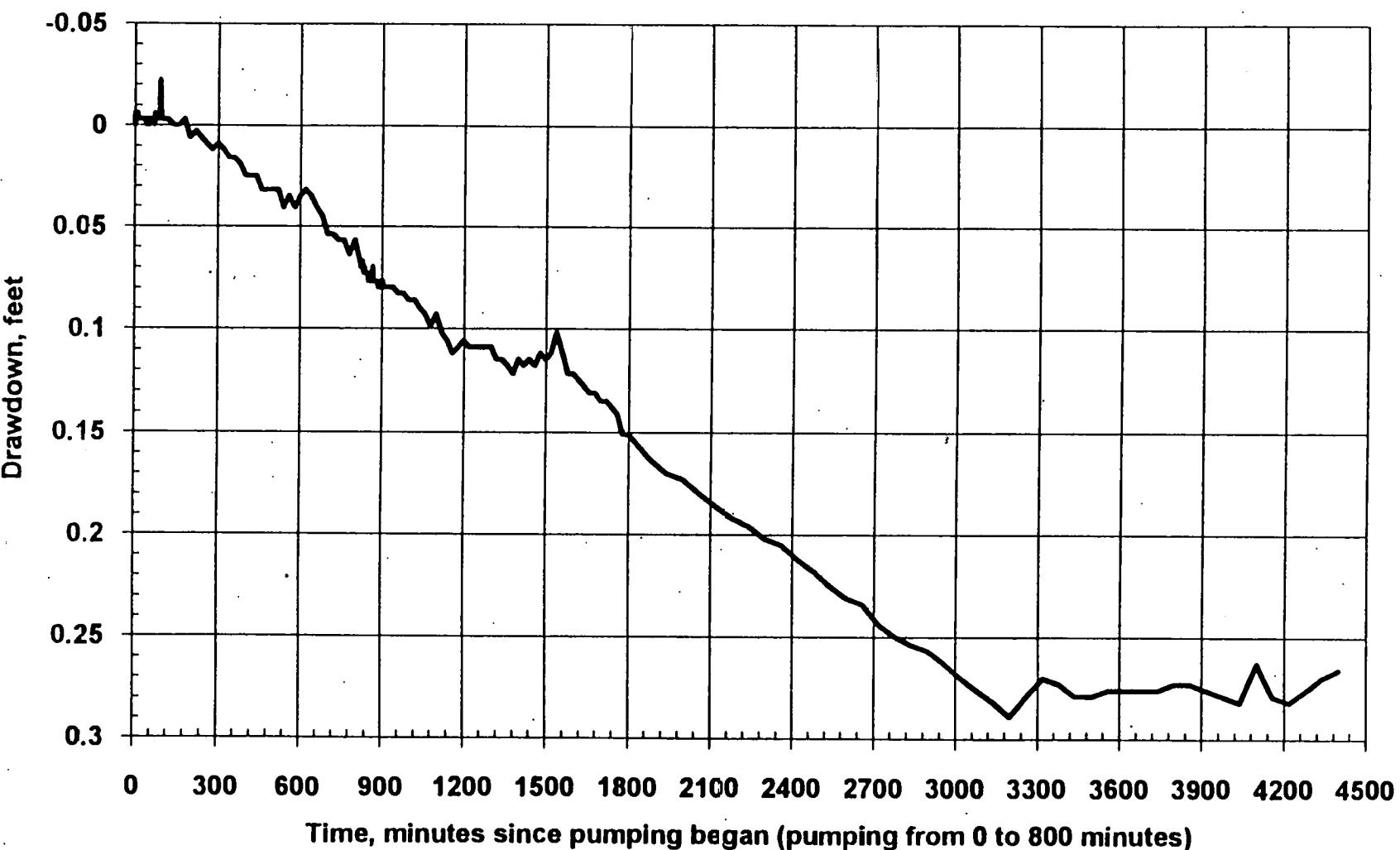
$S' = 1.023$

TEST DATA:

$Q = 0.0375 \text{ ft}^3/\text{min}$

$t_{\text{pumping}} = 835. \text{ min}$

Figure 5.2 M10-25S: Drawdown & Recovery



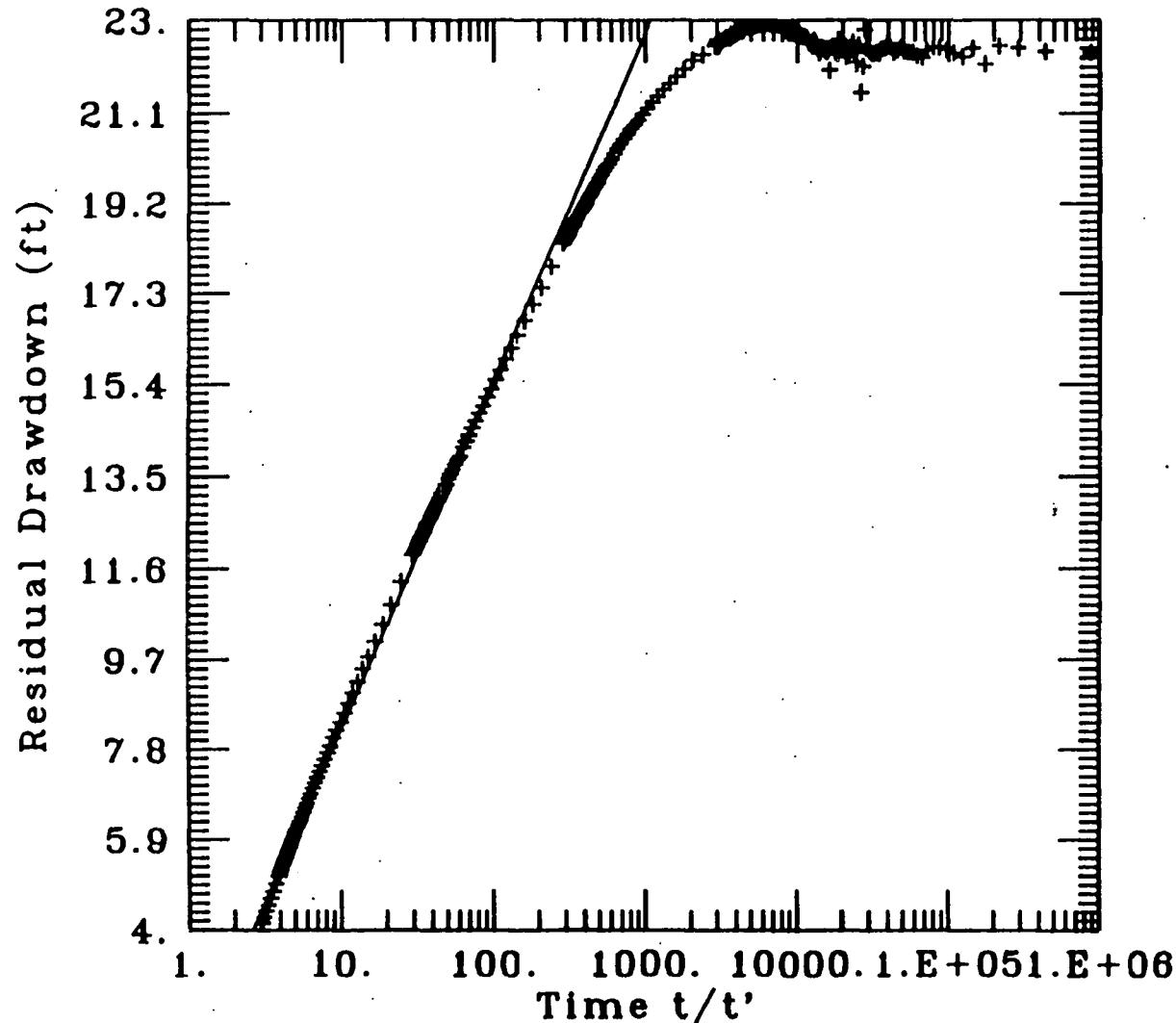
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5D Recovery Cycle



DATA SET:

13585-r.dat

12/28/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis Recovery

TEST DATE:

12/15/93 - 12/16/93

TEST WELL:

M13.5-8.5D

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$T = 0.0008439 \text{ ft}^2/\text{min}$

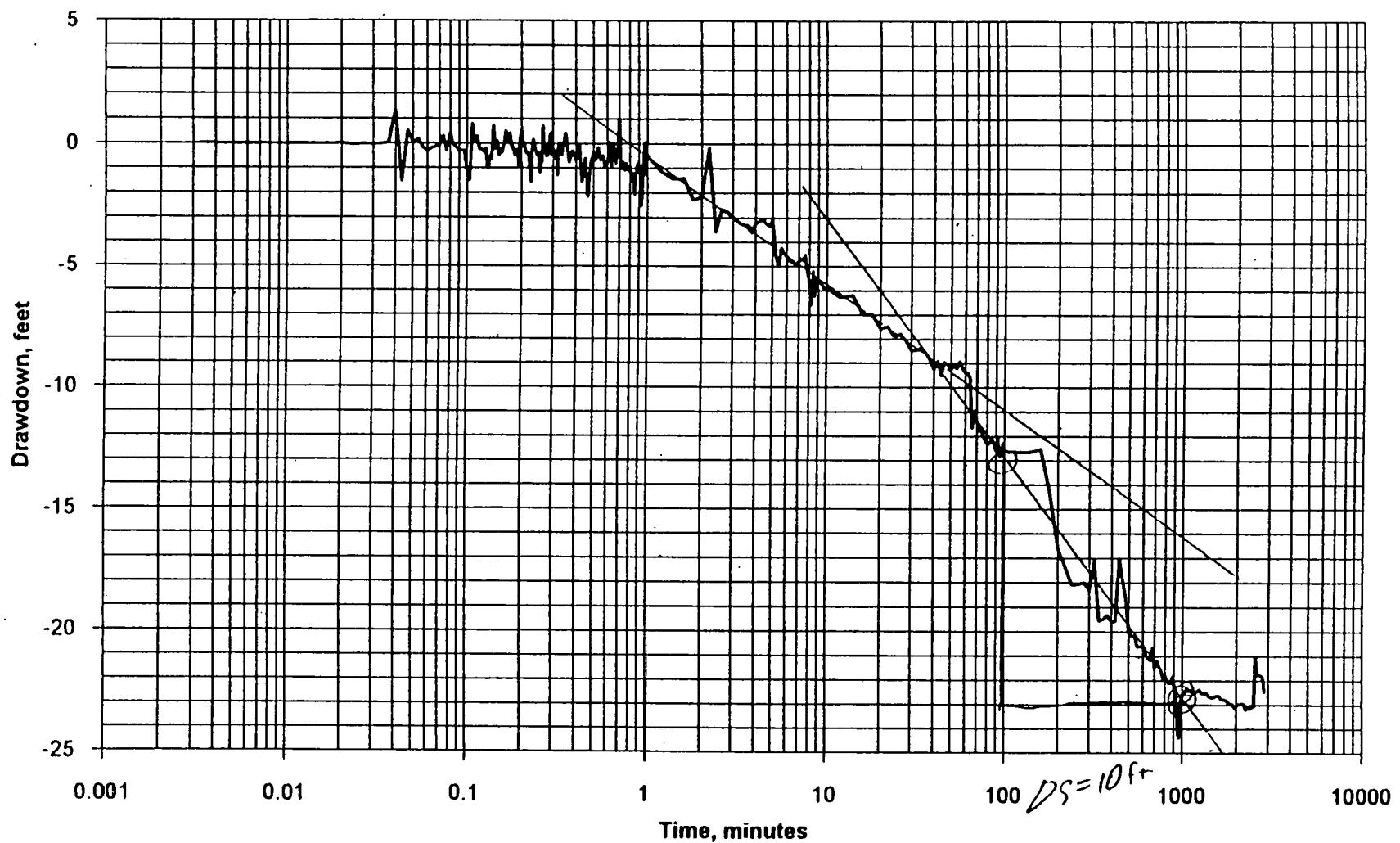
$S' = 0.7441$

TEST DATA:

$Q = 0.0335 \text{ ft}^3/\text{min}$

$t_{\text{pumping}} = 2880. \text{ min}$

FIGURE 6.2 M13.5-8.5D: Jacob Straight-Line Method -- 2-Day Test



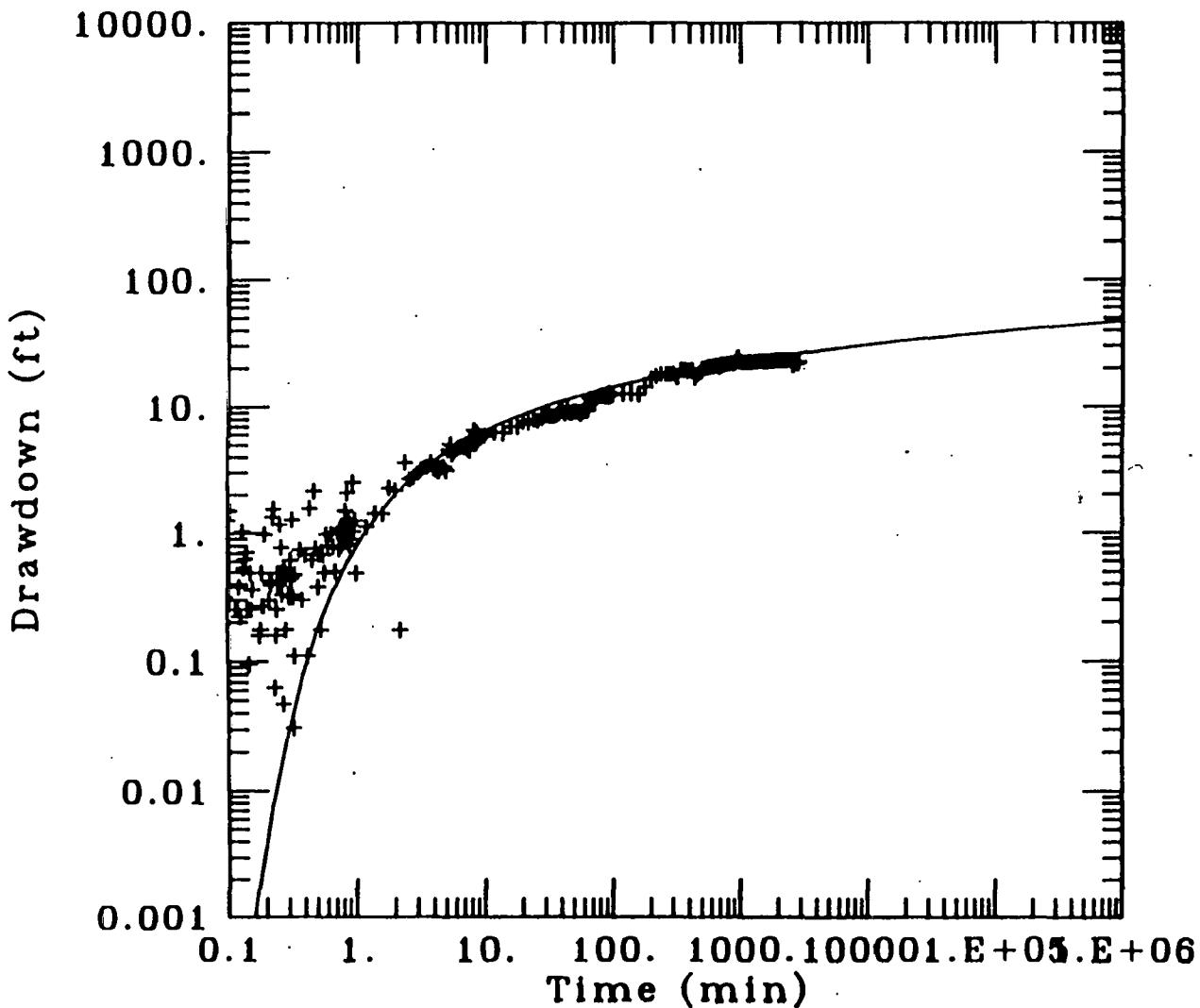
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5 Pumping Test



DATA SET:

13585-p.dat

12/29/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis

TEST DATE:

12/13/93 - 12/15/93

TEST WELL:

M13.5-8.50

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$T = 0.0007549 \text{ ft}^2/\text{min}$

$S = 1.7628E-05$

TEST DATA:

$Q = 0.0335 \text{ ft}^3/\text{min}$

$r = 13. \text{ ft}$

$r_c = 0.03 \text{ ft}$

$r_w = 0.25 \text{ ft}$

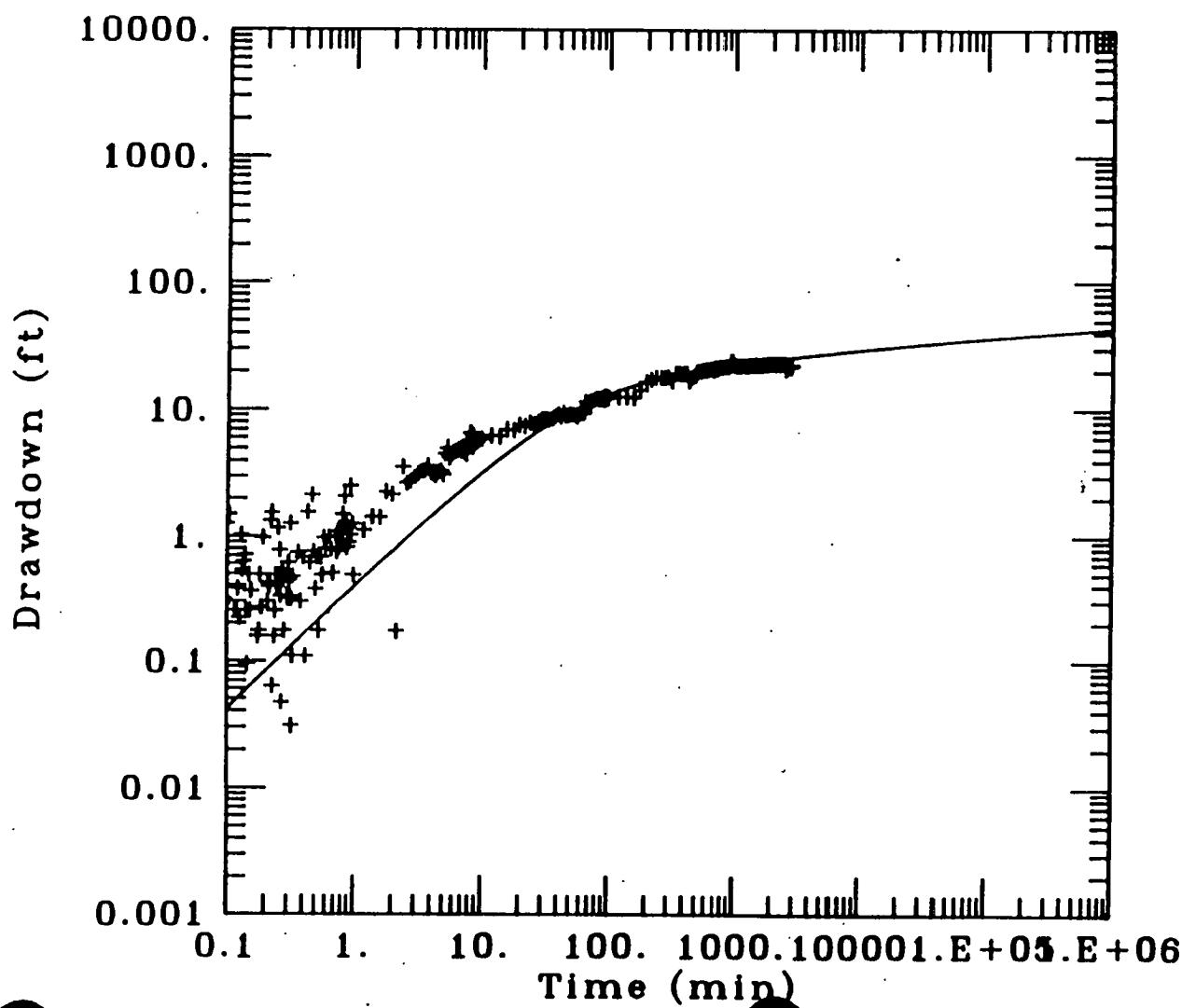
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5 Pumping Test



DATA SET:

13585-p.dat

12/29/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Papadopoulos-Cooper

TEST DATE:

12/13/93 - 12/15/93

TEST WELL:

M13.5-8.50

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$T = 0.0008986 \text{ ft}^2/\text{min}$

$S = 0.01483$

$a = 0.03631$

TEST DATA:

$Q = 0.0335 \text{ ft}^3/\text{min}$

$r = 13. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

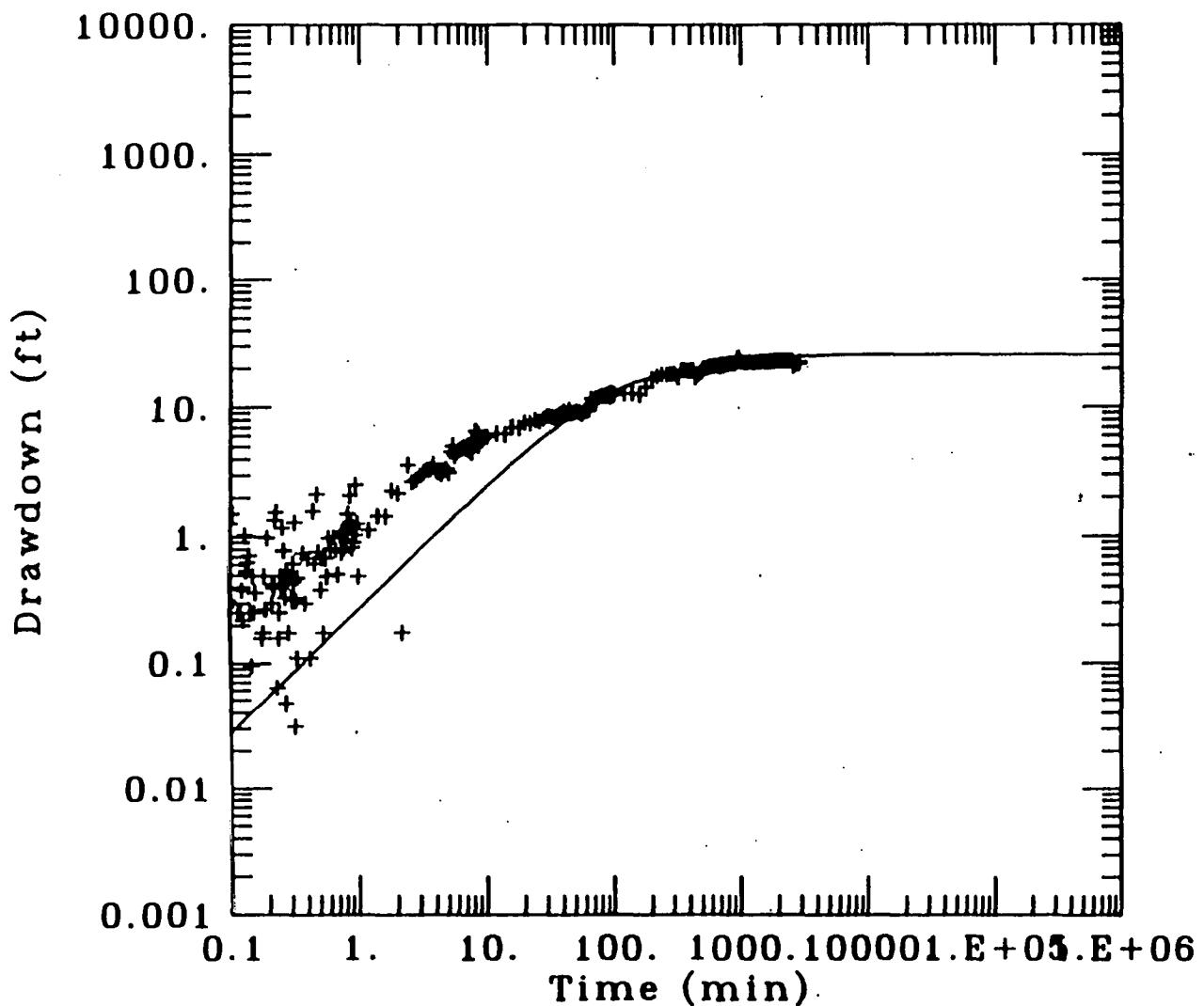
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5 Pumping Test



DATA SET:

13585-p.dat

12/29/93

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Moench

TEST DATE:

12/13/93 - 12/15/93

TEST WELL:

M13.5-8.50

OBS. WELL:

M13.5-8.55

ESTIMATED PARAMETERS:

$$T = 0.0006042 \text{ ft}^2/\text{min}$$

$$S = 1.6055E-05$$

$$r/b = 0.06212$$

$$\beta = 1.937$$

$$S_w = 0$$

$$a = 2.5877E-05$$

TEST DATA:

$$Q = 0.0335 \text{ ft}^3/\text{min}$$

$$r = 13. \text{ ft}$$

$$r_c = 0.08 \text{ ft}$$

$$r_w = 0.25 \text{ ft}$$

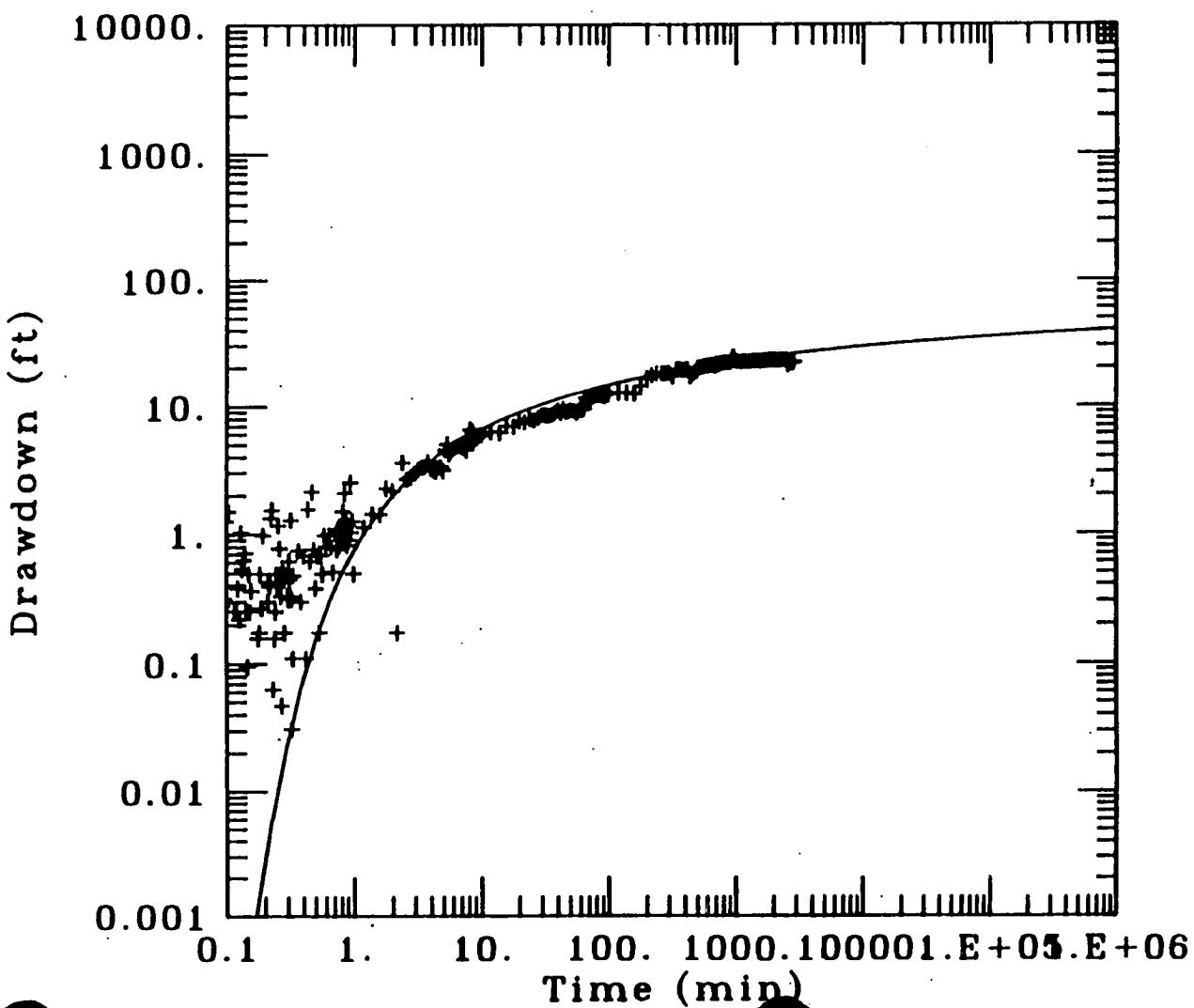
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5 Pumping Test



DATA SET:

13585-p.dat

12/29/93

AQUIFER TYPE:

Leaky

SOLUTION METHOD:

Hantush

TEST DATE:

12/13/93 - 12/15/93

TEST WELL:

M13.5-8.5D

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$T = 0.0007083 \text{ ft}^2/\text{min}$

$S = 1.7665E-05$

$B = 0.004521$

TEST DATA:

$Q = 0.0335 \text{ ft}^3/\text{min}$

$r = 13. \text{ ft}$

$r_c = 0.08 \text{ ft}$

$r_w = 0.25 \text{ ft}$

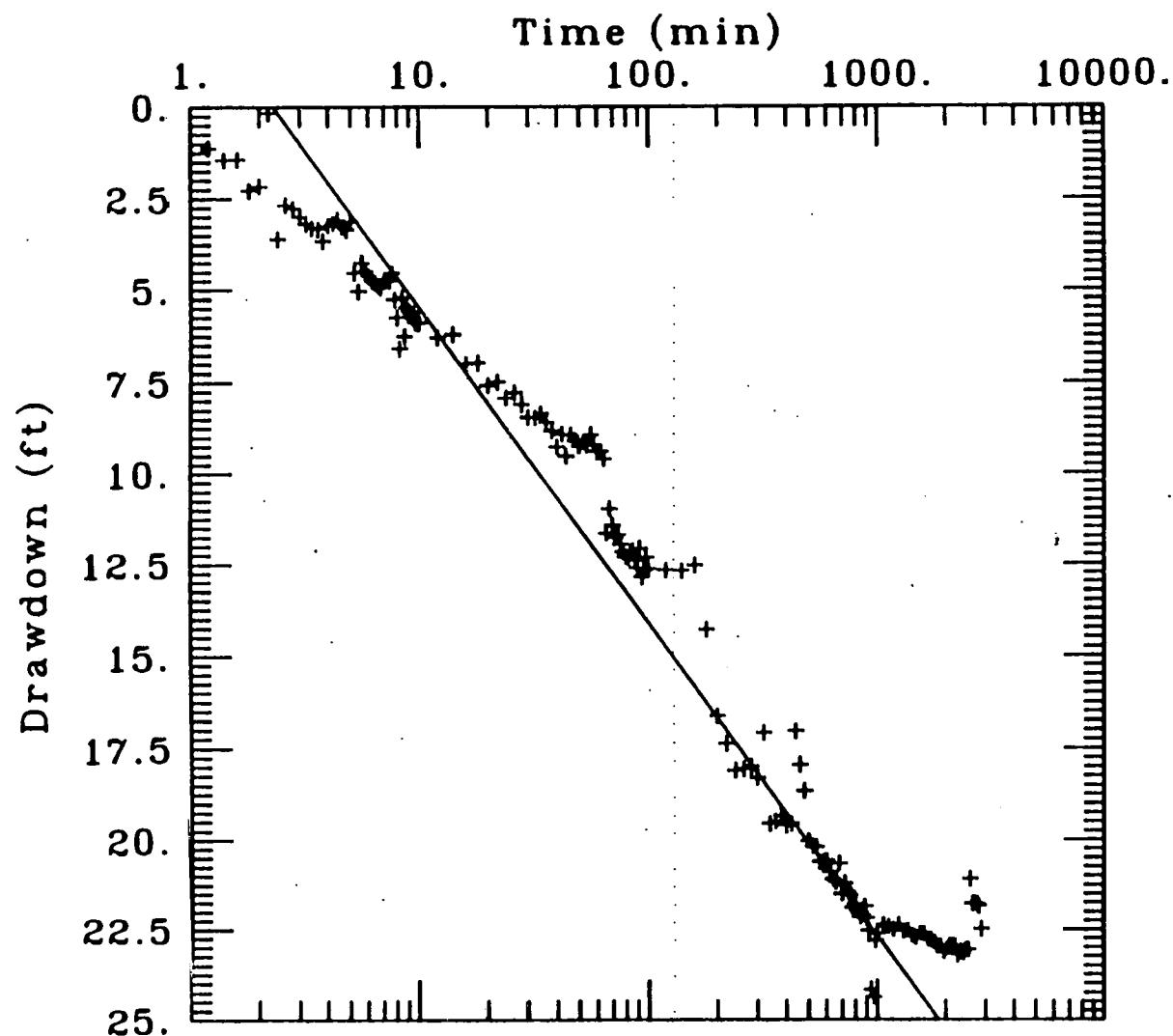
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

M13.5-8.5 Pumping Test



DATA SET:

13585-p.dat

12/29/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Cooper-Jacob

TEST DATE:

12/13/93 - 12/15/93

TEST WELL:

M13.5-8.50

OBS. WELL:

M13.5-8.5S

ESTIMATED PARAMETERS:

$$T = 0.000714 \text{ ft}^2/\text{min}$$

$$S = 2.1804E-05$$

TEST DATA:

$$Q = 0.0335 \text{ ft}^3/\text{min}$$

$$r = 13. \text{ ft}$$

$$r_c = 0.08 \text{ ft}$$

$$r_w = 0.25 \text{ ft}$$

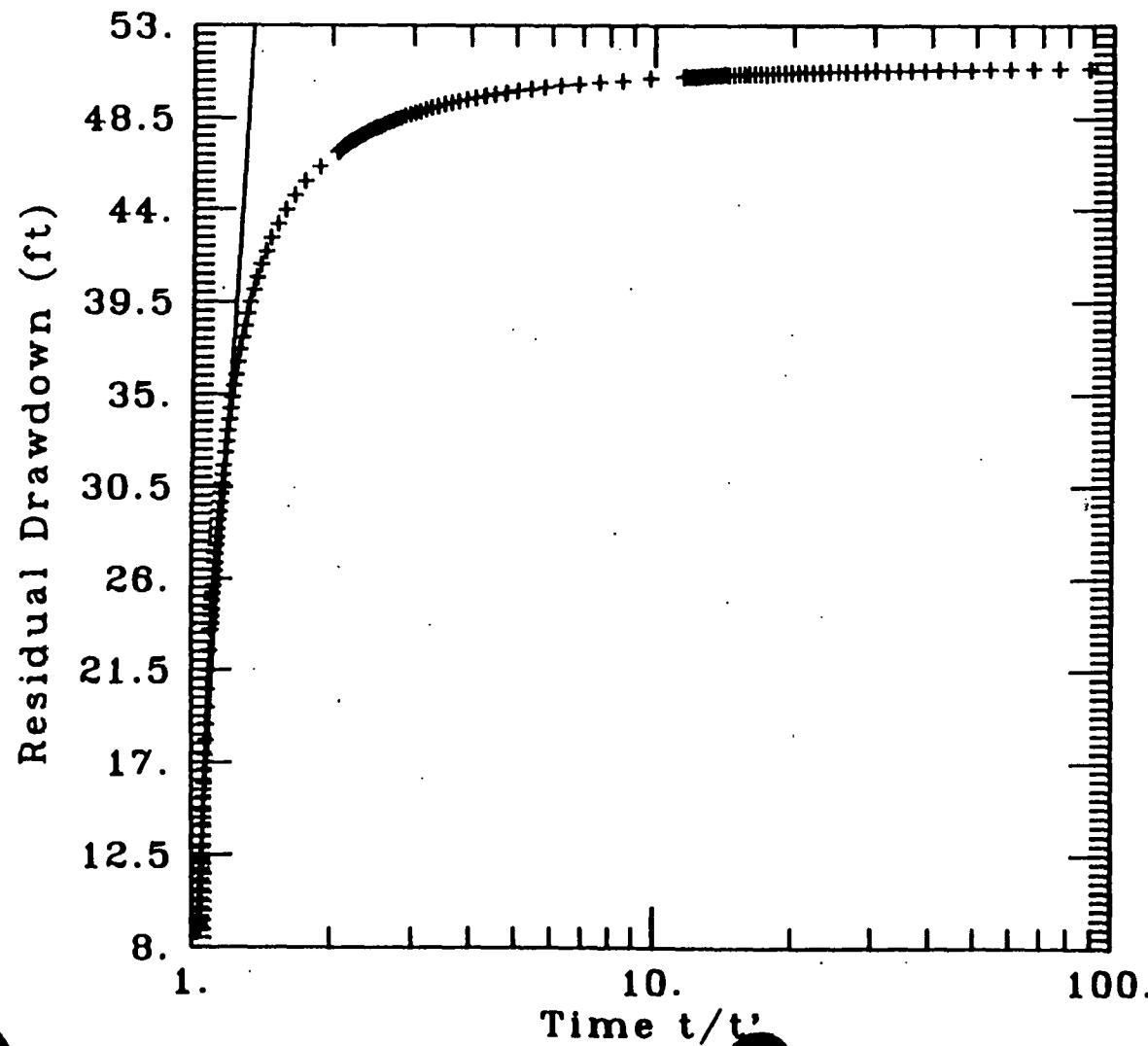
Bechtel National Inc.

Client: DOE Fusrap

Project No.: 14501-100-153

Location: SLAPS

B53W09D Recovery Test



DATA SET:

11s9d-r.dat

12/28/93

AQUIFER TYPE:

Confined

SOLUTION METHOD:

Theis Recovery

TEST DATE:

12/5/93

TEST WELL:

B53W09D

OBS. WELL:

B53W11S

ESTIMATED PARAMETERS:

$T = 6.6124E-06 \text{ ft}^2/\text{min}$

$S' = 0.9717$

TEST DATA:

$Q = 0.0134 \text{ ft}^3/\text{min}$

$t_{\text{pumping}} = 105. \text{ min}$

Attachment 1 - Tables

- Table 1 B53W06D: Drawdown and Recovery Data -- 2-Day Test
- Table 2 B53W06D: Drawdown and Recovery Data -- 7-Day Test
- Table 3 M10-25D: Drawdown and Recovery Data
- Table 4 M13.5-8.5D: Drawdown and Recovery Data
- Table 5 B53W09D: Drawdown and Recovery Data
- Table 6 B53W04D and B53W07D: Drawdown Data

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501				JOB NO. 153	SHEET NO. 1 OF 3	HOLE NO. B53W01D		
SITE North of Coldwater Creek			COORDINATES N 3198 E 1634						ANGLE FROM HORIZ Vertical		BEARING -----			
BEGUN 11-17-87	COMPLETED 11-18-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 93.5	ROCK (FT.)	TOTAL DEPTH 93.5					
CORE RECOVERY (FT./%) /	CORE BOXES 15	SAMPLES 527.1	SEL.	TOP CASING 525	GROUND EL. ▽ /	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK 93.5/							
SAMPLE HAMMER WEIGHT/FALL 2"/96.0'			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R.C. KISER								
SAMP. TYPE SAND	DIA. 3.5	ADV. LEN. CORE SAMPLE REC. CORE REC.	SAMPLE N ^o BLOND RECOVERY	WATER PRESSURE TESTS			ELEV. 524.6	DEPTH 521.6	GRAPHICS	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
				LOSS G.P.M.	PRES. P.S.I.	TIME MIN.								
CN	3.5	3.5	Rad sample							0.0-3.0 FT. ORGANIC SILT - olive black (5Y 2/1), low moisture, low plasticity, abundant roots.			Hole advanced to 93.5 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler. Borehole gamma-logged by TMA-Eberline Description of 0.0-23.0 FT. taken from B53W01S.	
									3.0-23.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) blebs and stringers of iron oxide and black (N1) organic material; low moisture, low plasticity to 10 FT.; moisture increases 10-23 FT.					
CN	5.0	5.0					501.6			23.0-53.0 FT. SILTY CLAY - greenish gray (5G 6/1-5/1), moderate moisture, low to moderate plasticity.				Description and classification by visual examination of samples.
CN	5.0	5.0												
CN	5.0	5.0												

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE North of Coldwater Creek

O = DENNISON; P = PITCHER; O = OTHER

HOLE NO. B53W01D

GEOLOGIC DRILL LOG

PROJECT

FUSRAP 14501

JOB NO.
153

SHEET NO.
2 OF 3

HOLE NO
B51

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

S11F

North of Coldwater Creek

HOLE NO.

B53W01D

GEOLOGIC DRILL LOG							PROJECT			JOB NO.	SHEET NO.	HOLE NO.			
SAMP. TYPE	DIA.	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	BAL. SAMP. L.F.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
							LOSS IN. G.P.M.	PRESS. P.S.I.	TIME MIN.						
CN	5.0	5.0								443.1	75				
CN	5.0	5.0									80				3B
CN	5.0	5.0								433.1	85			81.5-91.5 FT. SILTY CLAY - with sand, dark greenish gray (5G 4/1), high moisture, low plasticity, saturated lower 4 FT.	
										431.1	90				
											91.5-93.5 FT. CLAYEY SANDY GRAVEL - olive black (5Y 2/1) mix of clay, fine to medium-grained sand, and gravel to 1-1/2 in. major dimension; gravel is mainly chert; saturated.			Refusal at 93.5 FT.	
														Bottom of hole at 93.5 FT.	
														Boring completed as a deep monitoring well. See as-built drawing for details.	
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER														HOLE NO.	
North of Coldwater Creek														B53W01D	

GEOLOGIC DRILL LOG					PROJECT			FUSRAP 14501			JOB NO.	SHEET NO.	HOLE NO.
SITE North of Coldwater Creek					COORDINATES			N 3197 E 1648			153	1 OF 1	B53
BEGUN 11-4-87	COMPLETED 11-4-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 27.5	ROCK (FT.)	TOTAL DEPTH 27.5	ANGLE FROM HORIZ Vertical	BEAR. -----		
CORE RECOVERY (FT./%) /		CORE BOXES	SAMPLES	ELEV.	TOP CASING 6	GROUND EL. 527.0	DEPTH/EL. 525	GROUND WATER /	DEPTH/EL. /	TOP OF ROCK /			
SAMPLE HAMMER WEIGHT/FALL 2"/28.5'			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R.C. KISER										
SAMP. TYPE SAMP. DIA. LEN.	ADV. CORE	SAMPLE REC. CORE REC.	SAMPLE N. BLOW LOSS	WATER PRESSURE TESTS LOSS G.P.M.	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION					NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								ST. P. T. MIN.	TIME MIN.	SAMPLE			
CN	4.5	4.5			524.6			0.0-3.0 FT. ORGANIC SILT - olive black (5Y 2/1), low moisture, low plasticity, abundant roots.					Hole advanced to 27.5 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler. Borehole gamma-logged by TMA-Eberline.
CN	5.0	5.0			521.6			3.0-23.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) blebs and stringers of iron oxide and black (N1) organic material, low moisture, low plasticity to 10 FT.; moisture increases 10-23 FT.					
CN	5.0	5.0			5								
CN	5.0	5.0			10								
CN	5.0	5.0			15								
CN	5.0	5.0			20								
CN	5.0	5.0			25			31 23.0-27.5 FT. SILTY CLAY - greenish gray (5G 6/1-5/1), moderate moisture, low to moderate plasticity.					
CN	3.0	3.0			497.1			Bottom of hole at 27.5 FT. Hole completed as shallow monitoring well. See as-built drawing for details.					Description and classification by visual examination of samples.
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE North of Coldwater Creek			HOLE NO. B53W01S		

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501				JOB NO. 153	SHEET NO. 1 OF 3	HOLE NO. B53W02D		
SITE North of Coldwater Creek			COORDINATES N 2855 E 2928						ANGLE FROM HORIZ Vertical		BEARING -----			
BEGUN 11-20-87	COMPLETED 11-20-87	DRILLER GEOTECHNOLOGY	ORILL MAKE AND MODEL CME 75	SIZE 9"	OVERBUREN 81.7	ROCK (FT.) 0.2	TOTAL DEPTH 81.9							
CORE RECOVERY (FT./%) /	CORE BOXES 13	SAMPLES 517.5	TOP CASING 515	GROUND EL. DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK 81.7/433.4									
SAMPLE HAMMER WEIGHT/FALL 2"/83.5'			CASING LEFT IN HOLE: OIA./LENGTH LOGGED BY:			R.C. KISER								
SAMP. TYPE DIA.	ADV. LEN.	CORE REC. REC.	SAMPLE BLOCK RECOVERY	WATER PRESSURE TESTS			ELEV. 515.1	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				LOSS IN G.P.	PRES. P.S.I.	TIME MIN.								
CN	4.0	4.0	Rad sample											Hole advanced to 81.9 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.
														Borehole logged by TMA-Eberline.
														Description of 0.0-19.5 FT. taken from Log of B53W02S.
														34
CN	5.0	5.0												
CN	5.0	5.0												
CN	5.0	4.5												
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE North of Coldwater Creek										HOLE NO. B53W02D				
O = DENNISON; P = PITCHER; O = OTHER														

GEOLOGIC DRILL LOG								PROJECT	FUSRAP 14501	JOB NO.	SHEET NO.	HOLE NO.	
SAMP TYPE	ADV.	LEN	CORE	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMP	DATE			LOSS	G.P.M.	PRES:	TIME	MIN.					
CN	5.0	5.0											
CN	5.0	4.5											
CN	5.0	5.0											
CN	5.0	5.0											
CN	5.0	5.0											
CN	5.0	5.0											
CN	5.0	4.0											
CN	5.0	5.0											
CN	5.0	5.0											
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE					
North of Coldwater Creek												HOLE NO.	B53W02D

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

North of Coldwater Creek

HOLE NO.

B53W02D

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

North of Coldwater Creek

HOLE NO.

B53W02D

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. B53W02S	
SITE North of Coldwater Creek			COORDINATES N 2849 E 2939			ANGLE FROM HORIZ Vertical			BEARING -----	
BEGUN 11-5-87	COMPLETED 11-5-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 22.0	ROCK (FT.) 22.0	TOTAL DEPTH	
CORE RECOVERY (FT. %) /	CORE BOXES /	SAMPLES 5	SAMPLES 517.8	EL. TOP CASING 515	GROUND EL. 515	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /			
SAMPLE HAMMER WEIGHT/FALL 2"/23.5'			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R.C. KISER							
SAMP AND DIA.	TYPE ADV. CORE	LEN SAMPLE	REC. CORE REC.	SAMPLE LOSS %	WATER PRESS. TESTS	ELEV.	DEPTH	GRAPHICS	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
CN	4.0	3.8				515.4			Hole advanced to 22.0 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.	
CN	5.0	5.0				510.6	5		Borehole gamma-logged by TMA-Eberline.	
CN	5.0	4.0					10			
CN	5.0	3.5					15			
CN	3.0	3.0				495.9	20	7 u		
						493.4		19.5-22.0 FT. SILTY CLAY - greenish gray (5G 6/1-5/1), moderate moisture content, low to moderate plasticity.	Description and classification by visual examination of samples.	
Bottom of hole at 22.0 FT. Boring completed as a shallow monitoring well. See as-built drawing for details.										
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER						SITE North of Coldwater Creek				HOLE NO. B53W02S

GEOLOGIC DRILL LOG					PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. B53W03D		
SITE North of Coldwater Creek			COORDINATES N 2376 E 2116				ANGLE FROM HORIZ Vertical		BEARING -----			
BEGUN 11-12-87	COMPLETED 11-12-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 71.0	ROCK (FT.) 2.0	TOTAL DEPTH 73.0			
CORE RECOVERY (FT. %) /	CORE BOXES	SAMPLES	EL. TOP CASING 11	GROUND EL. 517	DEPTH/EL. GROUND WATER ▽ /	DEPTH/EL. TOP OF ROCK 71.0/446.1						
SAMPLE HAMMER WEIGHT/FALL		CASING LEFT IN HOLE: DIA./LENGTH 2"/73.5'			LOGGED BY: R.C. KISER							
TYPE SAMP. · DIA.	SAMP. ADV.	LEN.	CORE REC.	SAMPLE REC.	LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN	3.5	3.5	Rad sample only		G.P.M.	P.S.I.	TIME MIN	517.1			0.0-7.5 FT. ORGANIC SILT 0.0-2.5 FT. Olive black (5Y 2/1), dry, slightly cohesive, low plasticity, abundant roots. 2.5-7.5 FT. Grades to brownish gray (5YR 4/1-3/1) with slight increase in moisture content and plasticity.	Hole advanced to 73.0 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.
	20.0		on B53W03S					509.6			7.5-19.3 FT. CLAYEY SILT - light olive brown (5Y 5/6) mottled with reddish brown (10R 4/6) blebs and stringers of iron oxide and black (N1) organic material, low moisture upper zone, increases with depth, low plasticity.	Borehole gamma-logged by TMA-Eberline.
								497.8			19.3-40.0 FT. SILTY CLAY - medium greenish gray (5G 5/1), upper 2-3 FT. wet, moisture decreases with depth, low to moderate plasticity.	Description of 0.0-19.3 FT. taken from B53W03S.
CN	5.0	5.0										
CN	5.0	5.0										
CN	5.0	4.5										
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE North of Coldwater Creek						HOLE NO. B53W03D	

GEOLOGIC DRILL LOG							PROJECT			JOB NO.		SHEET NO.	HOLE NO.
SAMP. DIA.	TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON:
					LOSS T.N. G.P. M.	PRESS. I. P.S.I.	TIME MIN.						WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN	5.0	5.0								40.0-56.5 FT. CLAY - medium to dark greenish gray (5G 6/1-5/1) highly plastic "fat" clay.			3M
CN	5.0	5.0								56.5-71.0 FT. SILTY CLAY - with sand; olive black (5Y 3/1-2/1), moderate to high moisture, (lower +/- 6 FT. saturated); low to moderate plasticity; contact with overlying clay very distinct, possible unconformity.			3D
CN	5.0	5.0								71.0-73.0 FT. LIMESTONE - medium gray (N7-N6) limestone fragments mixed with overlying silty clay.			
CN	5.0	4.0								Bottom of hole at 73.0 FT. Boring completed as deep monitoring well. See as-built drawing for details.			Refusal at 73.0 FT
CN	5.0	3.0											
CN	4.5	3.5											

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

SITE

North of Coldwater Creek

E-B-68

HOLE NO.

B53W03D

J. PILL LOES

B53W01D ELEVATION 525 ft MSL

E 1634 N 3198

? \Rightarrow SATURATION 1ST NOTED @ 48.5 - 51.5 ft (476.5 - 473.5 msl)
IN SAND IMMEDIATELY ABOVE VALVES WHICH OCCUR
@ 51.5-52. ' eg 473.5 - 473 ft msl

~ 471.6' HGT MOISTURE CONTENT IN "FAT" PLASTIC CLAY

- $\frac{4}{4}$ 443. / 452 HGT MOISTURE CONTENT IN SILTY CLAY
 \Rightarrow 437-433 msl

B53W02A 515' msl

E 2028 N 2855

450-452 FIRST SATURATION NOTED @ 65-67' DEPTH

B53W03L 517 msl ELEVATION

? \Rightarrow 491.6 N 2376
HGT 499.8 \approx 495 msl WET - MOISTURE DECREASES WITH DEPTH.
SILTY CLAY

460.6 MOISTURE TO HIGH MOISTURE

452-4416

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. B53W03S		
SITE North of Coldwater Creek				COORDINATES N 2371 E 2106					ANGLE FROM HORIZ Vertical BEARING -----				
BEGUN 11-3-87	COMPLETED 11-3-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 23.5	ROCK (FT.)	TOTAL DEPTH 23.5				
CORE RECOVERY (FT./%) /	CORE BOXES 5	SAMPLES 518.9	EL. TOP CASING 517	GROUND EL. /	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 2"/23.5'		CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R.C. KISER											
SAMP TYPE SAMP DIA. SAMP LEN.	ADV. CORE	REC. CORE REC.	SAMPLE N ^o BLON	CORE RECOVERY	WATER PRESSURE TESTS			ELEV. 517.0	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
					LOSS L.P. G.	PRES. P.S.I.	TIME MIN.						
CN	3.5	3.5										0.0-7.5 FT. ORGANIC SILT 0.0-2.5 FT. Olive black (5Y 2/1), dry, slightly cohesive, low plasticity, abundant roots. 2.5-7.5 FT. Grades to brownish gray (5YR 4/1-3/1) with slight increase in moisture content and plasticity.	Hole advanced to 23.5 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.
CN	5.0	5.0										7.5-19.3 FT. CLAYEY SILT - light olive brown (5Y 5/6) mottled with reddish brown (10R 4/6) blebs and stringers of iron oxide and black (N1) organic material, low moisture upper zone increases with depth.	Borehole gamma-logged by TMA-Eberline.
CN	5.0	5.0										19.3-23.5 FT. SILTY CLAY - medium greenish gray (5G 5/1), upper 2-3 FT. has high moisture content, low plasticity.	31
CN	5.0	4.2										Bottom of hole at 23.5 FT. Boring completed as shallow monitoring well. See as-built drawing for details.	
												Description and classification by visual examination of samples.	
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER												HOLE NO. B53W03S	
North of Coldwater Creek												E-R-69	

GEOLOGIC DRILL LOG						PROJECT			JOB NO.		SHEET NO.	HOLE NO.		
						FUSRAP 14501			153		1 OF 3	B53W04D		
SITE				COORDINATES					ANGLE FROM HORIZ BEARING					
South of Coldwater Creek				N 2449 E 2813					Vertical					
BEGUN	COMPLETED	DRILLER		DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH						
12-31-87	1-12-88	GEOTECHNOLOGY		CME 75	9"	80.7	0.3	81.0						
CORE RECOVERY (FT./%)		CORE BOXES		SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK						
/		12		529.2	530	/	/	80.7/448.8						
SAMPLE HAMMER WEIGHT/FALL				CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY:	R. C. KISER						
2"/78.5'														
SAMP. TYPE SAND	ADV. SAMP.	CORE LEN.	CORE REC.	SAMPLE LEN. IN.	CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						LOSS G.P. M.	PRES. P.S.I.	TIME MIN.						
CN	3.5	1.0							529.5				0.0-13.0 FT. RUBBLE AND FILL - dominantly silty clay fill material in various shades of brown with minor amounts of red and yellow; moist, cohesive, variable plasticity; upper +/- 3 FT. consist of brownish black organic silt, moist, abundant roots.	Hole advanced to 13.5 FT. with 6-3/4 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler. Reamed hole to 14.0 FT. with 12 in. diameter flight augers and set 15 FT. of 10 in. diameter conductor casing.
CN	5.0	5.0								5				
CN	5.0	5.0							10					
									15					
									20					
									25					
									30					
Description and classification by visual examination of samples.														
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE														
D = DENNISON; P = PITCHER; O = OTHER														
South of Coldwater Creek														
HOLE NO. B53W04D														

GEOLOGIC DRILL LOG							PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.		
SAMP.	TYPE	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.				
		LOSS	G.P.M.	SI. PRESS.	TIME	MIN.										
CN	5.0	5.0														
CN	5.0	5.0														
CN	5.0	5.0														
CN	5.0	5.0														
CN	5.0	3.5														
CN	5.0	3.0														
CN	5.0	5.0														
CN	5.0	5.0														
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER							SITE			South of Coldwater Creek			HOLE NO. B53W04D			

GEOLOGIC DRILL LOG								PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.			
SAMP. TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMPLE IN"	CORE RECOVERY	LOSS	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								G.P.H	PRESS. P.S.I.	TIME MIN.								
CN	2.5	2.5													78.0-78.5 FT. Small amount of sand and gravel imbedded in clay.			
															80.7-81.0 FT. LIMESTONE - yellowish gray (SY 7/2), hard, moderately weathered. Bottom of boring at 81.0 FT.			
															After completion, set 2 in. diameter SS monitoring well with screen at 67.7-77.7 FT.			

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

SITE

South of Coldwater Creek

HOLE NO.

B53W04D

GEOLOGIC DRILL LOG					PROJECT			JOB NO.		SHEET NO.		HOLE NO.
					FUSRAP 14501			153		1 OF 2		B53W04S
SITE Ballfield					COORDINATES N 2443 E 2803			ANGLE FROM HORIZ Vertical			BEARING -----	
BEGUN 12-31-87	COMPLETED 1-8-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME-45B			SIZE 9"	OVERBURDEN 49.0	ROCK (FT.)	TOTAL DEPTH 49.0			
CORE RECOVERY (FT./%) /		CORE BOXES/SAMPLES	EL. TOP CASING 6	GROUND EL. 529	DEPTH/EL. 23.0/506.4	GROUND WATER 02/11/88	DEPTH/EL. TOP OF ROCK /	/				
SAMPLE HAMMER WEIGHT/FALL 140 LB/30 IN.			CASING LEFT IN HOLE: OIA./LENGTH 2" DIA./48.5'			LOGGED BY: G. CHERRY						
SAMP. SAND	TYPE DIAM.	ADV. LEN	CORE REC.	SAMPLE LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						529.4			0.0-13.0 FT. FILL			Advanced hole to 14.0 FT. with 12 in. diameter Flight Augers and set 15.0 FT. of 10 in. diameter conductor casing, no sampling. This well is nested with well No. B53W04D, and drill log to 13.5 FT. is taken from log of B53W04D.
SS	2.0	1.9				516.4			13.0-44.0 FT. CLAYEY SILT - mottled light olive gray (5Y 6/1) with dark yellowish orange (10YR 6/6) blebs and stringers of iron oxide plus scattered stringers of black (N1) organic material, low to moderate moisture content (increased with depth), low - moderate plasticity.			Borehole gamma-logged by TMA-Eberline.
SS	2.0	2.0	4-3-4 6									Hole advanced past 15.0 FT. with 9 in. OD hollow stem augers, disturbed samples taken with 2 in. split spoon (2 FT. long).
SS	2.0	1.8	5-6-7 6									23.0 FT. Water level taken after standing over weekend with augers set at 49.0 FT.
SS	2.0	1.8	6-10-13 15									
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE												HOLE NO. B53W04S

GEOLOGIC DRILL LOG								PROJECT	FUSRAP 14501	JOB NO.	SHEET NO.	HOLE NO.
SAMP. TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	SAMPLE REC.	LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE		
					G.P.M.	PRES.: P.S.I.	TIME: MIN.					
SS	2.0	2.0	7-11-13	12				40				
SS	2.0	2.0	5-6-8	10				485.4		44.0-49.0 FT. SILTY CLAY - mottled greenish gray (5G 6/1) light olive gray (5Y 5/2), stiff, moist, moderate plasticity.		
								480.4		Bottom of hole at 49.0 FT. Boring completed as a shallow monitoring well. See as-built for details.		Description and classification by visual examination, using Rock Color Chart (GSA, 1949)
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER												
Ballfield												
E-B-74										HOLE NO.		
										B53W04S		

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

SITE

HOLE NO.

B53W04S

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

GEOLOGIC DRILL LOG						PROJECT			JOB NO.		SHEET NO.	HOLE NO.		
						FUSRAP 14501			153		1 OF 3	B53W05D		
SITE				COORDINATES					ANGLE FROM HORIZ		BEARING			
North of Coldwater Creek				N 2384 E 1522					Vertical		-----			
BEGUN 11-9-87	COMPLETED 11-9-87	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERTBURDEN 83.2	ROCK (FT.) 0.3	TOTAL DEPTH 83.5					
CORE RECOVERY (FT./%) /	CORE BOXES /	SAMPLES 13	EL. TOP CASING 519.8	GROUND EL. 518	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /								
SAMPLE HAMMER WEIGHT/FALL 2"/83.5"			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R. C. KISER											
SAMP. SAMP.	TYPE DIA. IN.	ADV. LEN	CORE SAMPLE REC.	SAMPLE LOSS %	CORE RECOVERY %	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						LOSS G.P.	PRES. P.	TIME MIN.						
CN	3.5	3.5	Rad. sample						517.9				0.0-5.0 FT. ORGANIC SILT - grayish brown (5YR 3/2), slightly clayey, low moisture, low plasticity, abundant roots in upper 2 FT.	Hole advanced to 83.5 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.
									512.9	5			5.0-13.5 FT. CLAYEY SILT - light olive brown (5Y 5/6) mottled with reddish brown (10R 4/6) blebs and stringers of iron oxide and black (N1) organic material; low to moderate moisture, moderate plasticity, <u>thin layer of shells at 11.5 FT.</u>	Borehole gamma-logged by TMA-Eberline.
									504.4	10			<i>R 902</i>	Description of 0-27.0 FT. taken from B53W05S.
									490.9	15			13.5-27.0 FT. SANDY SILT - dark greenish gray (5G 4/1-3/1), with clay and moderate amount of fine to very fine grained sand; moderate moisture, cohesive, low to moderate plasticity; scattered shell fragments; saturated at 25.0-27.0 FT.	<i>34</i>
CN	5.0	3.0							490.9	20			<i>Not Xed</i>	
CN	5.0	5.0							490.9	25			<i>Not Xed</i>	
CN	5.0	5.0							490.9	30			<i>Not Xed</i>	
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER												HOLE NO. B53W05D		
SITE North of Coldwater Creek												E-B-75		

GEOLOGIC DRILL LOG							PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.								
SAMP	TYPE	DIA.M.	SAMP.	ADV.	LEN	CORE	SAMPLE	REC.	CORE	REC.	SAMPLE	F.N.	LOSS IN. 6 P.M.	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			
													LOSS IN. 6 P.M.	PRESS. P.S.I.	TIME MIN.							NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN																						
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	5.0																				
CN	5.0	4.5																				
CN	5.0	4.0																				
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER							SITE		North of Coldwater Creek										HOLE NO.			
																			B53W05D			

GEOLOGIC DRILL LOG								PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 3 OF 3	HOLE NO. B53W05D			
SAMPLE TYPE	SAMP. MTR.	ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMPLE BLOKS	% CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								LOSS G.LN.	G.P.M.	PRESS. P.S.I.						
CN	5.0	4.5														

439.9

78.0-83.2 FT. SAND - light olive gray (5Y 6/1)
coarse to very coarse-grained sand with silt and
clay; saturated, no cohesion, no plasticity.

434.7

434.4

83.2-83.5 FT. LIMESTONE - medium gray
(N6) hard, well-cemented.
Bottom of boring at 83.5 FT.

Boring completed as a deep monitoring well.
See as-built drawing for details.

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

SITE

HOLE NO.
B53W05D

North of Coldwater Creek

E-B-77

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. B53W05S							
SITE North of Coldwater Creek				COORDINATES N 2369 E 1530				ANGLE FROM HORIZ Vertical								
BEGUN 11-6-87	COMPLETED 11-6-87	DRILLER GEOTECHNOLOGY		DRILL MAKE AND MODEL CME 75	SIZE 9"	OVERBURDEN 28.5	ROCK (FT.)	TOTAL DEPTH 28.5								
CORE RECOVERY (FT./%) /	CORE BOXES 6	SAMPLES EL. TOP CASING 520.5	GROUNDS EL. 518	DEPTH/EL. GROUND WATER V /	DEPTH/EL. TOP OF ROCK /											
SAMPLE HAMMER WEIGHT/FALL 2"/31.5"			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R. C. KISER													
SAMP. SAND	TYPE DIAM.	ADV. LEN.	CORE SAMPLE LOSS	WATER PRESSURE TESTS			ELEV. 518.0	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION					NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
				IN. F.	G.P. P.S.	TIME MIN.										
CN	3.5	3.5													Hole advanced to 28.5 FT. with 9 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.	
CN	5.0	5.0						513.0	5						Borehole gamma-logged by TMA-Eberline.	
CN	5.0	5.0						504.5	10							
CN	5.0	5.0						504.5	15							
CN	5.0	5.0						491.0	20							
CN	5.0	3.0						489.5	25							
SS = SPLIT SPOON; ST = SHELBY TUBE; D = OENNISON; P = PITCHER; O = OTHER										SITE North of Coldwater Creek					HOLE NO. B53W05S	

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 3	HOLE NO. B53W06D		
SITE South of Coldwater Creek				COORDINATES N 2258 E 2298					ANGLE FROM HORIZ BEARING Vertical -----				
BEGUN 1-7-88	COMPLETED 1-14-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERTBURDEN 77.1	ROCK (FT.) 0.3	TOTAL DEPTH 77.4				
CORE RECOVERY (FT./%) /		CORE BOXES 14	SAMPLES 527.0	EL. GROUND EL. 527	TOP CASING DEPTH/EL. GROUND WATER V /	DEPTH/EL. TOP OF ROCK 77.1/450.2							
SAMPLE HAMMER WEIGHT/FALL 10 IN./15 FT., S40 PVC			CASING LEFT IN HDLE: DIA./LENGTH			LOGGED BY: R. C. KISER							
SAMP. TYPE SAMP. LEN.	DIA. ADV. CORE	SAMPLE REC. CORE REC.	SAMPLE LOSS %	WATER PRESSURE TESTS			ELEV. 527.3	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				LOSS LBS. IN.	PRESS. G.P.M.	P.S.I.				TIME MIN.			
CN	3.5	1.0								0.0-13.0 FT. (estimate) RUBBLE AND FILL - various shades of brown and gray clayey fill material with cobbles, gravel, wood.			Advanced hole to 18.5 FT. with 6-3/4 in. hollow stem augers; samples taken with CME split barrel continuous sampler and Shelby Tube. Note: Rubble/natural ground interface had to be estimated due to poor recovery (attributed to a piece of wood blocking augers); reamed hole with 12 in. diameter flight augers and set conductor casing 0.0 15.0 FT.; estimated maximum depth of fill at 13.0 FT.
CN	5.0	2.5								13.0-33.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) patches and stringers of iron oxide; moderate moisture, moderate plasticity.			Sample No. 1 (0.0-3.5) relinquished to TMA/Eberline for testing
CN	5.0	1.5								Hole advanced past 14.0 FT. (bottom of conductor casing) with 9 in. OD hollow stem augers, disturbed samples taken with 2 in. split spoon.			After casing grout cured, continued advance to 77.4 FT. with 9-in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler.
CN	5.0	0.0								Borehole gamma-logged by TMA-Eberline.			Description and classification by visual examination of samples.
CN	5.0	5.0											
CN	5.0	5.0											
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE South of Coldwater Creek												HOLE NO. B53W06D	
D = DENNISON; P = PITCHER; O = OTHER													

GEOLOGIC DRILL LOG						PROJECT			JOB NO.		SHEET NO.	HOLE NO.		
SAMPLE TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMPLE N°	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
						LOSS	G.P.M.	PRES. P.S.I.						
CN	5.0	5.0							488.3	40		39.0-50.8 FT. CLAY - greenish gray (5GY 6/1-5/1), low moisture, moderate to high plasticity, stiff.	3^1	
CN	5.0	5.0								45				
CN	5.0	5.0							476.5	50		50.8-77.1 FT. SILTY CLAY - olive gray (5Y 4/1), high moisture, low to moderate plasticity, near saturation in several zones; very distinct contact with overlying clay unit.	313	
CN	5.0	3.8								55				
CN	5.0	3.5								60			At +- 61 FT., slight odor, nothing registered on Enmet.	
CN	5.0	5.0								65				
CN	5.0	5.0								70			At +- 68 FT., slight odor, registered 15% LEL on Enmet.	
CN	5.0	5.0								73.5-74.4 FT. Layer of olive green (5GY 3/2-2/2) sand, partially cemented, hard, few gravels.				
CN	3.4	3.4												
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER						SITE			South of Coldwater Creek				HOLE NO. B53W06D	

GEOLOGIC DRILL LOG				PROJECT			FUSRAP 14501	JOB NO.	SHEET NO.	HOLE NO.		
SAMP. TYPE AND DIA. I	ADV. LEN. CORE	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMP. REC.	CORE REC.	SAMPLE	"N"	BLOWS	G.P.H.	PRES. P.S.I.	TIME MIN.					
								75	77.1-77.4 FT. LIMESTONE Bottom of boring at 77.4 FT. After completion, set 2 in. diameter monitoring well with screen at 60.2-70.2 FT.			
								450.2 449.9				

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

SITE

South of Coldwater Creek

HOLE NO.

B53W06D

GEOLOGIC DRILL LOG					PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. B53W06S		
SITE Ballfield			COORDINATES N 2261 E 2313					ANGLE FROM HORIZ BEAR Vertical				
BEGUN 1-7-88	COMPLETED 1-13-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME-45B	SIZE 9"	OVERBURDEN 37.0	ROCK (FT.)	TOTAL DEPTH 37.0					
CORE RECOVERY (FT./%) /	CORE BOXES 8	SAMPLES 1 EL. TOP CASING 526.7	GROUND EL. 527	DEPTH/EL. GROUND WATER 31.0/496.0 01/13/88	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 140 LB./30 IN.		CASING LEFT IN HOLE: DIA./LENGTH 2"/36'			LOGGED BY: R.C. KISER/G. CHERRY							
SAMP. TYPE SAND DIA.	ADV. SAMP. LEN.	CORE SAMPLE LOSS	REC. SAMPLE LOSS	REC. SAMPLE LOSS	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
					G. FT.	PRESS. P.	TIME MIN.					
CN	3.5	1.5						527.0			0.0-13.0 FT. (estimated) RUBBLE AND FILL	Advanced hole to 18.5 FT. with 6-3/4 in. hollow stem augers; samples taken with CME split barrel continuous sampler and Shelby Tube. Note: Rubble/natural ground interface had to be estimated due to poor recovery (attributed to cobbles to 5 in. major dimension). Efforts to get recovery included pushing sampler 13.5-18.5 FT instead of augering and pushing Shelby Tube from 18. FT. Extruded sample and found in. diameter cobble; other cobbles appeared while reaming with 12 in. diameter flight augers; (lead auger bent due to cobbles). Sample No. 1 (0.0-3.5) and Shelby sample relinquished to TMA/Eberline for testing.
CN	5.0	1.0							5			
CN	5.0	0.5							10			
CN	5.0	0.5							15			13.0-33.0 FT. CLAYEY SILT - mottled light olive gray (5Y 6/1) with dark yellowish orange (10YR 6/6) blebs and stringers of iron oxide plus scattered stringers of black (NT) organic material; moderate moisture content (increased with depth), roots, low - moderate plasticity.
SS	2.0	1.8	4-5-8 7						20			
SS	2.0	2.0	3-4-5 5						25			
SS	2.0	1.9	5-7-9 11						30			28.0-33.0 FT. Darker-olive gray (5Y 4/1).
SS	2.0	2.0	3-6-10 11						494.0			33.0-37.0 FT. SILTY CLAY - mottled greenish gray (5G 6/1), light olive gray (5Y 5/2), stiff, moist, moderate plasticity.
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE Ballfield					HOLE NO. B53W06S		

GEOLOGIC DRILL LOG							PROJECT			JOB NO.	SHEET NO.	HOLE NO.	
SAMP. TYPE	DIA. IN.	SAMP. ADV.	LEN. CORE	SAMPLE REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMPLE	BLOWS	% CORE RECOVERY	LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.								
								490.0	X			Bottom of boring at 37.0 FT. Boring completed as a shallow monitoring well. See as-built for details.	Description and classification by visual examination. Rock Color Chart (GSA, 1948)

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

SITE

Ballfield

HOLE NO.
B53W06S

GEOLOGIC DRILL LOG						PROJECT			JOB NO.			SHEET NO.		HOLE NO.			
South of Coldwater Creek						FUSRAP 14501			153			1 OF 3		B53W07D			
SITE			COORDINATES									ANGLE FROM HORIZ		BEAR			
BEGUN 1-21-88			COMPLETED 1-23-88			DRILLER GEOTECHNOLOGY			DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 88.8	ROCK (FT.) 0.2	TOTAL DEPTH 89.0		
CORE RECOVERY (FT. %) /			CORE BOXES 13			SAMPLES EL. TOP CASING 527.3			GROUND EL. 526			DEPTH/EL. GROUND WATER V /	DEPTH/EL. TOP OF ROCK 88.8/437.0				
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY:						R. C. KISER					
SAMP AND DIAM.	TYPE ADV.	CORE	SAMPLE REC.	CORE REC.	SAMPLE LEN	% CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMP	LEN	CORE	SAMPLE	CORE	LOSS	%	G.P.M	PRES.	ST.	TIME	MIN.						
														0.0-10.5 FT. RUBBLE AND FILL - moderate to dark yellowish brown (10YR 5/4-4/2) silt and clay, stiff; low moisture, moderate plasticity.			Advanced hole to 12.0 FT. with 12 in. diameter flight augers; set 13.0 FT. of 10 in. diameter conductor casing; no samples taken.
														10.5-32.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with yellowish orange (10YR 6/6) iron oxide (?) and small blebs and stringers of black (N1) organic material; soft to medium-stiff, moderate moisture (increasing with depth), moderate plasticity.			After casing grout cured, continued advance to 89.0 FT. with 9 in. diameter hollow stem augers; samples from 24.0 FT. to 89.0 FT. taken with CME split barrel continuous sampler; log to 24.0 FT. based on sampling in B53W07S, located 12.0 FT. away.
														At +/- 25.0 FT., olive gray grades to pale yellowish brown (10YR 6/2) and includes abundant pods of wet, peat-like material to 1/2 in. diameter.			Borehole gamma-logged by TMA-Eberline.
CN	5.0	5.0												32.0-46.0 FT. SILTY CLAY - greenish gray (5G 5/1-4/1), low to moderate moisture, moderate plasticity, moisture increases with depth.			Description and classification by visual examination of samples.
CN	5.0	5.0															
CN	5.0	5.0															
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER												SITE South of Coldwater Creek			HOLE NO. B53W07D		

GEOLOGIC DRILL LOG								PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 2 OF 3	HOLE NO. B53W07D	
SAMPLE TYPE	SAMPLE DATE	SAMPLE ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.						
CN	5.0	5.0												
CN	5.0	5.0								40				
CN	5.0	5.0								45				
CN	5.0	4.5								479.8				
CN	5.0	5.0								50				
CN	5.0	5.0								55				
CN	5.0	5.0								60				
CN	5.0	5.0								65				
CN	5.0	5.0								70				
CN	5.0	5.0								452.3				
SS = SPLIT SPOON; ST = SHELBY TUBE; D - DENNISON; P = PITCHER; O = OTHER	SITE South of Coldwater Creek												HOLE NO. B53W07D	

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

SITE

South of Coldwater Creek

HOLE NO.

B53W07D

GEOLOGIC DRILL LOG					PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. B53W07S										
SITE Ballfield			COORDINATES N 2140 E 1788				ANGLE FROM HORIZ Vertical		BEARING -----											
BEGUN 1-21-88	COMPLETED 1-23-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME-45B			SIZE 9"	OVERBURDEN 35.0	ROCK (FT.)	TOTAL DEPTH 35.0											
CORE RECOVERY (FT./%) /		CORE BOXES	SAMPLES	SEL.	TOP CASING 526.9	GROUND EL. 526	DEPTH/EL. GROUND WATER 1	DEPTH/EL. TOP OF ROCK /												
SAMPLE HAMMER WEIGHT/FALL 140 LB./30 IN.			CASING LEFT IN HOLE: DIA./LENGTH 2 IN./34.5 FT.			LOGGED BY: G. CHERRY														
SAMP. AND TYPE	DIA.M.	ADV. SAMP.	SAMPLE REC.	CORE REC.	SAMPLES	LOSS %	CORE RECOVERY	WATER PRESSURE TESTS		ELEV. 525.8	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.			
								G.P.M.	PRESS. P.S.I.					TIME MIN.						
SS	2.0	1.8															Advanced hole to 12.0 FT. with 12 in. diameter flight augers and set 13.0 FT. of 10 in. diameter conductor casing; sampled with a 2 in. split spoon (2 FT. long) after pulling flight augers.			
SS	2.0	2.0															This well is nested with well No. B53W07D. The drill log of B53W07D is taken from this log to 35.0 FT.			
SS	2.0	2.0	3-4-5														Hole advanced past 12.0 FT. with 9 in. hollow stem augers, disturbed samples taken with 2 in. split spoon (2 FT. long).			
SS	2.0	2.0	2-3-4														Borehole gamma-logged by TMA-Eberline.			
SS	2.0	1.9	4-4-6																	
SS	2.0	1.8	5-9-13																	
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER												Ballfield			HOLE NO. B53W07S					

GEOLOGIC DRILL LOG								PROJECT			JOB NO.		SHEET NO.	HOLE NO.			
SAMP. DIAM.	TYPE	SAMP. ADV.	LEN	CORE	SAMPLE REC.	CORE REC.	SAMPLE N°	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.							
															Bottom of boring at 35.0 FT. Boring completed as a shallow monitoring well. See as-built for details.		Description and classification by visual examination, Rock Color Chart, (GSA, 1948)

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

SITE

Ballfield

HOLE NO.

B53W07S

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501				JOB NO. 153	SHEET NO. 1 OF 3	HOLE NO. B53W08D	
SITE South of Coldwater Creek			COORDINATES N 1999 E 1411						ANGLE FROM HORIZ Vertical		BEARING -----		
BEGUN 12-30-87	COMPLETED 1-19-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 91.7	ROCK (FT.)	TOTAL DEPTH 91.7				
CORE RECOVERY (FT./%) /	CORE BOXES	SAMPLES	EL. TOP CASING 17	CASING	GROUND EL. 526.4	DEPTH/EL. GROUND WATER 525	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /					
SAMPLE HAMMER WEIGHT/FALL 2"/93.5'			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R. C. KISER							
SAMP. TYPE SAND	DIA. ADV. LEN.	CORE SAMPLE REC. CORE REC.	SAMPLE LOSS BLDG. RECOV.	G.P. LOSS	PRES. in. T.M.	TIME MIN.	ELEV. 524.8	DEPTH 5 5 10 15 20 25 30	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
										0.0 - 8.5 FT. RUBBLE AND FILL - alternating layers of light brown and dark clayey, silty fill material; low moisture except upper +/- 1 FT., low plasticity.			
										5.0 - 8.5 FT. ORGANIC SILT - grayish brown (5YR 3/2) clayey silt, moderate moisture, low to moderate plasticity; scattered roots.			
										10.0 - 15.0 FT. CLAYEY SILT - olive gray (5Y 4/1) slightly mottled with reddish brown (10R 4/6) iron oxide, mottling diminishes with depth; low to moderate moisture, increasing with depth to near saturation at +/- 29.0 FT., low to moderate plasticity, scattered wood chips.			
										15.0 - 20.0 FT. CLAYEY SILT - olive gray (5Y 4/1) slightly mottled with reddish brown (10R 4/6) iron oxide, mottling diminishes with depth; low to moderate moisture, increasing with depth to near saturation at +/- 29.0 FT., low to moderate plasticity, scattered wood chips.			
										20.0 - 25.0 FT. CLAYEY SILT - olive gray (5Y 4/1) slightly mottled with reddish brown (10R 4/6) iron oxide, mottling diminishes with depth; low to moderate moisture, increasing with depth to near saturation at +/- 29.0 FT., low to moderate plasticity, scattered wood chips.			
										25.0 - 30.0 FT. CLAYEY SILT - olive gray (5Y 4/1) slightly mottled with reddish brown (10R 4/6) iron oxide, mottling diminishes with depth; low to moderate moisture, increasing with depth to near saturation at +/- 29.0 FT., low to moderate plasticity, scattered wood chips.			
										30.0 - 38.8 FT. CLAYEY SILT - olive gray (5Y 4/1) slightly mottled with reddish brown (10R 4/6) iron oxide, mottling diminishes with depth; low to moderate moisture, increasing with depth to near saturation at +/- 29.0 FT., low to moderate plasticity, scattered wood chips.			
Resumed sampling at 29.0 FT. with CME split barrel continuous sampler; for samples between 19.0-29.0, see log of B53W98S.													
Description and classification by visual examination of samples.													
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE South of Coldwater Creek						HOLE NO. B53W08D							
O = DENNISON; P = PITCHER; O = OTHER													

GEOLOGIC DRILL LOG

PROJECCI

FUSRAP 14501

JOB NO.
153

SHEET NO.	HOLE NO.
2 OF 3	B53W8D

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

SITE

HOLE NO.

B53W08D

South of Coldwater Creek

GEOLOGIC DRILL LOG								PROJECT				FUSRAP 14501			JOB NO.	SHEET NO.	HOLE NO.		
SAMP. TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMP. LEN."	BLOWS	% RECOVERY	WATER PRESSURE TESTS				ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			
								LOSS	G.P.M.	PRES.	TIME	MIN.							
													75						
CN	5.0	5.0											444.8	80.0 - 87.5 FT. SILTY CLAY - olive gray (5Y 4/1), high moisture (near saturation) low to moderate plasticity; distinct contact with overlying clay; grades to light green gray (5G 6/1) at +/- 86.0 FT.				3B	
CN	5.0	5.0											437.3	87.5 - 91.7 FT. CLAYEY GRAVEL - with moderate amount of sand; olive gray (5Y 4/1), mainly pea-size gravel; stiff clay and 2 1/2 in. cobble at 91.5 FT. Refusal at 91.7 FT.					
CN	2.7	2.5											433.1	Bottom of boring at 91.7 FT.					

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE
 D = DENNISON; P = PITCHER; U = UIHER

South of Coldwater Creek

HOLE NO.
 B53W08D

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. B53W08S				
SITE South of Coldwater Creek				COORDINATES N 2006 E 1411				ANGLE FROM HORIZ Vertical					
BEGUN 12-30-87	COMPLETED 1-15-88	DRILLER GEOTECHNOLOGY		DRILL MAKE AND MODEL CME-45B	SIZE 9"	OVERBURDEN 37.5	ROCK (FT.)	TOTAL DEPTH 37.5					
CORE RECOVERY (FT./%) /	CORE BOXES 5	SAMPLES 525.9	SEL. TOP CASING 525	GROUND EL. 34.1/490.6 1/15/88	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 140 LB./30 IN.		CASING LEFT IN HOLE: DIA./LENGTH 2"/37.0'		LOGGED BY: G. CHERRY									
SAMP. TYPE SAMP. DIA. LEN.	ADV. CORE SAMPLE REC.	REC. CORE REC.	SAMP. BLD. LOSS	F.F.N. CORE RECOVERY	G.P. M	PRESS. P.S.I.	TIME MIN.	ELEV. 524.7	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
											0.0-8.5 FT. <u>FILL</u>		
											8.5-24.0 FT. <u>CLAYEY SILT</u> - mottled olive gray (5Y 4/1) with moderate brown (5YR 4/4) blebs and stringers of iron oxide plus scattered stingers of black (N1) organic material, soft-medium stiff, low-moderate moisture content (increasing with depth), low-moderate plasticity.		
SS	2.0	1.5	3-4-5 4								24.0-37.5 FT. <u>SILTY CLAY</u> - olive gray (5Y 4/1), stiff, moderate moisture content, medium plasticity.		
SS	2.0	1.7	3-5-5 7								34.0 FT. Trace amounts of sand.		
SS	2.0	1.7	3-5-6 9										
SS	2.0	1.8	4-6-8 8										
SS	2.0	1.8	5-5-8 10										
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER								South of Coldwater Creek		HOLE NO. B53W08S			

GEOLOGIC DRILL LOG							PROJECT			JOB NO.		SHEET NO.	HOLE NO.
SAMP. TYPE	ADV.	LEN. CORE	SAMPLE REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON:
SAMP. TYPE	ADV.	LEN. CORE	SAMPLE REC.	SAMPLE N°	LOSS IN FT.	PRESS. P.S.I.	TIME MIN.						WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								487.2	X		Bottom of boring at 37.5 FT. Boring completed as a shallow monitor well, See as-built for details.		Description and classification by visual examination; Rock Color Chart, (GSA, 1948).

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

SITE

South of Coldwater Creek

HOLE NO.

B53W08S

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 3	HOLE NO. B53W09			
SITE South of Coldwater Creek			COORDINATES N 1688 E 3619				ANGLE FROM HORIZ BE Vertical					
BEGUN 1-23-88	COMPLETED 2-29-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75		SIZE 9"	OVERBURDEN 74.0	ROCK (FT.) 0.5	TOTAL DEP 74.5				
CORE RECOVERY (FT./%) /	CORE BOXES 15	SAMPLES EL. TOP CASING 523.5	GROUND EL. 522	DEPTH/EL. GROUND WATER /		DEPTH/EL. TOP OF ROCK 74.0/448.1						
SAMPLE HAMMER WEIGHT/FALL 2"/74.0'		CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R. C. KISER										
SAMP TYPE DIA. SAMP. LEN	ADV. CORE	SAMPLE REC.	CORE REC.	SAMPLE LOSS %	CORE RECOVERY %	WATER PRESSURE TESTS		ELEV. 522.1	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC
						G.P.M.	PRESS. P.S.I.					
CN	2.0	0.0										
CN	5.0	4.5										
CN	5.0											
CN	5.0											
CN	5.0											
CN	5.0											
CN	5.0											
CN	5.0											
CN	5.0											
CN	5.0											
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER												HOLE NO. B53W09D
SITE South of Coldwater Creek												
E-B-94												

GEOLOGIC DRILL LOG								PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.			
SAMP.	TYPE	ADV.	LEN.	CORE	SAMPLE REC.	CORE REC.	SAMPLE LF.	BLOWS	IN"	CORE REC.	LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								G.P.	M	P.S.I.	TIME	MIN.						
CN	5.0	5.0											485.6				36.5-50.5 FT. CLAYEY SILT - olive gray (5Y 4/1), high moisture content, saturated in zones, low to moderate plasticity; distinct contact with overlying silty clay.	
CN	5.0	2.8											40					
CN	5.0	5.0											45					
CN	5.0	5.0											471.6				50.5-54.0 FT. SHALE - intermixed olive gray (5Y 6/1) and yellowish orange (10YR 6/6), laminated in a few zones; some laminations are coated with thin, brittle iron-oxide.	B.K.
CN	5.0	5.0											468.1				54.0-55.7 FT. COAL (LIGNITE ?) - black (N1), crumbly, soft; upper +/- 6 in. mixed with black gummy clay; high moisture content.	
CN	5.0	5.0											466.4				55.7-74.0 FT. SHALE 55.7-59.0 FT. Consists of intermixed gray and orange, essentially the same as interval 50.5-54.0 FT.	
CN	5.0	5.0											59.0-74.0 FT. Medium gray (N5), partially weathered to brownish gray (5YR 4/1); very low moisture content throughout; stiff, well compacted; friable after removal from sampler; faint laminations in lower part of unit.					
CN	5.0	5.0											60					
CN	5.0	5.0											65					
CN	5.0	5.0											70					
CN	0.5	0.5											448.1				74.0-74.5 FT. LIMESTONE - grayish red (5R 4/2), fine-grained, resembles sandstone but	
CN	0.5	0.5											447.6					
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE		South of Coldwater Creek						HOLE NO. B53W09D		

GEOLOGIC DRILL LOG								PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.		
SAMP	TYPE	ADV.	LEN	CORE	SAMPLE	REC.	CORE	LOSS	WATER PRESSURE TESTS		ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON:
	DIA				LEN	"	CORE	IN	G.P.H	PRESS.	TIME	MIN.					WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
																reacts to HCl; moderately cemented, probably weathered. Bottom of boring at 74.5 FT. After completion, set 2 in. diameter monitoring well with screen at 61.0-71.0 FT.	

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

SITE

South of Coldwater Creek

HOLE NO.

B53W09D

GEOLOGIC DRILL LOG						PROJECT	FUSRAP 14501	JOB NO.	SHEET NO.	HOLE NO.				
SITE			COORDINATES					153	1 OF 2	B53W09S				
Ballfield Area						N 1821 E 1112			ANGLE FROM HORIZ	BEARING				
BEGUN	COMPLETED	DRILLER	GEOTECHNOLOGY			DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH				
12-30-87	1-22-88					CME-45B	9"	35.0		35.0				
CORE RECOVERY (%)	CORE BOXES	SAMPLES	ELEM.	TOP CASING	GROUND EL.	DEPTH/EL.	GROUND WATER	DEPTH/EL.	TOP OF ROCK					
/		6		525.3	524	V /			/					
SAMPLE HAMMER WEIGHT/FALL:			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: G. CHERRY/R.C. KISER								
140 LB./30 IN.			2"/34.5'											
SAMP. SAND TYPE	ADV. SAMP. LEN.	CORE REC.	SAMPLE LOSS	SAMPLE BLNS.	CORE REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						G.P.	PRES.	TIME						
CN	4.0	1.8							524.3				0.0-6.5 FT. RUBBLE AND FILL - yellowish brown silty sand fill material, low moisture from +/- 1 FT. downward, slightly cohesive; small piece of asphalt at 4.0 FT.	Hole advanced to 9.0 FT. with 6-3/4 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler. Reamed hole to with 12 in. diameter flight augers and set conductor casing to 8.0 FT.
CN	5.0	5.0							517.8				6.5-12.5 FT. VARVED SILT - thin (1/16-1/8 in.) alternating bands of pale yellowish brown (10YR 6/2) and moderate brown (5YR 3/4), low moisture, friable, small amount of very fine-grained sand.	All of sample No. 1 relinquished to TMA/Eberline for testing. Borehole gamma-logged by TMA-Eberline.
SS	2.0	1.3	4-4-5						511.8				12.5-24.0 FT. CLAYEY SILT - olive gray (5Y 4/1) with moderate brown (5YR 3/4) blebs and stringers of iron oxide plus scattered stringers of olive black (5Y 2/1) organic material, soft-medium stiff, low-moderate moisture content, low plasticity.	Hole advanced past 9 FT. with 9 in. OD hollow stem augers, disturbed samples taken with 2 in. split spoon (2 FT. long).
SS	2.0	1.8	3-3-4						500.3				24.0-29.0 FT. CLAYEY SILT - mottled light olive gray (5Y 6/1) with dark yellowish orange (10YR 6/6) blebs and stringer of iron oxide plus scattered stringers of black (N1) organic material, stiff, moderate moisture content, moderate plasticity.	
SS	2.0	1.8	6-7-9						495.3				29.0-35.0 FT. SILTY CLAY - mottled greenish gray (5G 6/1) olive gray (5Y 4/1), stiff, moderate moisture content, moderate plasticity.	
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE O = DENNISON; P = PITCHER; O = OTHER						Ballfield Area						HOLE NO. B53W09S		

GEOLOGIC DRILL LOG								PROJECT			JOB NO.		SHEET NO.	HOLE NO.		
SAMP. AND TYPE	DIA. IN.	SAMP. ADV.	LEN. CORE	SAMPLE REC.	% CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
LOSS TON	G.P.H.	P.S.I.	TIME MIN.													
															Bottom of boring at 35.0 FT. Boring completed as a shallow monitoring well. See as-built for details.	Discription and classification by visual examination; Rock Color Chart, (GSA, 1948).

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

SITE

Ballfield Area

HOLE NO.
B53W09S

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501			JOB NO. • SHEET NO.	HOLE NO.
SITE South of Coldwater Creek			COORDINATES N 1578 E 926					ANGLE FROM HORIZ	BEARING	
BEGUN 12-30-87	COMPLETED 1-25-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 82.0	ROCK (FT.) 0.3	TOTAL DEPTH 82.3	
CORE RECOVERY (FT./%) /		CORE BOXES	SAMPLES	EL. TOP CASING 14	GROUND EL. 526.9	DEPTH/EL. GROUND WATER 526	▼ /	DEPTH/EL. TOP OF ROCK 82.0/443.5		
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R. C. KISER				
SAMPLE TYPE AND DIAM. SAMP. ADV. LEN. CORE SAMPLE REC. CORE REC. SAMPLE F. LOSS G.P.M.	ADV. LEN. CORE SAMPLE REC. CORE REC. SAMPLE F. LOSS G.P.M.	WATER PRESSURE TESTS	ELEV. 525.5	DEPTH 5	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
						PRES. P.: TIME MIN.				
CN 4.0	2.0					0.0-9.5 FT. RUBBLE AND FILL - yellowish brown silty, sandy fill material with moderate amount of clay; except for upper +/- 1 FT, low moisture, moderate cohesion; upper +/- 1 FT. is dark brown with grass roots and high moisture.			Hole advanced to 14.0 FT. with 6-3/4 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler.	
CN 5.0	5.0					5			Reamed hole with 12 in. diameter flight augers and set conductor casing to 12.0 FT. Sample No. 1 (0.0-4.0 FT.) relinquished to TMA/Eberline for testing.	
CN 5.0	5.0					10	9.5-29.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) patches and stringers of iron oxide; moderate moisture, moderate plasticity.		Borehole gamma-logged by TMA-Eberline.	
						15				
						20				
						25				
						30				
CN 5.0	5.0					30	29.0-43.3 FT. SILTY CLAY - greenish gray (5GY 6/1), stiff, low to moderate moisture, low to moderate plasticity.		Description and classification by visual examination of samples.	
CN 5.0	5.0									
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER						South of Coldwater Creek			HOLE NO. B53W10D	

GEOLOGIC DRILL LOG								PROJECT	FUSRAP 14501	JOB NO.	153	SHEET NO.	2 OF 3	HOLE NO.										
SAMP	TYPE	SAMP	ADV.	LEN	CORE	SAMPLE	REC.	CORE	REC.	SAMPLE	LEN	CORE	REC.	LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON:	
														G.P.M	PRESS. P.S.I.	TIME MIN.								WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN																								
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	4.0																						
CN	5.0	3.5																						
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	5.0																						
CN	5.0	5.0																						
SS = SPLIT SPOON; ST = SHELBY TUBE; O = DENNISON; P = PITCHER; O = OTHER								SITE		South of Coldwater Creek			HOLE NO.		B53W10D									

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

SITE

South of Coldwater Creek

HOLE NO.

B53W10D

GEOLOGIC DRILL LOG					PROJECT		FUSRAP 14501			JOB NO.	SHEET NO.	HOLE NO.		
SITE South of Coldwater Creek					COORDINATES N 1725 E 2332							ANGLE FROM HORIZ	BEAR	
BEGUN 12-29-87		COMPLETED 1-19-88		DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 49.0	ROCK (FT.)	TOTAL DEPTH 49.0			
CORE RECOVERY (FT./%) /		CORE BOXES 10		SAMPLES EL. TOP CASING 530.6	GROUND EL. 529	DEPTH/EL. V /	GROUND WATER V /	DEPTH/EL. V /	TOP OF ROCK V /					
SAMPLE HAMMER WEIGHT/FALL 2"/48.5'					CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R. C. KISER						
SAMPLE TYPE SAMP. DIA. SAMP. LEN.	ADV. CORE SAMPLE REC.	SAMPLE CORE REC. SAMPLE BLDG. % CORE RECOVERY	WATER PRESSURE TESTS			ELEV. 529.0	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.		
			LOSS IN G.P.M.	PRESS. P.S.I.	TIME MIN.									
CN	3.5	3.5							0.0-8.5 FT. RUBBLE AND FILL 0.0-5.0 FT. Various hues of brown silty, slightly sandy clay.			<p>Hole advanced to 13.5 FT. with 6-3/4 in. OD hollow stem augers; samples taken with CME split barrel continuous sampler. Reamed hole to 14.0 FT. with 12 in. diameter flight augers and set 10 FT. of 10 in. diameter conductor casing.</p> <p>Sample No. 1 (0.D-3.5 FT.) relinquished to TMA-Eberline for testing.</p> <p>Borehole gamma-logged by TMA-Eberline</p> <p>After casing grout cured, continued advance with 9 in. diameter hollow stem augers to 49.0 FT. Samples taken with CME split barrel continuous sampler.</p>		
CN	5.0	5.0							5.0-8.5 FT. Blackish clayey sludge, no odor detected.					
CN	5.0	5.0							8.5-45.0 FT. CLAYEY SILT - light olive gray (SY 6 1/2), mottled with reddish brown (10R 4/1) blebs of iron oxide; low to moderate moisture, moderate plasticity.					
CN	5.0	5.0							Ver Dow log					
CN	5.0	5.0												
CN	5.0	5.0												
CN	5.0	5.0												
CN	5.0	5.0												
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE South of Coldwater Creek			HOLE NO. B53W10S						

GEOLOGIC DRILL LOG								PROJECT			JOB NO.		SHEET NO.	HOLE NO.	
SAMP TYPE	SAMP ADV.	LEN CORE	SAMPLE REC.	CORE REC.	SAMPLE N°	% CORE RECOVERY	LOSS IN	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON:
							G.P.M.	F.S.I.							WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN	5.0	5.0								40			39.0-45.0 FT. Lower moisture, stiff, lighter shade of gray.		
CN	5.0	5.0								484.0			45.0-49.0 FT. SILTY CLAY - olive gray (5Y 4/1), high moisture (approaching saturation), moderate to high plasticity, highly compressible; very distinct contact with overlying unit.		
										480.0			Bottom of boring at 49.0 FT. After completion of boring, set 2 in. diameter monitoring well with screen at 41.0-46.0 FT.		

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

SITE

South of Coldwater Creek

HOLE NO.
B53W10S

GEOLOGIC DRILL LOG					PROJECT			JOB NO.		SHEET NO.	HOLE NO.
SITE South of McDonnell Blvd.					COORDINATES N 1029 E 3092			153		1 OF 3	B53W11D
BEGUN 1-22-88		COMPLETED 1-28-88		DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75		SIZE 9"	OVERTURE 79.6	ROCK (FT.) 0.2	TOTAL DEPTH 79.8	
CORE RECOVERY (FT./%) /		CORE BOXES 17		SAMPLES EL. TOP CASING 537.6	GROUND EL. 536	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK 79.6/456.5				
SAMPLE HAMMER WEIGHT/FALL 2"/81.0'			CASING LEFT IN HOLE: DIA./LENGTH 2"/81.0'			LOGGED BY: R. C. KISER					
SAMP. SAMP.	TYPE DIAM.	ADV. SAMPLE LEN.	CORE SAMPLE REC.	SAMPLE BLDS	LOSS G.P.M.	WATER PRESS. P.S.I.	DEPTH ELEV.	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
CN	4.5	4.5					536.1		0.0-1.5 FT. ORGANIC SILT - with clay, olive black (5Y 2/1), moderate moisture and plasticity, abundant roots.		
CN	4.0	4.2					534.6		1.5-15.5 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) iron oxide, moderate to high moisture, moderate plasticity.	Advanced hole to 9.5 FT. with 9 in. hollow stem augers; samples taken with CME split barrel continuous sampler, reamed hole with 12 in. diameter flight augers and set 8 FT. of 10 in. diameter conductor casing. There is no rubble or fill in this area. Conductor casing was set because sample No. 1 (0.0-4.5 FT.) had 250 count on PRM-6; second sample (4.5-9.5 FT.) had nothing above background; see No. 1 relinquished TMA/Eberline Rad. testing.	
CN	5.0	2.3					5				
CN	5.0	5.0					10				
CN	5.0	5.0					15		15.5-38.5 FT. SILTY CLAY - brown (5YR 4/4) with scattered black blebs and stringers of organic(?) matter; moisture content high to +/- 23 FT., then diminishes to low; also below 23 ft., brown is mottled with light olive gray (5Y 6/1); unit is stiff, moderately plastic throughout.	After casing grout cured, continued advance to 79.8 FT. with 9 in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler.	
CN	5.0	5.0					20				
CN	5.0	5.0					25			Borehole gamma-logged by TMA-Eberline.	
CN	5.0	5.0					30			Description and classification by visual examination of samples.	
CN	5.0	5.0							33.5-38.5 FT. Three joints 15-20 degrees, faint slickensides on one at +/- 37.0 FT., increase in moisture.		
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE O = OENNISON; P = PITCHER; O = OTHER								HOLE NO. B53W11D			
South of McDonnell Blvd.											

GEOLOGIC DRILL LOG							PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.		
SAMP. TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMPLE LFT.	Z CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		
							LOSS IN. G.P.M.	PRES. I.B.P.	TIME IN. MIN.							
CN	5.0	5.0								497.6						
										40						
CN	5.0	5.0								490.3						
										45						
CN	5.0	5.0								50						
										55						
CN	5.0	5.0								59.5						
										60						
CN	5.0	5.0								59.5-62.2 FT. SILTSTONE (?)	- medium gray (N4) very dense; strong, with silty cleavage and texture.					
										62.2						
CN	5.0	5.0								64.0						
										64.0-69.0 FT. SILTSTONE (?)	- same as interval 59.5-62.2 FT.					
CN	5.0	5.0								65						
										69.0						
CN	5.0	5.0								69.8						
										70						
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER	SITE			Seuth of McDonnell Blvd.			HOLE NO.			B53W11D						

GEOLOGIC DRILL LOG							PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 3 OF 3	HOLE NO. B53W111		
SAMP TYPE	SAMP. ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	LOSS IN FT.	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN	1.3	1.3									79.6-79.8 FT. LIMESTONE Bottom of boring at 79.8 FT. After completion, set 2 in. diameter monitoring well with screen at 68.5-78.5 FT.	

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

SITE

South of McDonnell Blvd.

HOLE NO.

B53W11D

GEOLOGIC DRILL LOG					PROJECT FUSRAP 14501				JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. B53W11S			
SITE South of Coldwater Creek			COORDINATES N 1675 E 3618				ANGLE FROM HORIZ Vertical							
BEGUN 1-23-88	COMPLETED 3-2-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 24.0	ROCK (FT.)	TOTAL DEPTH 24.0					
CORE RECOVERY (FT./%) /	CORE BOXES 2	SAMPLES 523.7	EL. TOP CASING 522	GROUND EL. ▽ /	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK /								
SAMPLE HAMMER WEIGHT/FALL 2"/24.0'			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY:			R. C. KISER								
SAMP. TYPE SAND	DIA. IN.	ADV. SAMPLE LEN. IN.	REC. CORE REC.	SAMPLE LOSS IN. %	CORE RECOVERY %	WATER PRESSURE TESTS			ELEV. 522.1	DEPTH 5	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
						G.P.M.	PRES.: P.	TIME MIN.						
CN	4.0	4.0											0.0-5.5 FT. RUBBLE AND FILL 0.0-1.2 FT. Mixture of clayey silt, gravels and asphalt chunks. 1.2-5.5 FT. Brownish black (5YR 2/1) clay and silt, low to moderate plasticity, wet (may be natural ground).	Advanced hole to 9.0 FT. with 9 in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler; reamed hole with 12 in. diameter flight augers and set 7 FT. of 10 in. diameter conductor casing. Note: Perched water at 4 FT. depth, hole depth at 9.0 FT augers out of hole.
CN	5.0	5.0							516.6	5			5.5-20.0 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) iron oxide, moderate moisture and plasticity.	After casing grout cured continued advance to 24.0 FT. with 9 in. diameter hollow stem augers; no samples taken; log from 9.0 to BOH based on B53W09D located 14 FT. to the north.
									10				16.5-20.0 FT. Grades to yellowish brown (10YR 6/2), moderate moisture, abundant small pods of peat-like material.	Borehole gamma-logged by TMA-Eberline.
								502.1	15					
								498.1	20				20.0-24.0 FT. SILTY CLAY - greenish gray (5G Y 6/1) low moisture (increases with depth), moderate plasticity.	
									24.0				Bottom of boring at 24.0 FT. After completion, set 2 in. diameter monitoring well with screen at 16.0-21.0 FT.	
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE South of Coldwater Creek		HOLE NO. B53W11S				



Bechtel GEOLOGIC DRILL LOG

PROJECT							JOB NO.		SHEET NO.		HOLE NO.		
									1 OF 4 B53W12D				
SITE SLAPS: Ball Fields			COORDINATES N 1,211.27 E 3,529.63							ANGLE FROM HORIZ Vertical		BLA	
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL				SIZE	OVERTURBEN	ROCK (FT.)	TOTAL DEPTH			
9-1-92	9-29-92	Fugro-McClelland	CME-55 & 75				18"	78.2	0.0	78.2			
CORE RECOVERY (FT./IN)		CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH EL. GROUND WATER		DEPTH EL. TOP OF ROCK					
19.0/24		0	18	None	527.6	/ /		0.0/0.0					
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE: DIAM LENGTH				LOGGED BY:						
140 lbs / 30 "			12" PVC = 32.75' / 4" SS = 59.2				J.T. Smith						
SAMP TYPE SAND	SAMP DIA. ADV. CORE	SAMPLE LEN. REC. REC.	SAMPLE CORE REC.	SAMPLE LOSS	WATER PRESSURE TESTS G. M.	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	
									L.N.P.	P.R.S.	T.M.		
						527.6			0.0 - 4.0 ft SILT				
									From 0.0 - 2.0 ft medium brown (5YR 3/4). Silt, organic topsoil; dry, fairly compact.			Borehole advanced using 4" I.D. auger, and 3" split spoon and 3" Shelby tube sampling to 38.0'.	
SS 3"	2.0	0.5	7-7- 7-6			525.6			From 2.0 - 4.0 ft, color grades from medium brown (5YR 3/4) to medium olive-brown (5Y 4/4). Silt, rolled fill, soil grading to silt with clay.			Hole reamed with 12 I.D., 18" O.D. auger to 32.0'.	
SS 3"	2.0	1.6	2-5- 7-8			523.6			4.0 - 22.0 ft Clayey SILT			Hydraulically pushed 12" PVC csg to 32.75'.	
O			Grab sample			521.6			From 4.0 - 6.0 ft, olive-brown (5Y 4/4). 30-40% clay, rolled fill. Sooty black (N1) inclusions grainy texture, semi-pliable to friable in places. Slick cut, soft, moist.			VO = Volatile Organics	
O			Grab sample						From 6.0 - 10.0 ft, black-brown (5YR 2/1) blotched inclusions in olive medium brown (5Y 4/4) matrix. Silty texture, smooth cut, even texture, moist.				
SS 3"	2.0	1.8	1-1- 2-2			517.6	10		From 10.0 - 12.0 ft, olive medium brown (5Y 4/4) matrix with grayish-brown streaks (5YR 4/1) and black-brown inclusions (5YR 2/1); highly speckled throughout matrix. Sooty, pliable, moist.			Cleaned out borehole pressure grout 33-35' inside and annulus of borehole. Grout plug setup 13 days.	
O			Grab sample			515.6			From 12.0 - 14.0 ft, Medium olive-brown (5Y 4/4). Silty with clay.			Reamed grout plug off from 15.0' to 33.0'.	
O			Grab sample			513.6	15		From 14.0 - 16.0 ft, medium olive-brown (5Y 4/4). Slightly drier, less soupy, more grainy, very fine-grained sand (?).			Extended borehole w 6-1/4 I.D., 10" O.D. to 77.0'.	
O			Grab sample			511.6			From 16.0 - 22.0 ft, color grades from medium olive-brown (5Y 4/4) to more brown-black (5YR 2/1) blotchy texture, mixed with reddish-brown and black mottling. Fine layering, gummy, forms balls on auger, pliable, rope forming, moist.			Samples too soupy for analysis.	
O			Grab sample			505.6	20		22.0 - 25.0 ft CLAY: Clay tense, silty. Will wash some below 22.5 ft.			14.0-16.0': sample too soupy, saved for SAJ.	
						504.6			23.0 - 25.0 ft SILT: Medium brown (5YR 4/4). Water washes, very soupy, muddy, loose.			Drills easily.	
						502.6						Sample attempted from 22-36', but too soft, wet and loose to obtain.	
BG = SPLIT SPOON; ST = SHELBY TUBE.							SITE				SLAPS: Ball Fields		
D = DOMINION; P = PITCHER; O = OTHER											HOLE NO. B53W12D		



Bechtel GEOLOGIC DRILL LOG

SAMP. TYPE	ADV. SAMP.	LEN. CORE	SAMPLE REC. CORE REC.	SAMPLE LEN. SPLIT SPOON RÉCUPÉR. CORE REC.	WATER PRESSURE TESTS				ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
					LOSS LOSS N.	G.P. M.	PRES. P.	TIME M.						
O				Grab sample									25.0 - 32.0 ft SILT: Brownish-gray (SYR 4/1). With clay, varies from very muddy, watery to very wet, thick.	augers. Soft drilling, auger brings up much water. Too soft and runny to obtain split spoon or shelby tube samples from 22-36'. Grab samples obtained at approximately 2' intervals.
O				Grab sample										
O				Grab sample										
O				Grab sample						495.6			32.0 - 52.5 ft CLAY	
O				Grab sample									From 32.0 - 36.0 ft, medium brown (SYR 3/4) with red streaks (IOYR 6/6). Silty (?), muddy, slick, tight, grades to fairly stiff.	
O				Grab sample						491.6				Firm, medium drilling 12' surface casing hydraulically pushed. Cleaned-out borehole and pressure grout annulus of hole from 32.0-32.75', outside 12" casing from 33' to 15' grouted in annulus of borehole surface. Resumed drilling 13 days later. Drilled out grout plug 15-33'. Resumed augering with 10" O.I. 6-1/4 I.D. auger from 33-77'. Firm drilling from 36.0-38.0'. Pushed shelby tube easily.
ST 3"	2.0	2.0	Pushed							489.6				
										486.6			From 41.0 - 44.0 ft, olive-tan (SY 6/4) with blue-gray (SPB 5/2), turquoise color. Slick break.	
SS 2"	2.0	2.0	Pushed							483.6				
O				Grab sample						481.1			From 44.0 - 46.5 ft, olive-tan (SY 6/4) with blue-gray (SPB 5/2) inclusion streaks. Slick break, conchoidal, hard, tough, dense.	
O				Grab sample						478.1				
ST 3"	2.0	2.0	Pushed							474.6			46.5 - 49.5 ft, ochre-yellow (IOY 6/5). Silty, soft to moderate, pliable, rope forming, gummy, slick-cut, tight, fairly dry.	
													From 49.5 - 52.5 ft, dark brown (SYR 2/10). Pliable, rope forming, semi-fatty, tight, aquoclade, slick cut, soft.	
														Fairly stiff drilling, no surface cuttings. Excellent clay pack on auger flights; photos taken of semi-core like auger packed from approximately 30.0-60.0'.
														At 52.5 ft, medium olive-green tan (IOY 7/4), soft.
														53.0 - 54.0 ft MUDSTONE: Medium gray (N5)
														Hard, tough drilling, mudstone.
S.S. = SPLIT SPOON; ST = SHELBY TUBE; O = DENISON; P = PITCHER; D = OTHER					MTC				SLAPS: Ball Fields				MTC	



Bechtel GEOLOGIC DRILL LOG

PROJECT

JOB NO.

SHED NO.

3 - 4 B

HOLE NO.

SAMP	TYPE	ADV.	CORE	REC.	SAMPLE	LOSS	G.N.	P.S.	TIME	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	
														ft.	in.		
O					Grab sample					473.6	"				with black streaks (N1) Semi-shale, silty clay; varving (approximately 2-3 mm) black organic inclusions with red stains (10R 6/6 to 10YR 6/6). Soft.	54.0 - 61.7 ft CLAY/SHALE	
ST	2.0	2.0	Pushed														Shelby tube and at 54.5' very hard, semi-shale clay.
O					Grab sample					468.6	"				From 54.0 - 59.0 ft, medium brown (5YR 3/4); clay dries light gray-tan (5Y 7/2) with gray black (N1) laminae varves. Slick, gummy, nodular pea-size quartz sparse, fairly soft to tight.		
SS	2.0	1.4	11-20-30-34							467.6	"				From 59.0 - 60.0 ft, yellow-red orange (10YR 6/6). Semi-shale, ferruginous, limonitic, laminated iron and clay in 1/4-1/2" layers. Dry, hard, noticeably heavier than hard, dense clay.		Shelby tube too tight clay from 57.0-59.0' pull. Drilled out with overshot auger, 10-1/2" O.D. from 57.0-60.0'; shelby retrieved in good condition.
SS	2.0	1.0	3-10-22-24							465.9	"				From 60.0 - 61.7 ft, turquoise (5BG 6/6) with red-ocher (10YR 6/5 to 6/6) iron-limonitic nodules; also black (N1) streaks. Thin banded oxide, very hard, tough, dry, shavings when dry.		Hard, tight drilling.
SS	2.0	0.7	4-7-10-12							465.6	"				61.7 - 62.0 ft SILT: Yellow-brown (10YR 5/4) with tan-yellow (5Y 6/4) inclusions and turquoise-gray (5BG 5/2) clay fragments.		
SS	2.0	0.5	5-8-14-20												From 62.0 - 69.0 ft, turquoise-blue (5PB 5/2 to 5BG 6/6) with black (N1) streaks; red-brown and black limy nodules mixed in blotchy zones. Clay matrix is tough, blocky, breaks, slick cut, semi-fatty, dense, tight with marbled laminae texture. Sparse limonitic nodules 1/4-1/2" in size.		
SS	2.0	0.9	8-10-18-15							458.6	"				From 69.0 - 69.3 ft, red-brown (10R 4/6) lens, medium tough, slick cut, very small limonitic nodules; streaked.		
										458.3	"				69.3 - 70.0 ft, gray-turquoise (5BG 6/6). semi-shale; varved, thin shavings.		
										457.6	"				From 70.0 - 74.0 ft, no returns, muddy water. Apparently same as 69.3 - 70.0 ft.		
SS	1.8	1.4	5-20-45-50/4"							453.6	"				From 74.0 - 74.5 ft, olive-green (10Y 5/4) with blue-turquoise (5BG 6/6 to 5B 6/2) and red-ocher (10YR 6/6) inclusions. Limonitic, slick, blocky, brittle, dense.		
SS	1.3	1.2	12-28-50/3"							453.1	"				From 74.5 - 75.4 ft, gray-green (5BG 6/6) and ochre streaks about 1" thick. Inclined slickensides with blue-gray (5BG 5/2) soft inclusions of fat clay, turquoise color.		Drives easily first 6' then hard and tough.
O			Grab sample							452.1	"				From 75.4 - 77.0 ft, dark dusky blue-gray (5PB 3/2) in red-brown (10R 4/6) matrix. Laminated clay with silt, slickensided, low angular bedding approximately 1/4" thick; dry, hard, brittle, dense, gritty silt (siltstone).		Very hard from 75.0-78.2', alternating dense, semi-shale layers for drilling with 10-1/2" O.D. augers (6-1/4") I.D. Split spoon sample driven from 77.0-78.2' (total depth).
										450.6	"				From 77.0 - 77.5 ft, Blue-black (5PB 3/2 to N2), bands in turquoise (5BG 6/6 to 5B 6/2) matrix. Clay, semi-fatty, tough, pliable.		All composite sample taken by TMA/Eberline per SAIC.
										450.1	"				At 77.5 ft, color changes to red-ocher 10YR 6/6 with gray-green (10GY 5/2) Clay.		No VO encountered.
										449.6	"						Borehole ground up to 62.0 ft. S.
										449.4	"						

SD = SPLIT SPOON; ST = SHELBY TUBE;
D = DOWDRILL; P = PITCHER; O = OTHER

MTE

SLAPS: Ball Fields

MOLE NO.

B53W12D



Bechtel
GEOLOGIC DRILL LOG

PROJECT								JOB NO.		SHEET NO.		HOLE NO.		
SAMP. TYPE	ADV.	LEN.	CORE	SAMPLE REC.	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION				NOTES ON:
SAMP. MTH.	SAMP.	LEN.	CORE	SAMPLE	LOSS	G.P.M.	PRES.	TIME	MIN.					WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
										ballis-rolls, concentric cleavage, dry-spall, hard, tough, dry. 78.0 - 78.2 ft SILTSTONE: Blue-gray (SBG 5/2), wet; dries whitish tinged-gray (N8). Well sorted, very fine gritty, tight, dense, scratches knife. BOTTOM OF HOLE: 78.2 FT. (Plugged back to 62.0 ft)				bentonite seal and completed as monitoring well on 9-29-92
														Description and classification of soils by visual examination of split spoon and gr samples. Sample classification is UNIFIED SOIL CLASSIFICATION; color descriptions fro the GSA Rock Color Chart.
SS = SPLIT SPOON; ST = SHIELY TUBE; U = UTMISON; P = PITCHER; O = OTHER								SITE				HOLE NO.		
								SLAPS: Ball Fields				B53W12D		

GEOLOGIC DRILL LOG				PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. B53W10D	
SITE Ballfield Area			COORDINATES N 1566 E 927				ANGLE FROM HORIZ Vertical			
BEGUN 12-30-87	COMPLETED 1-19-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME-45B			SIZE 9"	OVERBURDEN 35.0	ROCK (FT.)	TOTAL DEPTH 35.0	
CORE RECOVERY (FT./%) /		CORE BOXES 4	SAMPLES 1.	SEL. TOP CASING 526.9	GROUND EL. 525	DEPTH/EL. ▽ /	GROUND WATER	DEPTH/EL. TOP OF ROCK /		
SAMPLE HAMMER WEIGHT/FALL 140 LB./30 IN.			CASING LEFT IN HOLE: DIA./LENGTH 2 IN./34.5 FT.			LOGGED BY: G. CHERRY				
SAMP. TYPE SAMP. LEN.	ADV. LEN. CORE SAMPLE CORE REC. SAMPLE LEN. LOSS IN.	REC. CORE REC. CORE RECOVERY	WATER PRESSURE TESTS			ELEV. 525.4	DEPTH 5	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION 0.0-9.5 FT. FILL	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
			LOSS IN.	G.P.M.	PRESS. P.	TIME MIN.				Advanced hole to 11. FT. with 12 in diameter flight auger and set 12.0 FT. of conductor casing; no sampling; this well is nested with well No. B53W10D. Log to 14.0 FT. is taken from log of B53W10D.
							5			
							10		9.5-29.5 FT. CLAYEY SILT - mottled light olive gray (5Y 6/1) with dark yellowish orange (10YR 6/6) blebs and stringers of iron oxide plus scattered stringers of black (N1) organic material, medium stiff, low-moderate moisture content (increases with depth), low-moderate plasticity.	
							15			
SS	2.0	1.9					20			
							25			
SS	2.0	2.0	3-5-7 9				30		29.5-35.0 FT. SILTY CLAY - greenish gray (5G-5GY 6/1), stiff, moderate moisture content, moderate plasticity.	
							35			
SS	2.0	1.8					40			
							45			
							50			
							55			
							60			
							65			
							70			
							75			
							80			
							85			
							90			
							95			
							100			
							105			
							110			
							115			
							120			
							125			
							130			
							135			
							140			
							145			
							150			
							155			
							160			
							165			
							170			
							175			
							180			
							185			
							190			
							195			
							200			
							205			
							210			
							215			
							220			
							225			
							230			
							235			
							240			
							245			
							250			
							255			
							260			
							265			
							270			
							275			
							280			
							285			
							290			
							295			
							300			
							305			
							310			
							315			
							320			
							325			
							330			
							335			
							340			
							345			
							350			
							355			
							360			
							365			
							370			
							375			
							380			
							385			
							390			
							395			
							400			

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

SITE Ballfield Area

HOLE NO. B53W12S

GEOLOGIC DRILL LOG							PROJECT			JOB NO.	SHEET NO.	HOLE NO.
SAMP	TYPE	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON:
	DATA	ADV.	LEN	CORE								WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMP	LEN	REC.	CORE	REC.	LOSS	PRESS.	TIME	SAMPLE				NOTES ON:
	FT.	%	FT.	%	IN.	G.P.M.	MIN.					WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
									Bottom of boring at 35.0 FT. Boring completed as a shallow monitoring well. See as-built for details.			Description and classification by visual examination; Rock Color Chart, (GSA, 1948).

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

SITE

Ballfield Area

HOLE NO.

B53W12S

GEOLOGIC DRILL LOG					PROJECT		FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.
SITE South of Coldwater Creek					COORDINATES N 1634 E 1404				ANGLE FROM HORIZ Vertical		BEAR
BEGUN 1-20-88	COMPLETED 2-18-88	DRILLER GEOTECHNOLOGY			DRILL MAKE AND MODEL CME 75 & CME 45	SIZE 9"	OVERBURDEN 29.5	ROCK (FT.)	TOTAL DEPTH 29.5		
CORE RECOVERY (FT./%) /		CORE BOXES 5	SAMPLES 527.0	EL. TOP CASING 525	GROUND EL. 525	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /				
SAMPLE HAMMER WEIGHT/FALL 2"/29.0'			CASING LEFT IN HOLE: DIA./LENGTH		LOGGED BY: R. C. KISER						
SAMP. TYPE DIA.	SAMP. ADV. LEN. CORE	SAMPLE REC. CORE REC.	SAMPLE P/LN. % CORE RECOVERY	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
					525.3			0.0-10.0 FT. RUBBLE AND FILL - various hues of brown and brownish gray silt and clay with brick chips; high moisture in upper 3 FT. due to recent rains and thaw.			Hole advanced to 8.5 FT. with 12 in. diameter flight augers; took sample with 2 in. diameter split spoon. Cleaned hole to 11.0 FT. and set 12.0 FT. of 10 in. diameter conductor casing. Borehole gamma-logged by TMA-Eberline.
SS	1.0	2.0				5					
CN	5.0	3.5			515.3	10		10.0-26.0 FT. CLAYEY SILT - light olive gray (5Y 6/1), mottled with brown (10R 4/6) patches or iron oxide(?) and black blebs of organic material, moderate to high moisture, moderate plasticity.			Sample No. 1 (8.5-10.5 FT.) relinquished to TMA/Eberline testing.
CN	5.0	3.8				15					After casing grout cured, continued advance to 29.5 FT. with 9 in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler.
CN	5.0	5.0				20		19.5-26.0 FT. Brownish hue, wet.			
CN	5.0	5.0			499.3	25		26.0-29.5 FT. SILTY CLAY - greenish gray (5G 6/1), moderate moisture, moderate plasticity.			
					495.8			Bottom of boring at 29.5 FT. After completion, set 2 in. diameter monitoring well with screen at 21.0-26.0 FT.			Description and classification by visual examination of samples.
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE South of Coldwater Creek					HOLE NO. B53W13S	

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. B53W14S	
SITE South of Coldwater Creek			COORDINATES N 1476 E 2796				ANGLE FROM HORIZ Vertical		BEARING -----	
BEGUN 1-23-88	COMPLETED 2-17-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75		SIZE 9"	OVERBURDEN 34.0	ROCK (FT.)	TOTAL DEPTH 34.0		
CORE RECOVERY (FT. %) /	CORE BOXES /	SAMPLES 7	EL. TOP CASING 532.3	GROUND EL. 533	DEPTH/EL. GROUND WATER V /	DEPTH/EL. TOP OF ROCK /				
SAMPLE HAMMER WEIGHT/FALL 2"/28.5'			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R. C. KISER							
SAMP. AND DIA.	TYPE ADV. LEN.	SAMPLE REC. CORE REC.	SAMPLE LOSS IN BLDG.	% CORE RECOVERY	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
CN	4.3	2.0				532.5			0.0-8.0 FT. RIBBLE AND FILL 0.0-5.5 FT. Light brown (5YR 5/6) clean clayey fill, poorly compacted.	Hole advanced to 9.3 FT. with 9 in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler; reamed hole with 12 in. diameter flight augers and set 10.0 FT. of 10 in. diameter conductor casing. Sample No. 1 (0.0-4.3 FT.) relinquished to TMA-Eberline for testing.
CN	4.7	4.5				524.5	5		5.5-8.0 FT. Brownish black (5YR 2/1), very low moisture, low to moderate plasticity (may be natural ground).	Borehole Gamma-logged by TMA-Eberline.
CN	5.0	1.0				514.0	10		8.0-18.5 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/16) iron oxide, low to moderate moisture, moderate plasticity.	After casing grout cured, continued advance to 29.5 FT. with 9 in. diameter hollow stem augers; samples taken with CME split barrel continuous sampler.
CN	5.0	3.3				510.5	15		18.5-22.0 FT. ORGANIC SILT - brownish gray (5YR 4/1-3/1) with clay, high moisture content, low to moderate plasticity, wood chips.	
CN	5.0	5.0				498.5	20		22.0-34.0 FT. SILTY CLAY - greenish gray (5G 6/1), low to moderate moisture, stiff, moderate plasticity.	Description and classification by visual examination of samples.
CN	5.0	4.5					25		29.0-34.0 FT. Increase in plasticity, slightly mottled with brownish iron oxide(?)	
CN	5.0	5.0					30		Bottom of boring at 34.0 FT.	
SS = SPLIT SPOON; ST = SHELBY TUBE; SITE D = DENNISON; P = PITCHER; O = OTHER										HOLE NO. B53W14S
South of Coldwater Creek										E-B-115

GEOLOGIC DRILL LOG						PROJECT			JOB NO.		SHEET NO.	HOLE NO.		
						FUSRAP 14501			153		1 OF 1	B5		
SITE			COORDINATES						ANGLE FROM HORIZ					
South of McDonnell Blvd.			N 1069 E 3305						Vertical					
BEGUN 1-22-88	COMPLETED 1-27-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME-45B			SIZE 9"	OVERBURDEN 21.5	ROCK (FT.)	TOTAL DEPT 21.5					
CORE RECOVERY (FT./%) /	CORE BOXES	SAMPLES	EL. 4	TOP CASING 531.8	GROUND EL. 532	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 140 LB./30 IN.		CASING LEFT IN HOLE: DIA./LENGTH 2 IN./21.0 FT.			LOGGED BY: R.C. KISER/G. CHERRY									
SAMP. TYPE SAND DIAM.	ADV. LEN	CORE SAMPLE REC. LOSS %	SAMPLE LOSS %	CORE RECOVERY	WATER PRESSURE TESTS		ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
					G.P.M.	PRESS. P.					TIME MIN.			
CN	4.3	4.3					532.0				0.0-2.5 FT. FILL - about 0.4 FT. of road gravel underlain by 1.5 FT. of brown and reddish clayey fill, underlain by 0.6 FT. of gravel; (gravel is crusher-run grade).			
CN	5.0	5.0					529.5				2.5-5.0 FT. ORGANIC SILT - grayish brown (5YR 3/2), considerable amount of clay, moist, moderate plasticity.			Advanced hole to 9.1 FT. with 9 in. diameter hollow stem augers; samples take with CME split barrel continuous sampler; reamed hole with 12 in. diameter flight augers and set 5.0 FT. of 10 in. conductor casing. Note: Perched water at -3 FT. depth; hole at 5.0 FT., augers out of hole.
SS	2.0	1.8	3-3-4 6				527.0	5			5.0-15.0 FT. CLAYEY SILT - mottled light olive gray (5Y 6/1) with dark yellowish orange (10YR 6/6) blebs and stringers of iron oxide plus scattered stringers of organic material, soft, moist, moderate plasticity.			Hole advanced past 9.3 FT. with 9 in. OI hollow stem and disturbed samples taken with 2 ft. spoon (2 FT. long).
SS	2.0	2.0	4-6-7 10				517.0	10			15.0-21.5 FT. SILTY CLAY - mottled olive gray (5Y 4/1) with blebs of light olive gray (5Y 5/2), stiff, moist, moderate plasticity.			Borehole gamma-logged by TMA-Eberline.
							510.5	15			Bottom of boring at 21.5 FT. Boring completed as a shallow monitoring well. See as-built for details.			Description and classification by visual examination; Rock Color Chart, (GSA, 1948).
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER												HOLE NO. B53W15S		
SITE South of McDonnell Blvd.														

GEOLOGIC DRILL LOG					PROJECT		JOB NO.		SHEET NO.	HOLE NO.			
					FUSRAP 14501		153		1 OF 1	B53W16S			
SITE South of McDonnell Blvd.			COORDINATES N 1026 E 3105				ANGLE FROM HORIZ		BEARING Vertical				
BEGUN 1-22-88	COMPLETED 2-26-88	DRILLER GEOTECHNOLOGY	DRILL MAKE AND MODEL CME 75			SIZE 9"	OVERBURDEN 24.0	ROCK (FT.)	TOTAL DEPTH 24.0				
CORE RECOVERY (FT./%) /		CORE BOXES 0	SAMPLES EL. TOP CASING 537.6	GROUND EL. 536	DEPTH/EL. GROUND WATER /	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 2"/24"			CASING LEFT IN HOLE: DIA./LENGTH LOGGED BY: R. C. KISER										
SAMP. SAMP.	TYPE ADV. LEN	CORE REC.	SAMPLE LOSS	CORE REC. %	SAMPLE BLDS	WATER PRESS. TESTS	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
										G.P.M.	PRES. P.S.I.	TIME MIN.	
							535.9			D.0-1.5 FT. ORGANIC SILT - with clay olive black (5Y 2/1), moderate moisture and plasticity, abundant roots.			Advanced hole to 8.0 FT. with 12 in. diameter flight auger; and set 8 FT. of 10 in. diameter conductor casing; no samples taken. Borehole gamma-logged by TMA-Eberline. After casing grout cured, continued advance to 24.0 FT. with 9 in. hollow stem augers; no samples taken. Log and well screen placement based on nearby B53W11D. At 15.3 FT., contact between gray clay and brown silty clay is very distinct and is horizontal to ground.
							534.4			1.5-13.8 FT. CLAYEY SILT - light olive gray (5Y 6/1) mottled with reddish brown (10R 4/6) iron oxide; low to moderate moisture, moderate plasticity.			
							522.1			13.8-15.3 FT. CLAY - olive gray (5Y 4/1) moderate moisture, high plasticity.			
							520.6			15.3-24.0 FT. SILTY CLAY - brown (5YR 4/4) with scattered black blebs and stringers of organic(?) matter; moisture content high, low to moderate plasticity.			
							511.9			Bottom of boring at 24.0 FT. After completion, set 2 in. diameter monitoring well with screen at 16.0-21.0 FT.			
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER							SITE South of McDonnell Blvd.			HOLE NO. B53W16S			



Bechtel GEOLOGIC DRILL LOG

PROJECT							JOB NO.		SHEET NO.		HOLE NO.			
SLAPS: Ball Fields							N 1,750.78 E 1,910.01		ANGLE FROM HORIZ		Vertical			
BEGUN	COMPLETED	DRILLER			DRILL MAKE AND MODEL		SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH				
8-21-92	8-21-92	Fugro-McClelland			CME-55		10.5"	35.0	0.0	35.0				
CORE RECOVERY (FT./IN)		CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.		DEPTH/EL. GROUND WATER		DEPTH/EL. TOP OF ROCK					
14.3/41		0	10	None	527.1		22.5/504.8 B-25-92 15.2/511.8 B-31-92		0.0/0.0					
SAMPLE HAMMER WEIGHT/FTALL		CASING LEFT IN HOLE: DIA LENGTH				LOGGED BY: J.T. Smith								
SAMP. TYPE SAND DIAM.	ADV. CORE SAMPLE LEN.	REC. CORE REC.	REC. SAMPLE LOSS	REC. CORE LOSS	WATER PRESSURE TESTS		ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION				NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC
					G.	P.				TIME	MIN.	ELEV.	DEPTH	
O					Grab sample									Borehole advanced using 6-1/4" O.D. auger, with 2" and 3" split spoon and 3" Shelby tube sampling
SS 3"	2.0	1.0	9-12-21-15											VO = Volatile Organics
O					Grab sample									No VO
O					Grab sample									Appears rolled, compacted fill material.
O					Grab sample									Grab samples examined continuous to bottom of borehole approximately every 2'.
SS 3"	2.0	1.9	2-3-5-5											Center auger breaks from replaced.
O					Grab sample									Drives soft, easily retrieved.
O					Grab sample									VO = 10 ppm in spoc at 12'.
O					Grab sample									
O					Grab sample									
SS 2"	2.0	1.8	3-4-5-6											No VO.
O					Grab sample									
ST 3"	2.0	0.0	Pushed											Lost shelby tube sample, resam 24'.
ST 3"	2.0	2.0	Pushed											

LEGEND: S = SPLIT SPOON; ST = SHELBY TUBE;
D = DEMINER; P = PITCHER; G = GATHER

SITE

SLAPS: Ball Fields

B53W17S



Bechtel
GEOLOGIC DRILL LOG

PROJECT								JOB NO.	JOBSITE NO.	HOLE NO.		
SAMP TYPE	ADV.	LEN.	CORE REC.	SAMPLE F.	BLKS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
SAMP DIA IN.						LOSS G.P.M.	PRES. P.S.I.	TIME MIN.				
SS 2"	2.0	2.0	8-8-10-12								blocky to grainy, silty break, slick cut, pliable, tough.	VO = 0
ST 3"	2.0	2.0	Pushed								26.0 - 31.0 ft CLAY From 26.0 - 28.0 ft, upper end at 26.0 ft, gray (SBG 5/2). Silty clay, smooth cut, pliable, rope forming, semi-tough, sparse inclusions. Clay is gray-green (SBG 5/2) to (10GY 5/2). Stiff, tough, tight, smooth, slick, slight grainy texture. Iron and manganese nodules, concentric rings, oxide.	No VO.
O			Grab sample								From 28.0 - 30.0 ft, appears the same as above sample. At 30.0 ft, gray, slightly grainy.	Samples taken by TMA/Eberline per SAJC at 0.3-0.7', 2-4 10-12', 24-26', 28-30
SS 2"	2.0	1.8	5-7-7-3								31.0 - 33.0 ft Silty CLAY: Light gray-green (10GY 5/2). 60% silty; smooth, clean cut, soft, moist, silty grainy break. Ferruginous and manganese nodules, streaks of limonite stains.	WL = 22.5' below ground surface after setting approximately 86 hrs on 8-25-92.
SS 2"	2.0	1.8	3-3-7-5								33.0 - 35.0 ft CLAY: Olive gray-green (5Y 5/6) and sparse reddish-brown nodular streaks. Contact at 33.0 ft. Little silt, slightly to moderately fatty, 'gummy' slick, clean cut, thread forming, pliable, moist.	WL = 15.2' below ground surface on 8-31-92 after approximately 2-3 rainfall previous 24-3 hrs (readily fluctuate with infiltration).
											BOTTOM OF HOLE: 35.0 FT.	Borehole completed a monitoring well on 8-26-92.
SS - SPLIT SPOON; ST - SHIELLY TUBE; O - ODEMBSON; P - PITCHER; D - OTHER								SLAPS: Ball Fields				
												hole no. B53W17S



Bechtel GEOLOGIC DRILL LOG

PROJECT						JOB NO.		SHEET NO.		HOLE NO.			
SLAPS: Ball Fields						N 1,561.04 E 560.10		ANGLE FROM HORIZ		1 of 2 B53W18S			
SITE			COORDINATES						Vertical				
BEGIN	COMPLETED	DRILLER				DRILL MAKE AND MODEL	SIZE	OVERTUREN	ROCK (FT.)	TOTAL DEPTH			
8-26-92	9-1-92	Fugro-McClelland				CME-55	10.5"	37.0	0.0	37.0			
CORE RECOVERY FT.-%		CORE BOXES		SAMPLES	EL. TOP CABING	GROUND EL.	DEPTH/EL. GROUND WATER		DEPTH/EL. TOP OF ROCK				
15.2/41		0		10	None	522.3	12.8/509.4		0.0/0.0				
SAMPLE HAMMER WEIGHT/ALL		CASING LEFT IN HOLE: CHAL LENGTH				LOGGED BY:		J.T. Smith					
140 lbs / 30 "		4" SS / 25.2 ft											
SAMP. TYPE	SAMP. LEN. IN.	ADV. CORE	SAMPLE REC. %	SAMPLE LOSS %	SAMPLE LF. %	WATER PRESS. TESTS	ELEV.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC
										G.P.	PRES. P.	TIME MIN.	
SS	2.0	i.7	12-17- 11-8				522.3						Borehole advanced using 6-1/4" I.D. and 10-1/2" O.D. auger, combined with 2" 3" split spoon and 3" shelby tube sampling
								520.8					VO = Volatile Organics
								518.3					Samples taken by TMA/Eberline per SAIC.
SS	2.0	1.9	4-6- 8-14					516.3					At approximately 4 ft hit old, hard pavement. Let stand in water for about 2.0 days then drilled through.
O			Grab sample					514.8					VO = 0.0 ppm
								512.3					No VO.
SS	2.0	1.9	4-6- 8-14					510.3					Soft, easy drilling.
O			Grab sample										VO = 0.0 ppm
O			Grab sample										Grab samples taken, 1 VO.
													Easy, smooth drilling
SS	2.0	2.0	3-3- 4-5										NOTE: Well is readily influenced by rainfall runoff in adjacent road ditch and creek; water level fluctuates several feet.
O	2.0	--	Grab sample										Water level is approximately the same as water surface in adjacent entrenched stream flow level.
O			Grab sample										Watery-mud sample. Very soft, dry soil makes water. wash zone.
SLAPS: Ball Fields												HOLE NO.	B53W18S
BS = SPLIT SPOON; ST = SHELBY TUBE; D = DOWNDRAIL, P = PITCHER; O = OTHER						SITE							



Bechtel GEOLOGIC DRILL LOG

PROJECT										JOB NO.	SHOOT NO.	HOLE NO.	
SAMP. DATE	TYPE	ADV. CORE	REC. CORE	SAMPLE	LOSS %	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE		2 or 2	B53W18S
					G.	SS. P.		M.					
ST 3°	2.0	1.7	Pushed								From 25.0 - 27.0 ft, blue gray-green (5BG 5/2). Smooth, slightly grainy break, wet.		Pushes easily from 25-27'; no VO.
SS 2°	2.0	2.0	3-5-4-4								At 28.0 ft, no inclusions or streaks (appears same as above).		Soft, easily driven. No VO.
ST 3°	2.0	2.0	Pushed								At 30.0 ft, still silty and wet appears same as above).		Soft, pushes easily. Very wet to saturated at 31.0 ft.
SS 2°	2.0	1.9	2-4-3-3								33.0 - 35.0 ft SILT: Medium gray (N3). Some clay, sparse organics, silty-gritty texture, soft, slick and smooth cut, semi-friable, wet.		Drives very soft, wet. No VO.
SS 2°	2.0	2.0	1-2-3-4								35.0 - 36.5 ft Silty CLAY: Blue gray-green (5BG 5/2). 50-60% clay content (35.5-36.5 ft), smooth, slightly silty to slightly fatty.		Very soft, wet. No VO at 36.5'.
											36.5 - 37.0 ft SILT: Black-charcoal (N2). Sharp contact, little clay (approximately 10%); very fine, laminae-varved, with organics friable, dries easily.		WL = 30.0' after 1.5 hrs, 12.2 after 74 hrs. Let borehole stand for approximately 94 hrs before completion. as monitoring well on 9-1-92
BOTTOM OF HOLE: 37.0 FT.													Description and classification of soils by visual examination of split spoon and grained samples. Sample classification is UNIFIED SOIL CLASSIFICATION; color descriptions from the GSA Rock Color Chart.
SS - SPLIT SPOON; ST - SHIRLEY TUBE; D - DENSIMETER; P - PITMEAS; O - OTHER										SLAPS: Ball Fields			
										HOLE NO.			
										B53W18S			



Bechtel GEOLOGIC DRILL LOG

Bechtel GEOLOGIC DRILL LOG								PROJECT				JOB NO.		SHEET NO.		HOLE NO.									
SITE								COORDINATES				N 853.14 E 1,425.82		ANGLE FROM HORIZ		Vertical									
SLAPS: Airport Margin								DRILLER				CME-55		SIZE		OVERBURDEN		ROCK (F.T.)		TOTAL DEPTH					
BEGUN	COMPLETED		DRILLER				CORE BOXES		SAMPLES	EL. TOP CASING		GROUND EL.		DEPTH/EL. GROUND WATER		DEPTH/EL. TOP OF ROCK		BEARING							
9-8-92	9-16-92		Fugro-McClelland				0		8	None		526.0		18.0/510.0 9-15-92 8.2/517.8 9-16-92		0.0/0.0									
SAMPLE HAMMER WEIGHT/FALL								CASING LEFT IN HOLE: DIA./LENGTH								LOGGED BY:									
140 lbs / 30 "								4" SS / 22.0 ft								J.T. Smith									
SAMP. TYPE AND DIA.	ADV. LEN	SAMPLE REC. CORE REC.	SAMPLE LEN	SAMPLE BLOWS	LOSS	LOSS P. %	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION								NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC					
												G.	M.	PRES. I.	TIN. M.										
								526.0				0.0 - 0.9 ft ROAD PAD: Asphalt with rolled road base gravel, tar, silt, sand, crushed limestone.								Borehole advanced using 6-1/4" I.D. and 10-1/2" O.D. auger, combined with 2" and 3" split spoon and 3" shelby tube sampling					
								525.1				0.9 - 2.2 ft FILL: Medium to dark brown (5YR 2/2). Silt, sandy loam fill, few pebbles.													
SS 3"	2.0	1.5	Pushed					523.8				2.2 - 5.0 ft SILT: Dark brown-black (5YR 2/1). Silt and clayey loam; semi-slick, semi-friable, very fine texture, slightly grainy, dry.													
O 4"	1.0	1.0	Hand augered					521.0				5.0 - 8.0 ft Clayey SILT: Medium olive-brown (5Y 4/4 to 5Y 3/2) with reddish-brown (10YR 6/6) and black-gray (N3) blotching. Pliable, semi-rope forming, semi-friable, silty breaks, soft.													
ST 3"	2.0	1.6	Pushed					518.5				From 7.5 - 8.0 ft, becomes more grayish-green (5GY 3/1), blotched.													
								518.0				8.0 - 18.0 ft SILT													
SS 3"	2.0	1.9	Pushed					516.0				From 8.0 - 10.0 ft, medium olive-brown (5Y 4/4) to 5Y 3/2). Sandy, clayey, fine sand grains; black (N1), nodular, pea-size inclusions.													
ST 3"	2.0	1.7	Pushed									From 10.0 - 18.0 ft, gray-green (5GY 3/1) with reddish-brown (10YR 4/6 to 10YR 6/6) clayey stains. Silt lenses, grainy, slick cut, semi-friable, silty break, dries easily, fairly dense and soft.													
												From 13.0 - 14.0 ft, end of shelby tube gray-green (5GY 3/1) and blotched black (N1).													
												At 16.0 ft, color of cuttings gradually change to gray-brown.													
SS 2"	2.0	2.0	Pushed					508.0				18.0 - 25.8 ft Silty CLAY: Light to medium gray-brown (5YR 3/2 to 5/2). Soft, pliable, wet.								Very wet from 11-12 ft, no VO. No VO.					
O			Grab sample									At 20.0 ft, gradual color change, reddish-gray (10YR 4/2) to reddish-brown (5YR 3/2). Slightly less clay.													
O			Grab sample									From 24.0 - 25.8 ft, grayish-brown (5YR 3/2 to 5/2). Soft, very wet.													
SS 2"	2.0	1.7	3-3-3-4					502.0												Soft drilling.					
SS = SPLIT SPOON; ST = SHELBY TUBE.								SITE								SLAPS: Airport Margin								HOLE NO.	
D = DENNISON, P = PITCHER; O = OTHER																								B53W19S	



Bechtel GEOLOGIC DRILL LOG

PROJECT

JOB NO.

SPOT NO.

HOLE NO.

2 2 B53W19

SAMPLE TYPE	ADV.	LEN.	CORE REC.	SAMPLE REC.	SAMPLE	LOSS	G.P.M.	PRESS.	TIME	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	
														WATER PRESSURE TESTS	RECOVERY		
										500.2					25.8 - 26.0 ft CLAY: Light gray (N6) to bluish-gray (SPB 5/2). Semi-fatty, slick, tight, semi-tough.	BOTTOM OF HOLE: 26.0 FT.	Sharp break, contact. Drilling is tougher at tighter.
										500.0							Let borehole stand for approximately 21 hrs before completion.

SS = SPLIT SPOON; ST = SHALLOW TUBE;
D = DENSIMETER; P = PITCHER, O = OTHER

SITE

SLAPS: Airport Margin

HOLE NO.

B53W19S



Bechtel GEOLOGIC DRILL LOG

Bechtel GEOLOGIC DRILL LOG							PROJECT				JOB NO.		SHEET NO. 1 OF 2		HOLE NO. B52W20C	
SITE SLAPS: Airport Margin				COORDINATES N 804.20 E 3,302.74				ANGLE FROM HORIZ Vertical								
BEGUN 9-3-92	COMPLETED 9-9-92	DRILLER Fugro-McClelland			DRILL MAKE AND MODEL CME-55		SIZE 10.5"	OVERBURDEN 35.0	ROCK (FT.) 0.0	TOTAL DEPTH 35.0						
CORE RECOVERY (FT./IN) 8.6/25		CORE BOXES 0		SAMPLES 7	EL. TOP CASING None	GROUND EL. 541.6	DEPTH/EL. GROUND WATER 31.5/510.1 9-4-92 10.5/531.1 9-8-92	DEPTH/EL. TOP OF ROCK 0.0/0.0								
SAMPLE HAMMER WEIGHT/FALL 140 lbs / 30 "				CASING LEFT IN HOLE: DIA LENGTH 4" SS / 25.3 ft				LOGGED BY: J.T. Smith								
SAMPLE TYPE SAND DIA. SAMP. ADV. LEN.	CORE SAMPLE REC. SAMP. LOSS	REC. CORE LOSS	SAMPLE REC. SAMP. LOSS	F/N BLDG. CORE RECOVERY	WATER PRESSURE TESTS			ELEV. 541.6	DEPTH 540.1	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION				NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	
					G.P.	PRESS. P.	TIME MIN.									
SS 3"	2.0	1.0	9-10-10-10								0.0 - 3.5 ft FILL: From 0.0 - 1.5 ft, light brown (5YR 6/4). Road base, sand, gravel; loose, friable. From 1.5 - 3.5 ft, Dark brown-black (5YR 2/1) with brown (5Y 4/4) streaks. Silt, layered road fill, oiled-compact.				Borehole advanced using 6-1/4" I.D. and 10-1/2" O.D. auger, combined with 3" spoon and 3" shelby tube sampling.	
O			Grab sample								3.5 - 10 ft Silty CLAY From 3.5 - 6.0 ft, dark brown-black (5YR 2/1). Approximately 30% clay, even grainy texture, pliable, ball forming on augers, moist.				VO = Volatile Organics	
O			Grab sample								From 6.0 - 7.0 ft, lighter medium dark brown (5YR 3/4). Moist. From 7.0 - 10.0 ft, olive reddish-brown (10YR 4/2) with dark brown (5YR 2/2) inclusions of dry, speckled pieces. Silty texture break, pliable, rope forming, moist.				Samples taken by TMA/Eberline per SAIC.	
SS 3"	2.0	1.7	Pushed								10.0 - 15.0 ft Clayey SILT From 10.0 - 12.0 ft, gray-brown (5YR 3/2) with reddish-brown (10R 4/6) and black (N1) inclusions. Silt grain texture, semi-rope forming, limonitic stains, firm, semi-dense, wet.				Drills easily with augers.	
ST 3"	1.0	0.0	Pushed								12.0 - 13 ft, crumpled edge of shelby tube (damaged). Lost content.				* After bailing down approximately 30.0' depth and let stand for about 3.0 hrs.	
ST 3"	2.0	2.0	Pushed								14.0 - 15.0 ft, gray-brown (5YR 3/2) with reddish-brown (10R 4/6) inclusions and blotchy stains.				Soft, easy dr	
ST 3"	2.0	1.9	Pushed								15.0 - 17.0 ft Silty CLAY From 15.0 - 16.0 ft, gray-green (5G 5/2). Pliable, smooth cut, slightly moist.				Wet cuttings.	
ST 3"	2.0	2.0	Pushed								16.0 - 17.0 ft, red olive-brown (10R 4/6) to 10YR 6/6 with gray-tan (5YR 6/1) silt streaks. Pliable, varved, soft, moist.				From 12-13', crumpled edge of shelby tube (damaged). Lost content.	
ST 3"	2.0	1.9	Pushed								17.0 - 18.0 ft Clayey SILT: Gray-green (5G 6/1) with medium reddish-brown (10R 4/6) streaks. Silty breaks, semi-pliable, fairly dry.				Soft drilling; no VO.	
SS 2"	2.0	2.0	2-4-3-6								18.0 - 21.0 ft Silty CLAY: Olive gray-brown (5Y 5/2) and reddish-brown (10R 4/6) blotches. Pliable, rope forming, moist.				Soft, 'gummy' drilling.	
SS 2"	2.0	2.0	2-4-3-6								21.0 - 22.0 ft Clayey SILT: Olive gray-brown (5Y 5/2). Approximately 60% silt, grainy texture, pliable, moist, dries easily.				Description from top and bottom of shelby tube at 17 and 19 ft.	
SS 2"	2.0	2.0	2-4-3-6								22.0 - 26.0 ft Silty CLAY: Gray-green (10GY 5/2) with reddish-brown (10R 4/6) blotchy inclusions and stains. Very fine, even texture.				Fairly firm, tight drilling at 22 ft.	
SG = SPLIT SPOON; ST = SHELBY TUBE. D = DENNISON; P = PITCHER; O = OTHER								SITE SLAPS: Airport Margin				HOLE NO. B53W20S				



Bechtel GEOLOGIC DRILL LOG

SAMPLE TYPE SAND DIAM. SAMPLE ADV. LEN. CORE SAMPLE REC. LOSS IN G.P.M.	SAMPLE NAME CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
		PRESS. P.S.I.	TIME MIN.						
O	Grab sample				515.6			26.0 - 30.0 ft Clayey SILT: Reddish-brown (10R 4/6) with gray-green (10GY 5/2) streaks and layers. Pliable, wet.	Water level during augering at 28.5' below ground surface. At 31.5' when finished drilling.
O	Grab sample				511.6	30		30.0 - 35.0 ft Silty CLAY: Medium reddish-brown (10R with light gray-green (10GY 5/2) varving. Silty grainy break, pliable to stiff, fairly tough.	Grab samples taken each 2.0 ft intervals (approximately) for examination.
O	Grab sample				506.6	35		BOTTOM OF HOLE: 35.0 FT.	Below 30', bit and auger very wet.
O	Grab sample								Let borehole stand for approximately 98 hrs before completion. as monitoring well on 9-9-92
									Description and classification of soils by visual examination of split spoon and grab samples. Sample classification is UNIFIED SOIL CLASSIFICATION; color descriptions from the GSA Rock Color Chart.

SS - SPLIT SPOON; ST - SHIELLY TUBE;
D - DENSIMETER; F - FISCHER; O - OTHER

NOTE

SLAPS: Airport Margin

HOLE NO.

B53W20S

GEOLOGIC DRILL LOG				PROJECT	FUSRAP 14501	JOB NO.	SHEET NO.	HOLE NO.			
SITE				COORDINATES			153	1 OF 3	M10-15D		
				N 1008 E 1498			ANGLE FROM HORIZ		BEAR		
BEGUN 6-27-86		COMPLETED 7-22-86		DRILLER McCLELLAND	DRILL MAKE AND MODEL CME 55	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH 87.1		
CORE RECOVERY (FT./%) /		CORE BOXES/SAMPLES		EL. TOP CASING	GROUND EL. 526	DEPTH/EL. GROUND WATER ▼ 9.4/516.5	DEPTH/EL. TOP OF ROCK /				
SAMPLE HAMMER WEIGHT/FALL				CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R.L.SAYRE/D.HARNISH				
SAMP. AND TYPE	ADV. SAMP. LEN	CORE SAMPLE REC.	CORE REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				LOSS G.P.M.	PRESS. P.S.I.	TIME MIN.					
ST	1.8	1.1					525.9			D.D - 4.3 ft. SILT (ML)	Drilling with 7 3/4 IN. OD - 4 3/4 IN. ID hollow stem augers. ST Shelby tube extruded unless noted otherwise. SS Split spoon pusher except where shown driven. "Retaped and releveled in field from peg.
ST	2.0	1.1					521.6			4.3 - 17.5 ft. SILT (ML)	
ST	2.0	1.3					515.9	5			
ST	2.0	1.1					508.4	10		Augerred to 10.0 Ft. without sampling. Above description a compilation of several nearby geologic logs.	
ST	2.0	1.6					500.4	15			
ST	2.0	1.8					500.4	20		17.5 - 25.5 Ft. Clayey SILT & Silty CLAY (ML/ML-CL); Yellowish brown (10YR4/3-5/3), softer, more clayey (silty clay) and lighter color toward top. Grading again to light colored silt (10YR6/3) near break; moderately stiff, with some clay. Dark orange brown oxide spots and oxide lined vertical tubules.	
ST	2.0	1.7					500.4	25			
ST	2.0	1.6					500.4	30			
SS	1.5	1.5	2-3-4								
ST	0.5	0.5									
ST	2.0	2.0									
SS	1.5	1.5									
SS	1.5	1.5									
SS	1.5	1.5									
Description and classification by visual examination of sample. "Rock Chart", (GSA).											
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER											HOLE NO. M10-15D
SITE											

GEOLOGIC DRILL LOG

PROJECT

FUSRAP 14501

JOB NO.

SHEET NO.

HOLE NO.

3 M10-151

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

SITE

HOLE NO.

M10-15D

GEOLOGIC DRILL LOG								PROJECT			JOB NO.		SHEET NO.	HOLE									
SAMP	TYPE	ADV.	LEN	CORE	SAMPLE	REC.	CORE	REC.	SAMPLE	LEN	% CORE	LOSS	G.P.M	PRESS	TIME	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			
SS	1.5	1.5															75						
SS	1.5	1.5															446.7						
SS	1.5	1.5															80				79.2 - 86.4 Ft. Silty SAND (SM); Medium dark olive gray (5Y3.5/1), fine to very fine grained; trace peaty plant fragments at 84 ft; loose to medium dense. Upper contact is very sharp.		
ST	2.0	2.0															439.5						
SS	1.5	1.5															85						
SS	1.5	1.5															438.8				86.4 - 87.1 Ft. Silty sandy GRAVEL (GM); Olive gray 5Y3.5/1), with pebbles of chert and sandstone. Chert pebbles smooth but broken. 1.5 inch size of broken sandstone suggests unit is a cobble gravel. Trace matrix clay; dense.		
SS	0.7	0.6																		Bottom of borehole at 87.1 ft.			
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE			HOLE NO.			M10-15D									

GEOLOGIC DRILL LOG					PROJECT		FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.	
SITE					COORDINATES		N 1012 E 2508		153	1 OF 2	M10-25D	
BEGUN 7-9-86	COMPLETED 7-11-86	DRILLER McCLELLAND	DRILL MAKE AND MODEL CME 55		SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH		ANGLE FROM HORIZ	BEARING	
CORE RECOVERY (FT./%) /		CORE BOXES	SAMPLES	EL. TOP CASING 534.7	GROUND EL. 534	DEPTH/EL. GROUND WATER 9.0/524.5	DEPTH/EL. TOP OF ROCK /	/		Vertical	-----	
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY:			R.L. SAYRE			
SAMP TYPE SAND	SAMP ADV. LEN	CORE REC. SAMPLE REC. CORE REC.	SAMPLE BLOCK	% CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
ST	1.7	1.3			LOSS LBN. G.P.M.	PRESS. P.S.	TIME MIN.	533.5			0.0 - 2.0 Ft. SAND & GRAVEL (SM & GM); *Sample not taken at this interval, description derived from other geologic logs in the vicinity.	
ST	2.0	1.1						531.5			2.0 - 12.8 Ft. SILT (ML); *Sample not taken at this interval.	
ST	2.0	1.5						520.7			12.8 - 22.8 Ft. Sandy SILT & Silty SAND (SM-MS); *Sample not taken at this interval.	
ST	2.0	1.5						510.7			22.8 - 41.5 Ft. CLAY & Silty CLAY (CL-ML); Medium gray (N4), slightly greenish in places, silt content variable from trace to major; medium stiff.	
SS	1.5	1.5	2-3-4								25.0-28.5 Ft. Slightly greenish and very silty. (ML-CL).	
ST	2.0	1.7										
ST	2.0	1.7										
SS	1.5	1.5										
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE						HOLE NO. M10-25D	

GEOLOGIC DRILL LOG								PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.	
SAMP.	TYPE	ADV.	CORE	SAMPLE	REC.	CORE	REC.	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
		SAMP.	LEN	SAMPLE	%	CORE	RECOVERY	LOSS	G.P.	PRES.						
SS	1.5	1.5													36.5-41.5 Ft. Stiff, with slight to some silt; typically mottled with dark yellowish-brown to olive brown (5Y4/4). Irregular to hackly parting.	
SS	1.5	1.5													41.5 - 51.8 Ft. CLAY (CL-CH); Variable dark brown shades.	31
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.5	1.5														
SS	1.1	1.1													51.8 - 52.1 ft. SHALE	
															Bottom of borehole at 52.1 ft.	
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE						HOLE NO.		M10-25D

GEOLOGIC DRILL LOG						PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 1 OF 2	HOLE NO. M10-8D		
SITE				COORDINATES N 1011 E 800			ANGLE FROM HORIZ Vertical			BEARING -----	
BEGUN 6-25-86	COMPLETED 6-25-86	DRILLER McCLELLAND	DRILL MAKE AND MODEL Mobile B53	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH 73.5				
CORE RECOVERY (FT./%) /	CORE BOXES /	SAMPLES EL. TOP CASING 520.8	GROUND EL. 520	DEPTH/EL. 4.1/515.5 /	GROUND WATER	DEPTH/EL. TOP OF ROCK /					
SAMPLE HAMMER WEIGHT/FALL		CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY: R.L.SAYRE/D.HARNISH						
SAMP. SAMP. LEN.	TYP. ADV. CORE REC. REC. SAMPLE BLOWS %	SAMPLE CORE LOSS %	SAMPLE CORE LOSS %	WATER PRESSURE TESTS			ELEV. 519.6	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				G.P. LOSS	P. PRESS.	T. TIME MIN.					
ST	2.0	1.6					518.5			0.0 - 1.1 ft. SILT (ML-OL) & SANDY SILT (ML) 1.1 - 12.3 ft. organic SILT (ML/OL)	10" dia conductor casing was grouted into 15" dia hole, augered w/o sampling to a depth of 10 ft. on 6/25/86.
ST	2.0	1.8									
ST	2.0	1.6									
ST	2.0	1.7									
ST	2.0	1.8									
ST	2.0	1.8									
ST	2.0	1.5									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
SS	2.0	2.0	2-3-3-4								
SS	2.0	2.0									
SS	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
ST	2.0	2.0									
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER	SITE									HOLE NO. M10-8D	
26/34											

GEOLOGIC DRILL LOG							PROJECT			FUSRAP 14501		JOB NO.	SHEET NO.	HOLE NO.
SAMP.	TYPE	ADV.	LEN.	CORE	SAMPLE REC.	CORE REC.	SAMP.	LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								FEET	G.P.M.					
							BLOWS	% CORE	RECOVERY					
ST	2.0	2.0											34.5-35.0 Ft. light greenish-gray (5G6/1) with olive-brown mottling.	
SS	2.0	2.0	4-6-4-8										35.0-38.7 Ft. bluish-greenish gray (5BG5/1), stiff with hackly parting; olive-brown mottling.	
													36.7-38.7 Ft. becoming grayer toward base (gradational contact).	
													38.7 - 43.3 Ft. Clay (CH), gray (N5) to slightly olive brown, stiff.	
													43.3 - 56.0 Ft. Silty CLAY - Clayey Silt (MH-CH), dark olive-gray (5Y4/1), very soft, very wet, mushy.	
SS	2.0	2.0	x-1-1-1										49.0-53.0 Ft. less clay; silt (ML) with some clay, soft, very wet; lower contact not well established, due to lack of sampling).	
SS	2.0	2.0											53.0-55.0 Ft. Stiffer, more clay.	
ST	2.0	2.0											56.0 - 62.0 Ft. Silty CLAY (CL), medium olive gray (5Y5/1), stiff to hard.	
SS	2.0	2.0											60.0-62.0 Ft. hard.	
SS	2.0	1.8	7-9-9-x										62.0 - 73.5 Ft. SILT (ML) olive gray (5Y5.5/1, slightly greenish, to 5Y5/1) with some fine sand and trace to slight clay; very stiff.	Driller reports very hard augering at 60-62 ft.
SS	2.0	2.0												*Note water flowed out top of augers, test invalid.
SS	2.0	1.5												Augered 70.0-73.5 ft. driller reports no change in character of drilling.
													Bottom of borehole at 73.5 ft.	
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER							SITE			HOLE NO.		M10-8D		

519.6 E-B-132

GEOLOGIC DRILL LOG					PROJECT FUSRAP 14501			JOB NO. 153	SHEET NO. 1 OF 1	HOLE NO. M11-21S	
SITE SLAPS					COORDINATES N 1098 E 2096			ANGLE FROM HORIZ Vertical	BEARING -----		
BEGUN 7-2-86	COMPLETED 7-2-86	DRILLER McCLELLAND	DRILL MAKE AND MODEL CME-55			SIZE 7 3/4"	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH 23.0		
CORE RECOVERY (FT./%) /	CORE BOXES	SAMPLES	EL. TOP CASING 10	GROUND EL. 529	DEPTH/EL. GROUND WATER 6.3/522.2		DEPTH/EL. TOP OF ROCK /				
SAMPLE HAMMER WEIGHT/FALL 140 lbs./30-inch		CASING LEFT IN HOLE: DIA./LENGTH 10"/8 ft.			LOGGED BY: R. SAYRE						
SAMP. TYPE DIA.	SAMP. LEN	ADV. LEN	CORE REC.	SAMPLE LOSS %	WATER PRESS. TESTS	ELEV.	DEPTH	GRAPHICS SAMPLE	DESCRIPTION AND CLASSIFICATION		NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
									G.P.M.	P.R.S.: TIME MIN.	
ST	2.0	1.3				528.5			0.0-2.4 ft. Silty SAND (SM) & SILT (ML) 0.0-1.0 ft. Silty SAND, light yellowish brown (10YR5/6), very fine grained, dry, crumbly. 1.0-2.4 ft. SILT, dark brown, some clay, orange and yellow specks, stiff. Elevated beta/gamma emission, highest at base. 2.4-8.0 ft. SILT (ML), olive brown, becoming light olive gray (5Y6/2) downward; minor very fine sand, minor clay, some very small organic specks. Slightly damp. 4.0-8.0 ft. Damp, soft.		Drilled with hollow stem auger 7 3/4" OD, 3 3/4" ID.
ST	2.0	1.0				520.6			8.0-20.5 ft. SILT (ML), light olive gray (5Y6/1), little clay.		Gamma logged 6/24/86.
ST	2.0	1.5				10			14.0-16.5 ft. Medium olive-gray (5Y4/1) with some organic material.		SS sampler pushed except where shown driven.
ST	2.0	1.6				15			16.5-18.0 ft. Dark olive-black (5Y2/1) organic silt with some very fine sand peaty material; soft, porous. 17.5-18.0 ft. Laminated, interbedded gray silt and brown-black organic silt. 18.0-20.5 ft. Light olive-gray silt, little clay.		ST samples extruded at rig unless noted otherwise.
ST	2.0	1.7				20			20.5-21.5 ft. Clayey SILT (ML-CL), light greenish gray.		Ground elevation leveled in field from surveyor's stake.
SS	1.5	1.2	2-3-5			508.6					Soil below 2.4 ft. scans clean.
ST	2.0	1.8				507.0					Water at 7.0 ft. while reaming, 40 minutes after drilling 8.0 ft. dry hole.
ST	2.0	1.5									Reamed to 15"; installed 10"; conductor casing to 8.0 ft. 6/24/86.
ST	2.0	1.8									
ST	2.0	1.5									
									Bottom of hole = 23.0 ft.		
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE SLAPS			HOLE NO. M11-21S			

GEOLOGIC DRILL LOG						PROJECT			FUSRAP 14501			JOB NO.	SHEET NO.	HOLE NO.	
SITE SLAPS						COORDINATES			N 1102 E 900			ANGLE FROM HORIZ		BEAR	
BEGUN 7-3-86	COMPLETED 7-3-86	DRILLER McCLELLAND	ORILL MAKE AND MODEL CME-55			SIZE 7 3/4"	OVERBURDEN 33.0	ROCK (FT.) 33.0	TOTAL DEPTH 33.0						
CORE RECOVERY (FT./%) /		CORE BOXES 14	SAMPLES EL. TOP CASING 526	GROUND EL. 526	DEPTH/EL. 10.7/514.8	GROUND WATER			DEPTH/EL. TOP OF ROCK /						
SAMPLE HAMMER WEIGHT/FALL Samples pushed			CASING LEFT IN HOLE: DIA./LENGTH 10"/14.5 ft.			LOGGED BY: R. SAYRE									
SAMP SAND	TYPE DIAM.	ADV.	LEN	CORE	REC.	SAMPLE LOSS	WATER PRESSURE TESTS	ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
												G.P.M	PRES. PSI	TIME MIN.	
ST	0.9	0.9						525.5				0.0-7.0 ft. Gravelly SAND (SP) & Gravelly SILT (MLG), dry and crumbly, loose in places. 0.0-2.0 ft. Gravelly SAND, light yellowish brown (10YR5/6), gravel is limestone. 2.0-2.7 ft. Gravelly SILT, dark brown mixed up topsoil, limestone gravel and gray silt. 2.7-4.3 ft. SAND, light brown, very fine grained.			Drilled with hollow stem auger 7 3/4" OD, 3 3/4" ID.
ST	2.0	1.0										4.8-5.0 ft. Gravelly CLAY, reddish brown, quite elevated beta/gamma emissions. 5.0-7.0 ft. Disturbed topsoil and gray silt.			Gamma logged 7/7/86.
ST	2.0	1.4						518.6				7.0-13.0 ft. SILT (ML-OL), brown and gray on top, becomes dark gray downward, some very fine sand, minor plant fragments, damp to moist. 7.5-9.8 ft. Dark gray, slightly damp, few plant fragments. 9.8-13.0 ft. Minor clay, dark olive brown (5Y2.5/1), to olive black, organic.			SS sampler pushed except where shown driven.
ST	2.0	1.7										7.0-13.0 ft. SILT (ML-OL), brown and gray on top, becomes dark gray downward, some very fine sand, minor plant fragments, damp to moist. 7.5-9.8 ft. Dark gray, slightly damp, few plant fragments. 9.8-13.0 ft. Minor clay, dark olive brown (5Y2.5/1), to olive black, organic.			ST samples extruded at rig unless noted otherwise.
ST	1.5	1.1										7.0-13.0 ft. SILT (ML-OL), brown and gray on top, becomes dark gray downward, some very fine sand, minor plant fragments, damp to moist. 7.5-9.8 ft. Dark gray, slightly damp, few plant fragments. 9.8-13.0 ft. Minor clay, dark olive brown (5Y2.5/1), to olive black, organic.			Ground elevation leveled in field surveyor's stake.
ST	1.5	1.4										7.0-13.0 ft. SILT (ML-OL), brown and gray on top, becomes dark gray downward, some very fine sand, minor plant fragments, damp to moist. 7.5-9.8 ft. Dark gray, slightly damp, few plant fragments. 9.8-13.0 ft. Minor clay, dark olive brown (5Y2.5/1), to olive black, organic.			0.9-2.3 ft. gravel, no sample.
ST	1.5	1.3										7.0-13.0 ft. SILT (ML-OL), brown and gray on top, becomes dark gray downward, some very fine sand, minor plant fragments, damp to moist. 7.5-9.8 ft. Dark gray, slightly damp, few plant fragments. 9.8-13.0 ft. Minor clay, dark olive brown (5Y2.5/1), to olive black, organic.			Water level 12.3 ft. 5 minutes after completing hole dry.
ST	1.5	1.0						512.6				13.0-14.5 ft. SILT (ML), light brownish gray (2.5Y6/2) becoming light gray (5Y7/2) downward, minor very fine sand, iron hydroxide mottling. Slightly damp, soft, organic specks.			Note: Lack of "take" is suspect for the permeability test at 22.5-244.5 ft. Refer to remarks on the permeability test report form attached hereto.
ST	2.0	1.6						511.0	15			14.5-20.1 ft. SILT (ML), light olive gray (5Y6/1), with blotches of orange-brown limonite staining; soft.			Auger from 30.5 to 33.0 ft.
ST	2.0	2.0						505.4	20			20.1-30.5 ft. Sandy SILT to Silty SAND (ML/MLS), medium olive gray (5Y4-5/1), soft to very soft, with plant fragments.			
ST	2.0	2.0	0.0	8	21	3						24.5-25.7 ft. Sandy silt with scattered snail shells.			
SS	1.5	1.2										25.7-30.5 ft. Fine to very fine grained silty sand with unoriented shreds of plant stems and leaves (mostly reedy plants). Soft, massive deposit. Character of material and attitude of fossils suggest local slump or subaqueous mudflow.			
SS	1.5	1.5										24.5-25.7 ft. Sandy silt with scattered snail shells.			
SS	1.5	1.5						495.0	30			25.7-30.5 ft. Fine to very fine grained silty sand with unoriented shreds of plant stems and leaves (mostly reedy plants). Soft, massive deposit. Character of material and attitude of fossils suggest local slump or subaqueous mudflow.			
													Bottom of hole = 33.0 ft.		
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER						SITE			SLAPS			HOLE NO.			M11-9

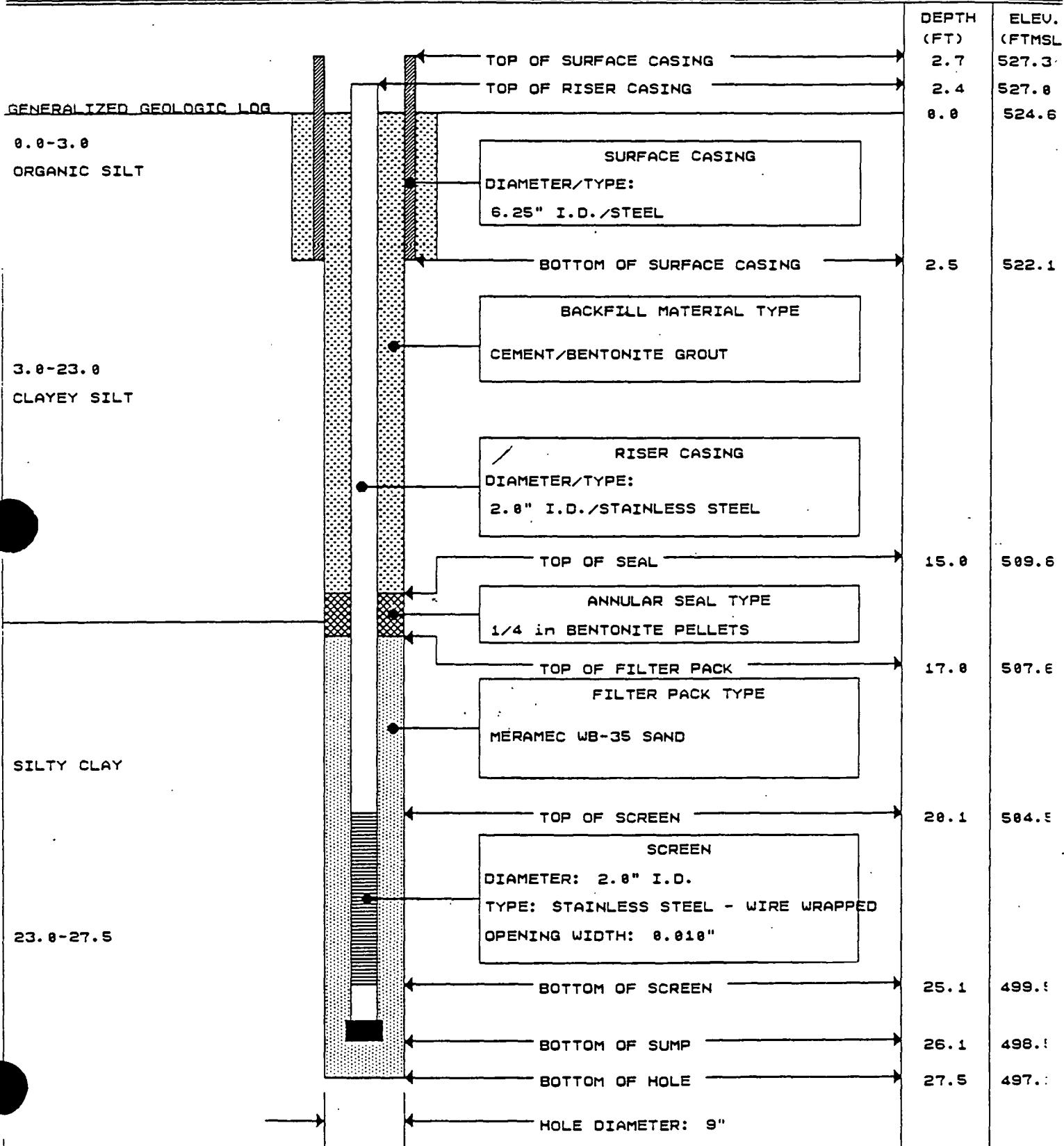
GEOLOGIC DRILL LOG						PROJECT			JOB NO.		SHEET NO.	HOLE NO.	
SITE SLAPS						COORDINATES			FUSRAP 14501		153	1 OF 2	M13-8D
BEGUN 7-28-86	COMPLETED 7-30-86	DRILLER McClelland Sys, Inc	DRILL MAKE AND MODEL CME-55			SIZE 7-3/4"	OVERBURDEN	ANGLE FROM HORIZ Vertical	BEARING -----				
CORE RECOVERY (FT. /%) /		CORE BOXES 10	SAMPLES EL. TOP CASING 10	GROUND EL. 522	DEPTH/EL. GROUND WATER 8.7/513.1 8.7/513.1	DEPTH/EL. TOP OF ROCK /							
SAMPLE HAMMER WEIGHT/FALL 140 lbs/30 inches			CASING LEFT IN HOLE: DIA./LENGTH 11.5 ft, 10" conductor			LOGGED BY: R.L. Sayre							
SAMP. AND LEN.	TYPE ADV.	SAMPLE REC.	SAMPLE N.	WATER PRESSURE TESTS		ELEV. 521.8	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION			NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
				CORE REC.	% RECOVERY				LOSS IN IN.	G.P. P.	SP. P.		TIME MIN.
												0.0 - 30.0 Ft. Augered without sampling.	
												Drilling with 7-3/4" OD, 3-3/4" ID hollow stem auger.	
												Shelby tube samples extruded at rig unless noted otherwise.	
												Split spoon samplers pushed unless shown driven	
ST	2.0	1.5											
ST	2.0	2.0											
ST	2.0	1.5											
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER						SITE			SLAPS			MOLE NO. M13-8D	

GEOLOGIC DRILL LOG							PROJECT FUSRAP 14501	JOB NO. 153	SHEET NO. 2 OF 2	HOLE NO. M13-8D						
SAMPLE TYPE	SAMPLE ADV.	LEN. CORE	SAMPLE REC.	CORE REC.	SAMPLE L.F.N.	BLOWS	CORE RECOVERY	WATER PRESSURE TESTS			ELEV.	DEPTH	GRAPHICS	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
								LOSS TIN. G.P.M.	PRES. P.S.I.	TIME MIN.						
ST	2.0	2.0									450.4				35.5 - 39.0 Ft. CLAY (CL-CH) blue gray (5B5/1), hackly (grainy) texture.	
SS	2.0	2.0									482.9				39.0 - 50.3 Ft. CLAY (CH) medium gray (N4) greenish near top. 40.0-42.0 ft. Mottled medium olive brown, light olive gray zone (SY5/1) at 41.7-41.9 ft. 46.0-50.0 ft. Stiff, gradually becomes softer 46-50.	
SS	2.0	2.0									45					
SS	2.0	2.0	1-2-2-3								471.6				50.3 - 60.5 Ft. Clayey SILT and SILT (ML-CL/ML) with some clay. Dark olive black (SY2.5/1) very soft, very wet. Siltier near top, more clay toward base. Sandy concretions 1/2" in diameter at 60 ft. lower contact is gradational, becoming less soft.	Permeability test attempted at 471.6 ft, but flown found to be inoperative. Test cancelled after 1 hour.
ST	2.0	2.0									50					
SS	2.0	2.0									55					
SS	2.0	2.0									60					
SS	2.0	2.0									60.5 - 70.4 Ft. CLAY (CL) silty, greenish gray to olive gray, becoming stiff with depth. Some scattered medium to coarse sand at 69 ft with hard cemented sand concretions 1". Grades to underlying unit.				Driller augered 2 feet further than requested.	
SS	2.0	2.0	6-6-8-8								65					
SS	2.0	2.0									70					
SS	2.0	2.0									70.4 - 72.0 Ft. SILT (ML) Greenish gray with some clay and medium sand, stiff to very stiff.					
SS	2.0	2.0									449.9				72.0 - 74.0 Ft. Clayey SILT (ML-CL) dark blue gray, stiff, scattered smooth tan chert pebbles (residual clay) very stiff to hard.	
											447.8				Bottom of hole at 74.0 ft.	
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER								SITE SLAPS								HOLE NO. M13-8D

Attachment 3 - Monitoring Well Construction Logs

PROJECT			WELL NO.	
MONITORING WELL			st. Louis Airport Site	
JOB NO.	SITE	COORDINATES	853W011	
14501-153	North of Coldwater Creek	N 3.198.4 E 1.633.8		
JUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS	
11-18-87	11-19-87	R.C. KISER	TOP OF 2" DIAM. SS RISER	
<u>GENERALIZED GEOLOGIC LOG</u>				
0.0-3.0	ORGANIC SILT	<p>SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL</p> <p>BOTTOM OF SURFACE CASING</p>	DEPTH (FT) 2.9 2.5 0.0	ELEV. (FTMSL) 527.5 527.1 524.6
3.0-23.0	CLAYEY SILT	<p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p>	2.3	522.3
23.0-53.0	CLAY	<p>RISER CASING DIAMETER/TYPE: 2.0" I.D./STAINLESS STEEL</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p>	77.3	447.3
53.0-81.5	CLAY	<p>TOP OF SCREEN</p>	79.7	444.9
81.5-93.5	SILTY CLAY & GRAVEL	<p>SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	82.5	442.1
			92.5	432.1
			93.5	431.1
			93.5	4

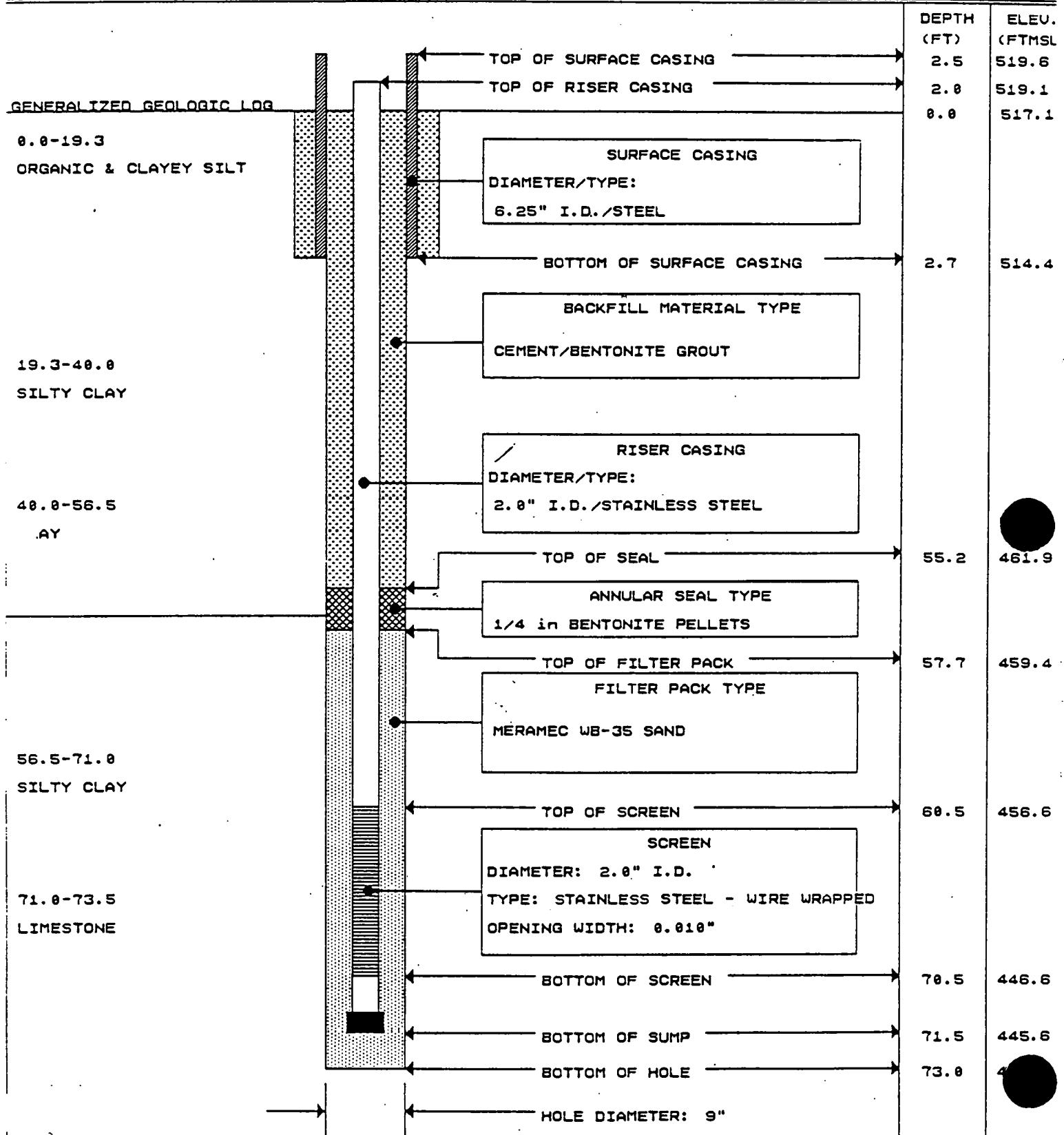
PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			B53W01
JOB NO.	SITE	COORDINATES	
01-153 North of Coldwater Creek		N 3.197.2 E 1.648.1	
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
4-87	11-13-87	R.C. KISER	TOP OF 2" DIAM. SS RISER



PROJECT			WELL NO.	
MONITORING WELL			85348;	
JOB NO.	SITE	COORDINATES		
14501-153	North of Coldwater Creek	N 2,855.3 E 2,928.4		
PERGUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS	
-23-87	11-23-87	R.C. KISER	TOP OF 2" DIAM. SS RISER	
<u>GENERALIZED GEOLOGIC LOG</u>				
0.0-19.6	ORGANIC & CLAYEY SILT	 TOP OF SURFACE CASING	DEPTH (FT)	ELEV. (FTMSL)
19.5-41.0	SILTY CLAY	SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL	2.9	518.0
41.0-58.0	AY	BOTTOM OF SURFACE CASING	2.4	517.5
58.0-81.7	SILTY CLAY	 BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT	0.0	515.1
		RISER CASING DIAMETER/TYPE: 2.0" I.D./316 STAINLESS STEEL	2.3	512.6
		TOP OF SEAL	63.5	451.6
		ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS	67.1	448.0
		TOP OF FILTER PACK	70.1	445.0
		FILTER PACK TYPE MERAMEC WB-35 SAND	80.1	435.0
		TOP OF SCREEN	81.1	434.8
		SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"	81.9	
		BOTTOM OF SCREEN		
		BOTTOM OF SUMP		
		BOTTOM OF HOLE		
		HOLE DIAMETER: 9"		

PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			BS3W025
JOB NO.	SITE	COORDINATES	
	1-153 North of Coldwater Creek	N 2.849.1 E 2.939.4	
JUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
5-87	11-13-87	R.C. KISER	TOP OF 2" DIAM. SS RISER
<u>GENERALIZED GEOLOGIC LOG</u>			
0.0-19.5	ORGANIC & CLAYEY SILT		
19.5-22.0	SILTY CLAY		
		DEPTH (FT)	ELEV. (FTMSL)
		2.9	518.3
		2.4	517.8
		0.0	515.4
		2.3	513.1
		9.4	506.0
		11.9	503.5
		15.1	500.3
		20.1	495.3
		21.1	494.3
		22.0	493.4
			HOLE DIAMETER: 9"

PROJECT			WELL NO.
MONITORING WELL			853W05
JOB NO.	SITE	COORDINATES	
14501-153	North of Coldwater Creek	N 2.375.5 E 2.115.8	
REGRN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
-12-87	11-13-87	R.C. KISER	TOP OF 2" DIAM. SS RISER



MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO. B63W03
JOB NO.	SITE	COORDINATES N 2.371.1 E 2.106.2	
01-153 North of Coldwater Creek			
JUN	COMPLETE	PREPARED BY R.C. KISER	REFERENCE POINT FOR MEASUREMENTS TOP OF 2" DIAM. SS RISER
-3-87	11-3-87		

GENERALIZED GEOLOGIC LOG

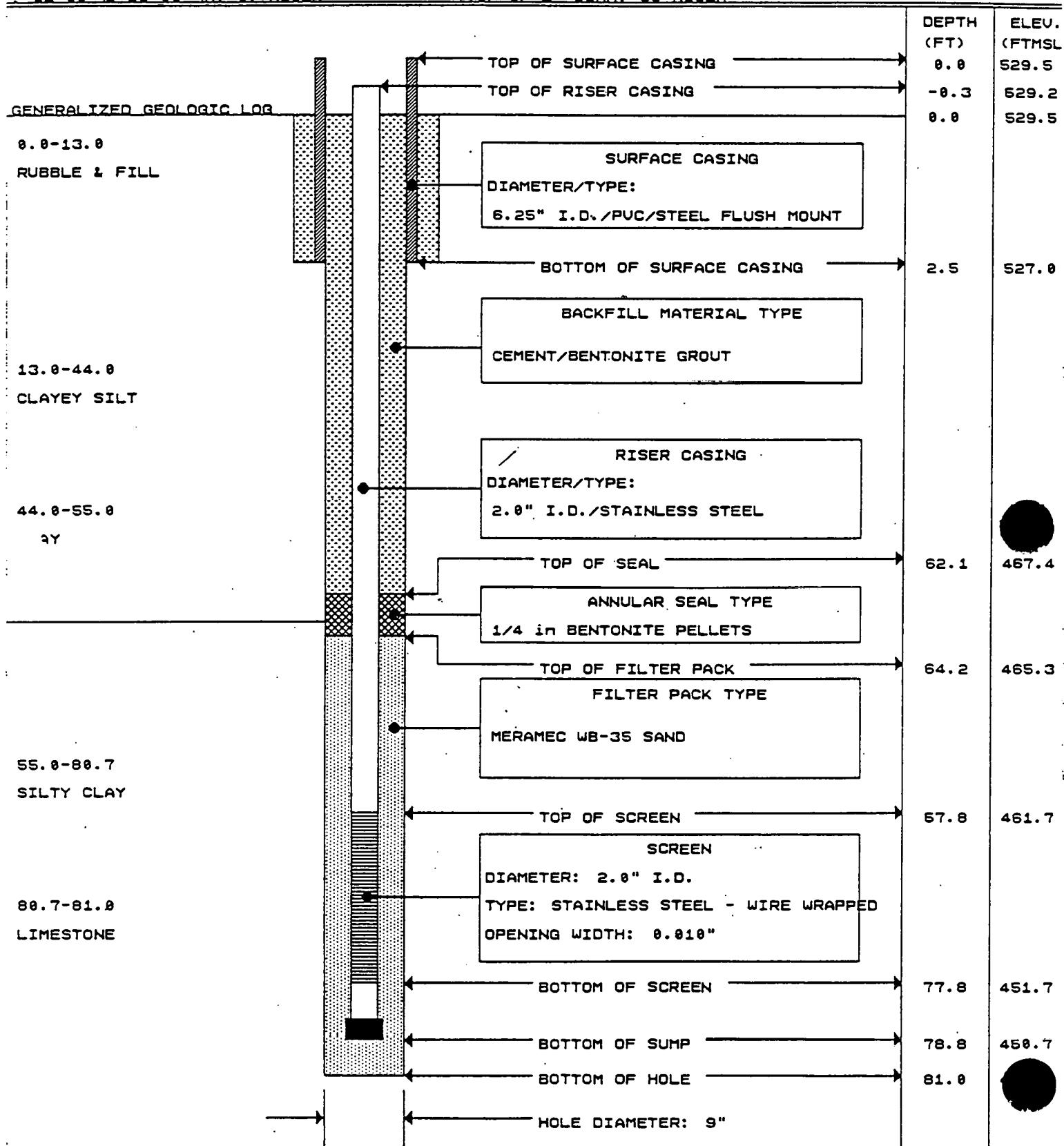
The diagram illustrates the well bore sections with the following details:

- Surface Casing:** Depth 2.5 ft, Elevation 519.5 ftmsl. Diameter/Type: 6.25" I.D./STEEL. Backfill Material Type: CEMENT/BENTONITE GROUT.
- Riser Casing:** Depth 1.9 ft, Elevation 518.9 ftmsl. Diameter/Type: 2.0" I.D./STAINLESS STEEL. Top of Seal: 10.6 ft, Elevation 506.4 ftmsl. Annular Seal Type: 1/4 in BENTONITE PELLETS.
- Filter Pack:** Depth 12.9 ft, Elevation 504.1 ftmsl. Filter Pack Type: MERAMEC WB-35 SAND.
- Screen:** Depth 15.6 ft, Elevation 501.4 ftmsl. Screen Diameter: 2.0" I.D. Type: STAINLESS STEEL - WIRE WRAPPED. Opening Width: 0.010". Bottom of Screen: 20.6 ft, Elevation 496.7 ftmsl.
- Bottom of Hole:** Depth 23.5 ft, Elevation 493.5 ftmsl. Hole Diameter: 9".

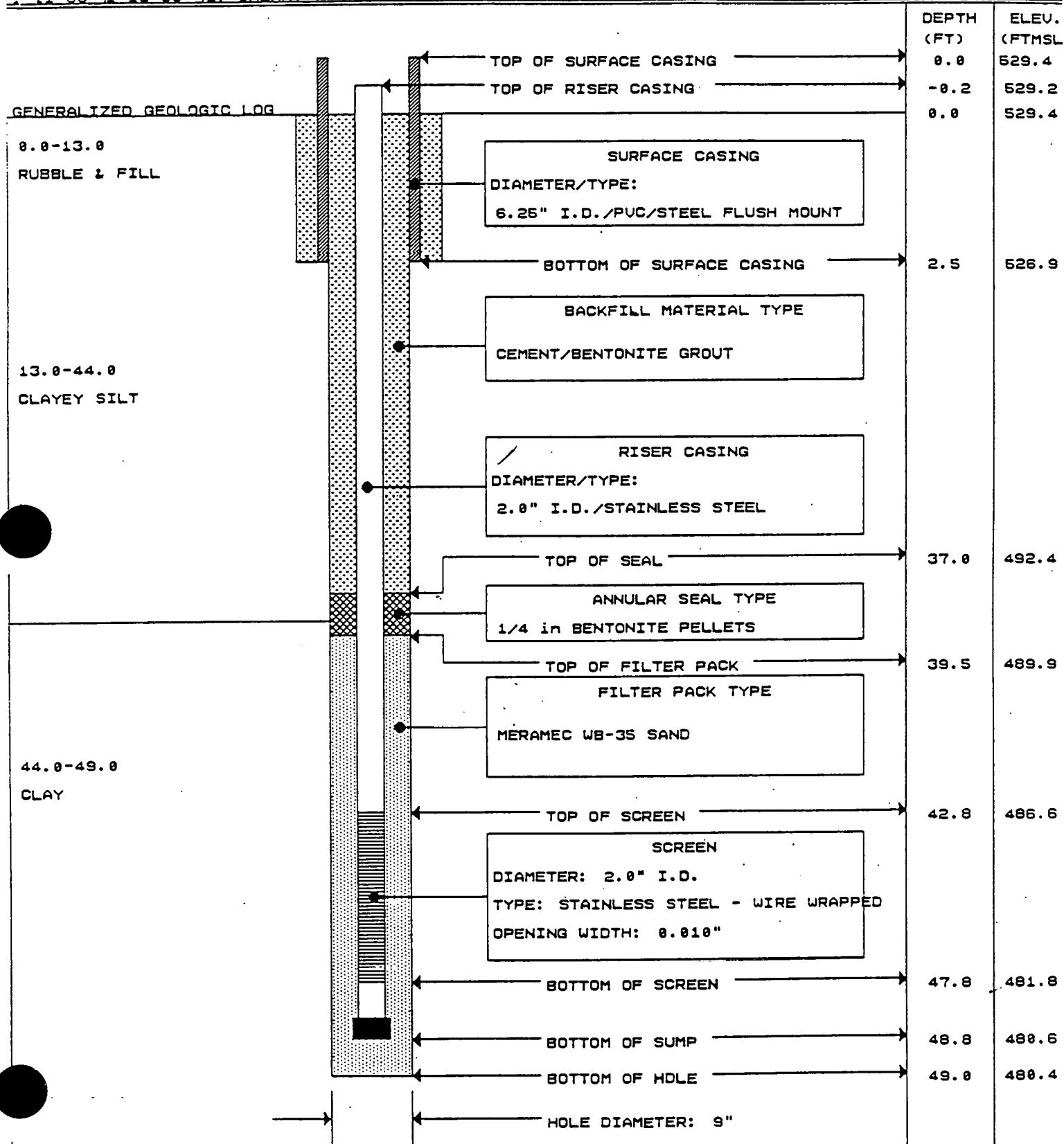
GENERALIZED GEOLOGIC LOG

GENERALIZED GEOLOGIC LOG	DEPTH (FT)	ELEV. (FTMSL)
0.0-19.3 ORGANIC & CLAYEY SILT	2.5	519.5
	1.9	518.9
	0.0	517.0
19.3-23.5 SILTY CLAY	2.7	514.3
	10.6	506.4
	12.9	504.1
	15.6	501.4
	20.6	496.7
	21.6	495.4
	23.5	493.5

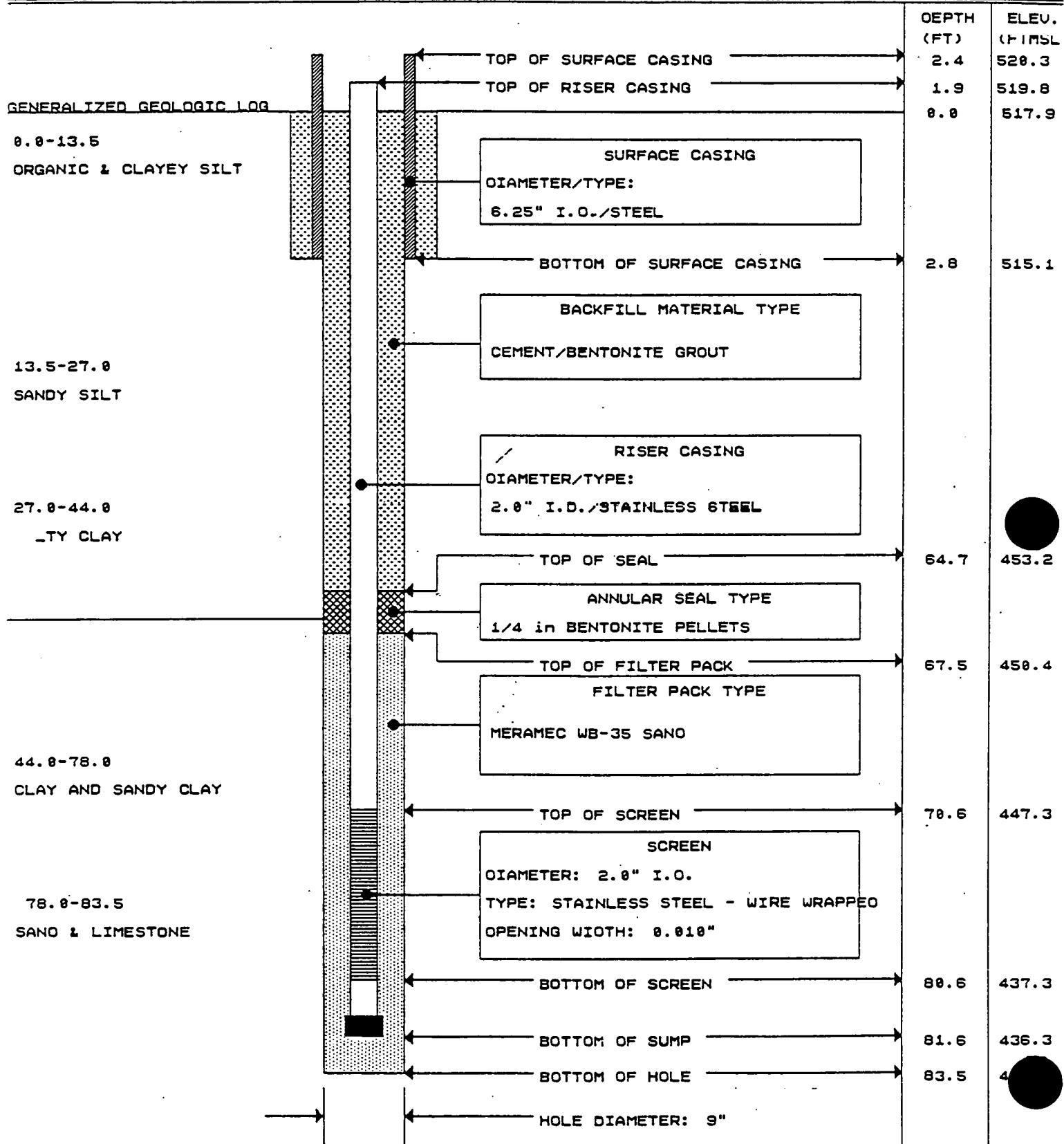
PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			853W04
JOB NO.	SITE	COORDINATES	
14501-153	South of Coldwater Creek	N 2.448.8 E 2.813.3	
PERIOD	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
12-88	1-13-88	R. C. KISER	TOP OF 2" DIAM. SS RISER



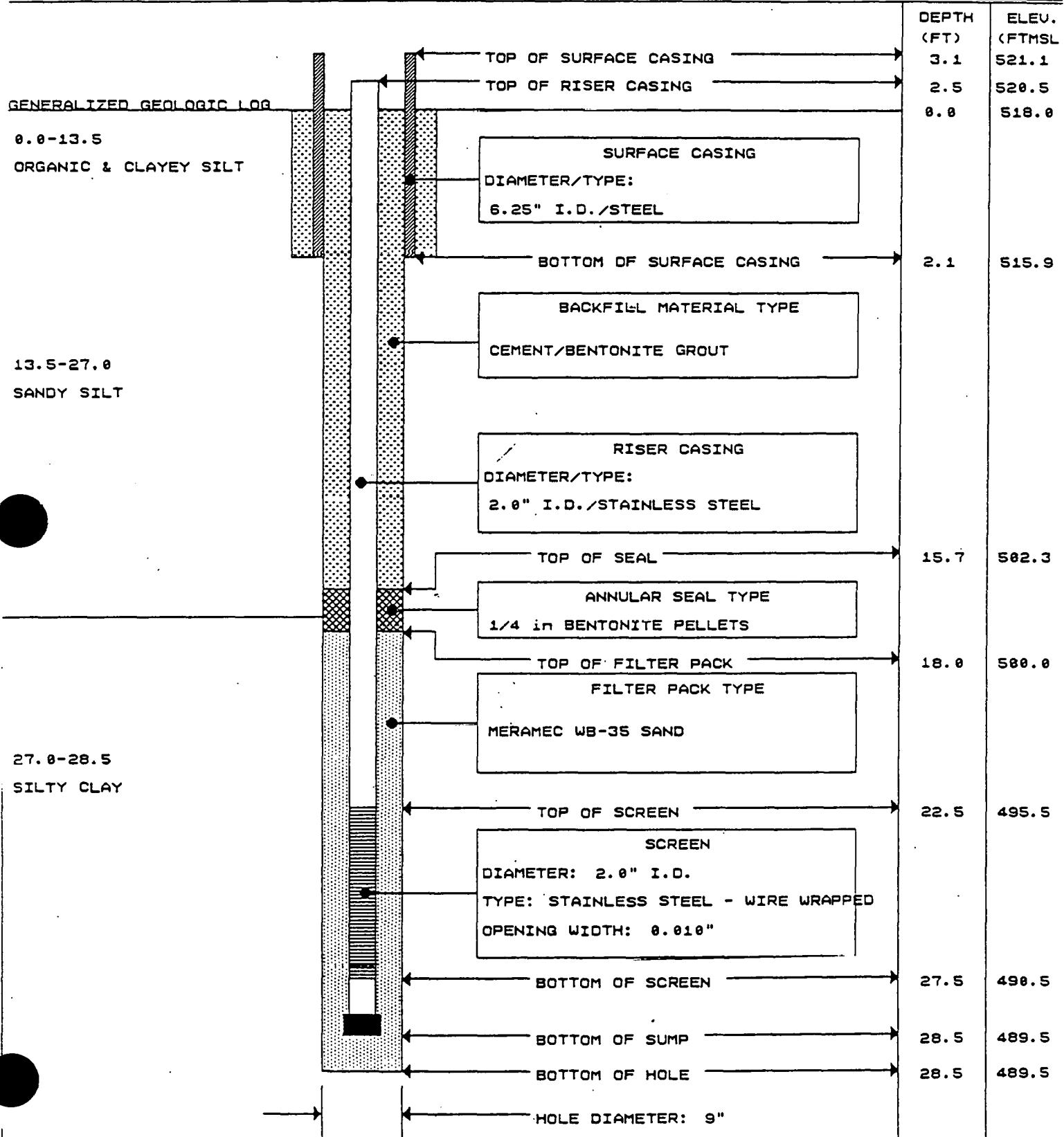
MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO. B53W04
JOB NO.	SITE	COORDINATES	
81-153 Ballfield Area		N 2.443.1 E 2.802.8	
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
11-88	1-13-88	G. CHERRY	TOP OF 2" DIAM. SS RISER



PROJECT			WELL NO.
st. Louis Airport Site			BS3W051
JOB NO.	SITE	COORDINATES	
14501-153	North of Coldwater Creek	N 2.383.5 E 1.522.4	
1-GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
1-10-87	11-12-87	R. C. KISER	TOP OF 2" DIAM. SS RISER



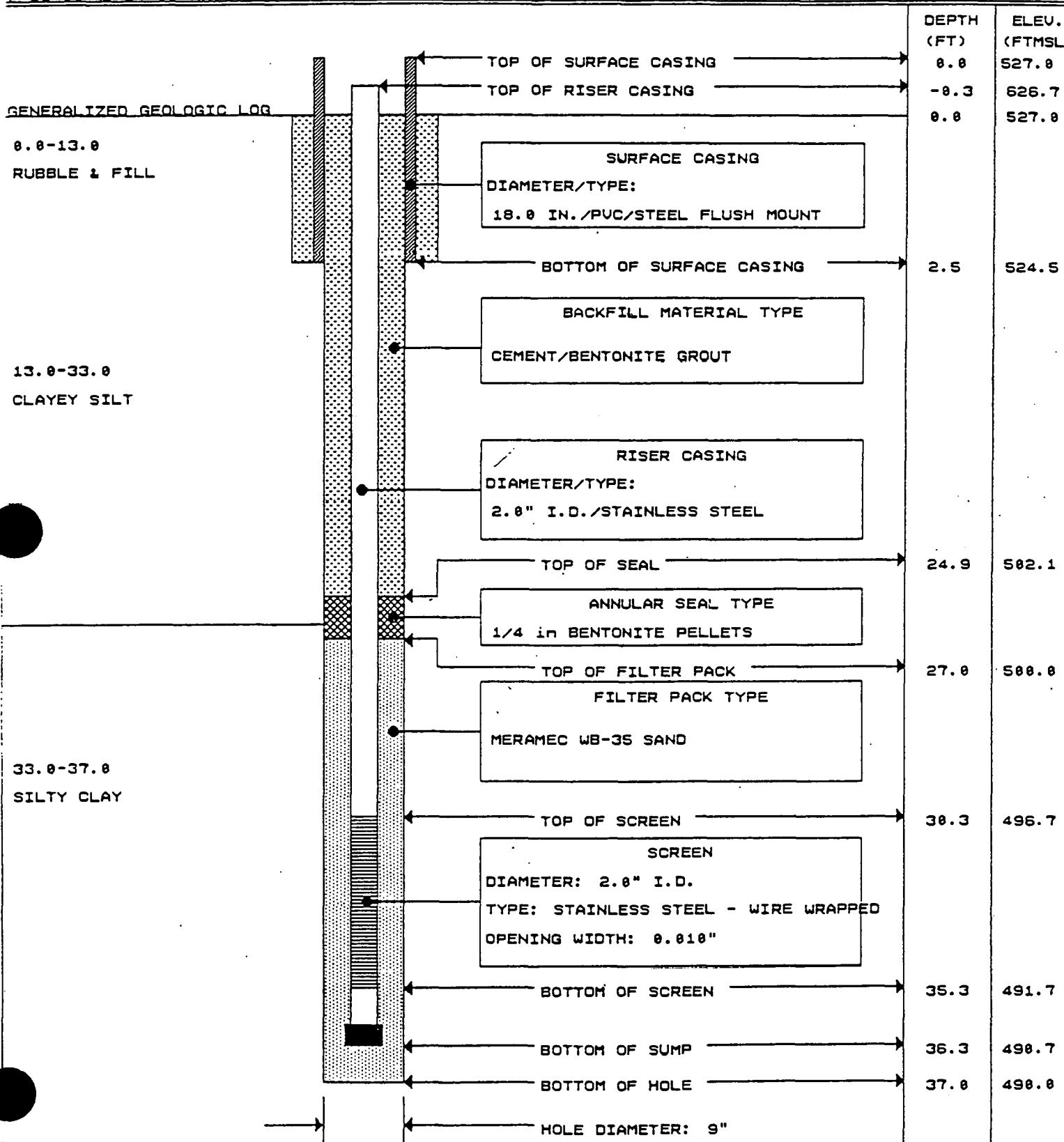
PROJECT			WELL NO.
MONITORING WELL			BS3W055
JOB NO.	SITE	COORDINATES	
11-153	North of Coldwater Creek	N 2.369.0 E 1.529.6	
SUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
6-87	11-12-87	R. C. KISER	TOP OF 2" DIAM. SS RISER



MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO B53W01
JOB NO.	SITE	COORDINATES		
14501-153 South of Coldwater Creek		N 2,258.4 E 2,298.4		
SEGUN	COMPLETE	PREPARED BY		
14-88	1-15-88	R. C. KISER		
REFERENCE POINT FOR MEASUREMENTS			TOP OF 2" DIAM. SS RISER	
GENERALIZED GEOLOGIC LOG			DEPTH (FT)	ELEV (FTMS)
0.0-13.0	RUBBLE & FILL	<p>TOP OF SURFACE CASING</p> <p>TOP OF RISER CASING</p> <p>SURFACE CASING DIAMETER/TYPE: 18.0 IN. /PVC/STEEL FLUSH MOUNT</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p> <p>RISER CASING DIAMETER/TYPE: 2.0" I.O./316 STAINLESS STEEL</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p> <p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	0.0	527.3
13.0-33.0	CLAYEY SILT			
33.0-39.0	SILTY CLAY			
39.0-50.8	CLAY			
50.8-77.4	SILTY CLAY & LIMESTONE			
			2.5	524.6
			54.7	472.6
			56.7	470.6
			60.3	467.0
			70.3	457.0
			71.3	456.0
			77.4	

PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			853W06

JOB NO.	SITE	COORDINATES	
01-153 Ballfield Area		N 2,261.4 E 2,312.5	
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
13-88	1-14-88	R.C. KISER/G. CHERRY	TOP OF 2" DIAM. SS RISER



PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			B53We-
JOB NO.	SITE	COORDINATES	
14501-153	South of Coldwater Creek	N 2.143.6 E 1.801.4	
-3UN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
2-24-88	2-25-88	R. C. KISER	TOP OF 2" DIAM. SS RISER
GENERALIZED GEOLOGIC LOG			
0.0-10.5	RUBBLE & FILL	<p>SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL</p> <p>BOTTOM OF SURFACE CASING</p>	
10.5-32.0	CLAYEY SILT	<p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p>	
32.0-46.0	LTY CLAY	<p>RISER CASING DIAMETER/TYPE: 2.0" I.D./316 STAINLESS STEEL</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p>	
46.0-88.8	CLAY & SILTY CLAY	<p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p> <p>TOP OF SCREEN</p>	
88.8-89.0	LIMESTONE	<p>SCREEN DIAMETER: 2.0" I.O. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"</p> <p>BOTTOM OF SCREEN</p>	
		<p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	

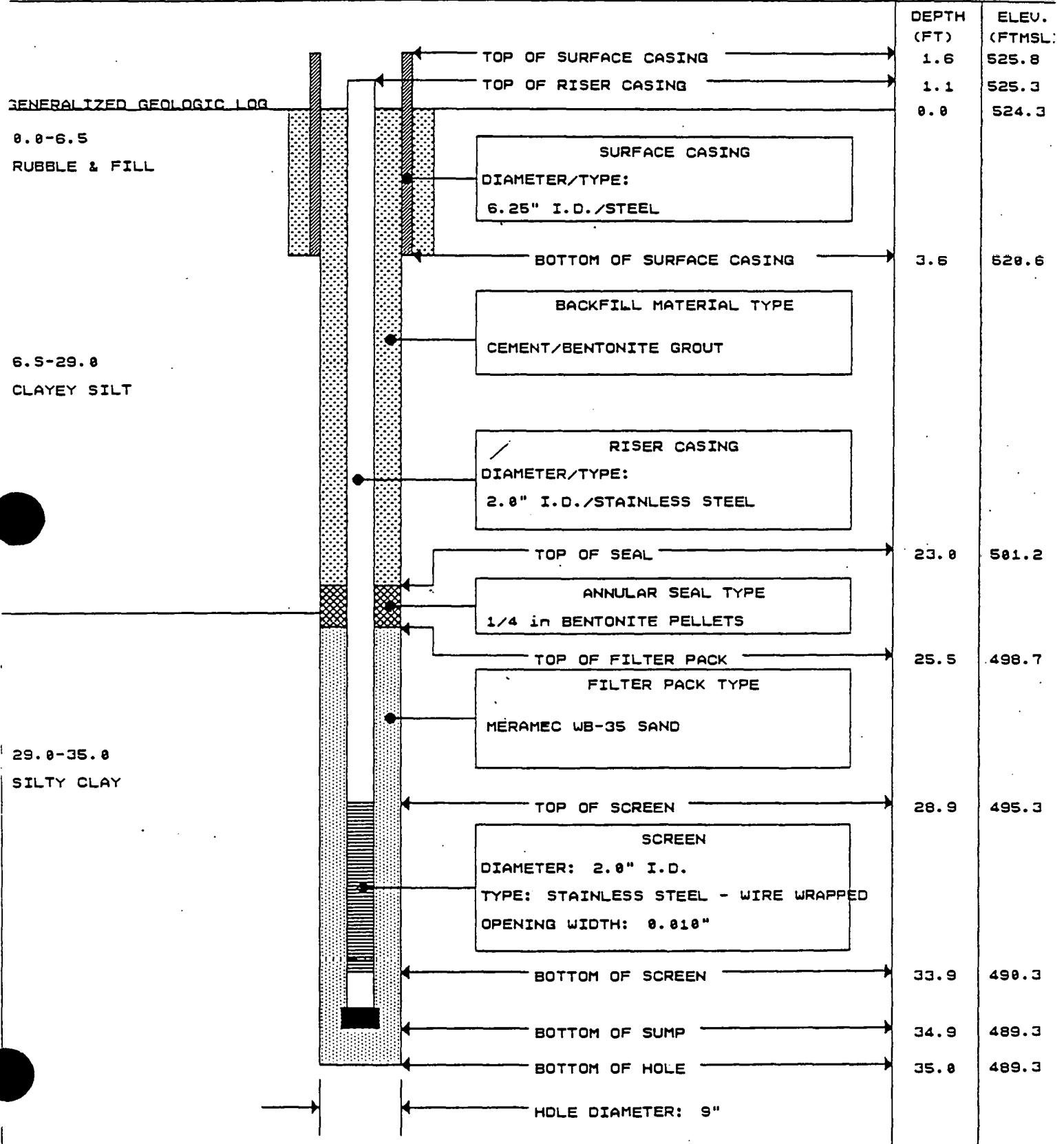
MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO. B53W07
JOB NO.	SITE 01-153 Ballfield Area	COORDINATES N 2.140.4 E 1.787.6		
GUN	COMPLETE	PREPARED BY 1-23-88 1-23-88 G. CHERRY	REFERENCE POINT FOR MEASUREMENTS TOP OF 2" DIAM. SS RISER	
<u>GENERALIZED GEOLOGIC LOG</u>				
0.0-18.5 RUBBLE & FILL		<p>TOP OF SURFACE CASING</p> <p>TOP OF RISER CASING</p> <p>SURFACE CASING DIAMETER/TYPE: 6.25 IN. /STEEL</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p> <p>RISER CASING DIAMETER/TYPE: 2.0" I.D./STAINLESS STEEL</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p> <p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.81"</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	DEPTH (FT)	ELEV. (FT MSL)
10.5-29.0 CLAYEY SILT			3.6	522.2
29.0-35.0 SILTY CLAY			23.0	502.8
			25.5	488.3
			28.9	496.8
			33.9	491.8
			34.9	490.8
			35.0	490.8

MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO B53W8
JOB NO.	SITE	COORDINATES	
14501-153	South of Coldwater Creek	N 1.999.1 E 1.410.5	
~GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
6-22-88	2-23-88	R. C. KISER	TOP OF 2" DIAM. SS RISER
<p>GENERALIZED GEOLOGIC LOG</p> <p>The diagram illustrates the well construction and surrounding geological layers. The well consists of a Surface Casing (6.25" I.O./STEEL) and a Riser Casing (2.0" I.O./316 STAINLESS STEEL). The well is sealed at 75.8 ft with 1/4 in Bentonite Pellets. The filter pack is made of MERAMEC WB-35 SAND. The screen is 2.0" I.O. and wire wrapped, with an opening width of 0.010". The bottom of the screen is at 86.9 ft, the bottom of the sump is at 91.9 ft, and the bottom of the hole is at 91.7 ft. The hole diameter is 9". The surrounding geological layers include Rubble & Fill (0.0-8.5), Organic & Clayey Silt (8.5-38.8), LTY CLAY (38.8-52.5), CLAY & SILTY CLAY (52.5-87.5), and CLAYEY GRAVEL (87.5-91.7).</p>			
GENERALIZED GEOLOGIC LOG		DEPTH (FT)	ELEV (FTMS)
0.0-8.5 RUBBLE & FILL		2.1	526.9
8.5-38.8 ORGANIC & CLAYEY SILT		1.6	524.8
38.8-52.5 LTY CLAY		0.0	524.8
52.5-87.5 CLAY & SILTY CLAY		3.1	521.7
87.5-91.7 CLAYEY GRAVEL		75.8	445.6
		78.0	446.6
		80.9	443.5
		90.9	433.5
		91.9	432.5
		91.7	431.5

PROJECT			WELL NO.	
MONITORING WELL			BS3408	
JOB NO.	SITE	COORDINATES		
91-153	South of Coldwater Creek	N 2.006.2 E 1.410.5		
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS	
7-88	1-15-88	G. CHERRY	TOP OF 2" DIAM. SS RISER	
<u>GENERALIZED GEOLOGIC LOG</u>				
0.0-8.5	RUBBLE & FILL	<p>TOP OF SURFACE CASING</p> <p>TOP OF RISER CASING</p> <p>SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p> <p>RISER CASING DIAMETER/TYPE: 2.0" I.D./STAINLESS STEEL</p>	DEPTH (FT)	ELEV. (FTMSL)
8.5-24.0	ORGANIC & CLAYEY SILT	<p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p>	3.5	521.2
24.0-37.5	SILTEY CLAY	<p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	26.0	498.7
			27.5	497.2
			31.3	493.4
			36.3	488.4
			37.3	487.4
			37.5	487.2

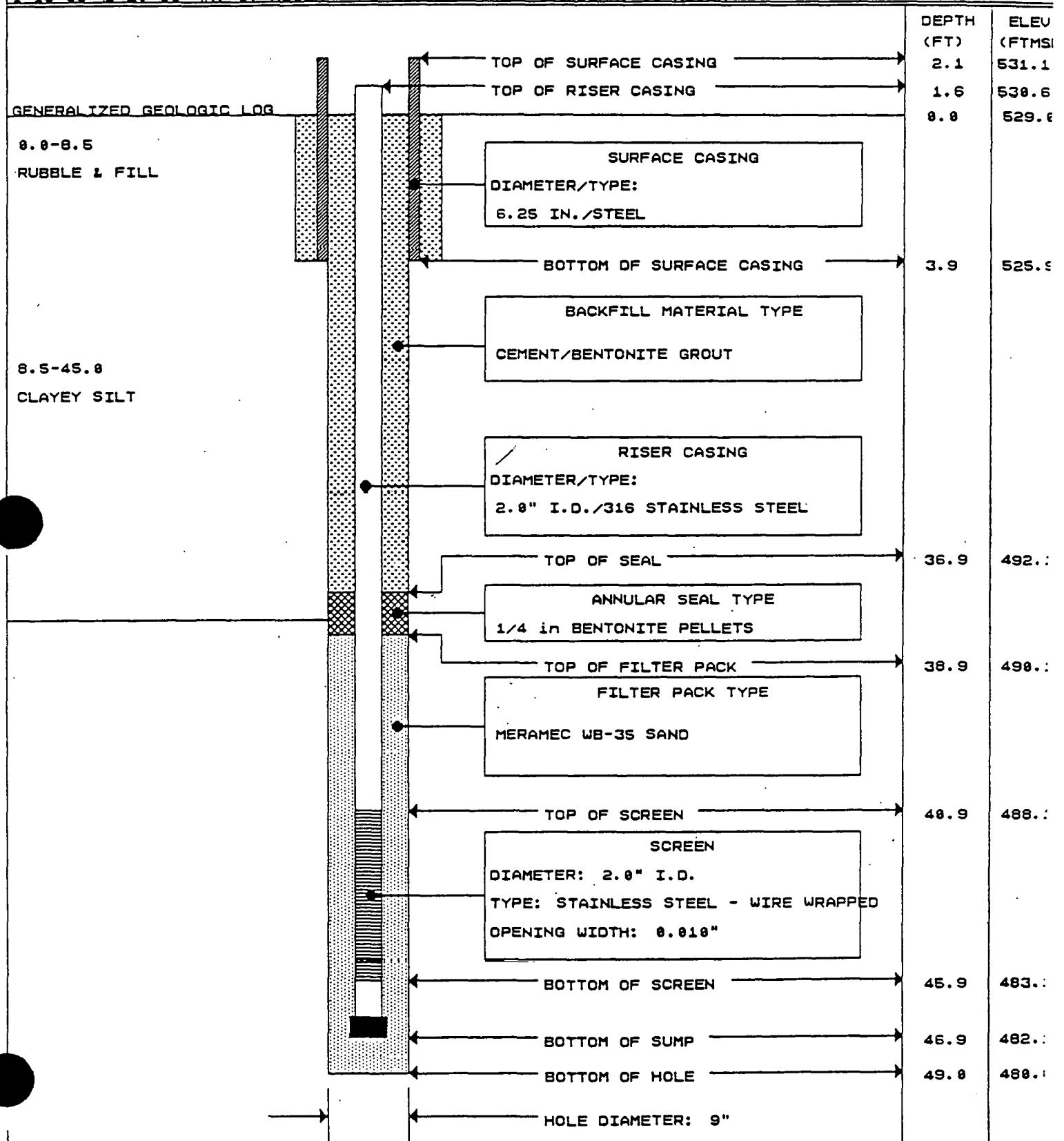
MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO. B53W6
JOB NO.	SITE 14501-153 South of Coldwater Creek	COORDINATES N 1,688.4 E 3,618.5		
PERIOD	COMPLETE	PREPARED BY R. C. KISER	REFERENCE POINT FOR MEASUREMENTS TOP OF 2" DIAM. SS RISER	
GENERALIZED GEOLOGIC LOG			DEPTH (FT)	ELEV. (FTMS)
			1.9	524.6
			1.4	S23.5
			0.0	S22.
0.0-S.S. RUBBLE & FILL				
			3.3	S18.
S.S-20.0 CLAYEY SILT				
20.0-36.5 'LTY CLAY				
			55.3	466.1
36.5-50.5 CLAYEY SILT				
50.5-74.0 PENN. CYCLOTHEM				
			57.5	464.6
			61.1	461.1
			71.1	451.6
			72.6	499.5
			74.5	

PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			BS3W095
JOB NO.	SITE	COORDINATES	
1-153 Ballfield Area		N 1,821.2 E 1,111.9	
SUN	COMPLETE	PREPARED BY	
1-22-88	1-22-88	G. CHERRY/R.C. KISER	
REFERENCE POINT FOR MEASUREMENTS			TOP OF 2" DIAM. SS RISER

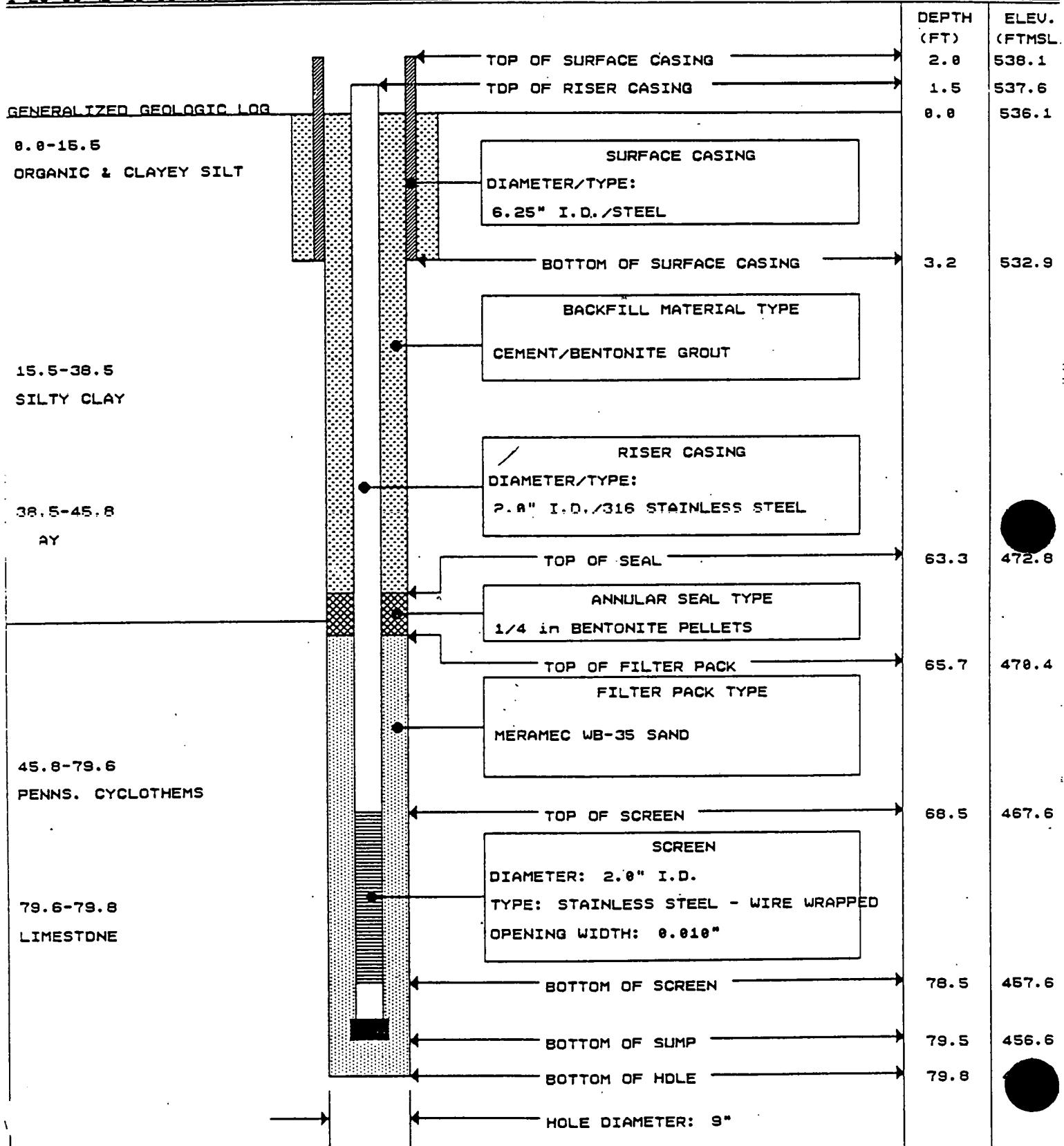


MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO BS3W1
JOB NO.	SITE	COORDINATES N 1.578.4 E 926.4		
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS	
1-26-88	1-27-88	R. C. KISER	TOP OF 2" DIAM. SS RISER	
GENERALIZED GEOLOGIC LOG				
0.0-9.5	RUBBLE & FILL		TOP OF SURFACE CASING	DEPTH (FT) 1.9 ELEV (FTMS 527.4
			TOP OF RISER CASING	1.4 526.9
				0.0 525.5
			SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL	
			BOTTOM OF SURFACE CASING	3.3 522.2
			BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT	
9.5-29.0	CLAYEY SILT			
29.0-43.3	LTY CLAY		RISER CASING DIAMETER/TYPE: 2.0" I.D./316 STAINLESS STEEL	66.8 458.1
			TOP OF SEAL	
			ANNULAR SEAL TYPE 1/4 in. BENTONITE PELLETS	68.8 456.1
			TOP OF FILTER PACK	
			FILTER PACK TYPE MERAMEC WB-35 SAND	
43.3-76.5	CLAY AND SILTY CLAY			71.1 454.1
			TOP OF SCREEN	
			SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"	
76.5-82.3	GRAVEL & LIMESTONE		BOTTOM OF SCREEN	81.1 444.1
			BOTTOM OF SUMP	82.1 443.1
			BOTTOM OF HOLE	82.3
			HOLE DIAMETER: 9"	

PROJECT			WELL NO.
MONITORING WELL			853W1
JOB NO.	SITE	COORDINATES	
01-153	South of Coldwater Creek	N 1.725.1 E 2.331.7	
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
19-88	1-20-88	R. C. KISER	TOP OF 2" DIAM. SS RISER



PROJECT			WELL NO.
MONITORING WELL			853W11C
JOB NO.	SITE	COORDINATES	
14501-153	South of McDonnell Blvd.	N 1.028.9 E 3.091.6	
--GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
1-28-88	1-29-88	R. C. KISER	TOP OF 2" DIAM. SS RISER



PROJECT			WELL NO.
MONITORING WELL			853W11
JOB NO.	SITE	COORDINATES	
81-153	South of Coldwater Creek	N 1.674.8 E 3.617.7	
DATE	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
3-2-88	3-2-88	R. C. KISER	TOP OF 2" DIAM. SS RISER
<u>GENERALIZED GEOLOGIC LOG</u>			
0.0-5.5	RUBBLE & FILL	<p>SURFACE CASING DIAMETER/TYPE: 6.25" I.D./STEEL</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p>	DEPTH (FT) ELEV. (FTMSL)
5.5-20.0	CLAYEY SILT	<p>RISER CASING DIAMETER/TYPE: 2.0" I.D./316 STAINLESS STEEL</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE 1/4 in BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC WB-35 SAND</p>	3.1 519.0 11.7 510.4 13.8 508.3
20.0-24.0	MULTI CLAY	<p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2.0" I.D. TYPE: STAINLESS STEEL - WIRE WRAPPED OPENING WIDTH: 0.010"</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER: 9"</p>	15.9 506.2 20.9 501.2 22.4 499.7 24.0 498.1

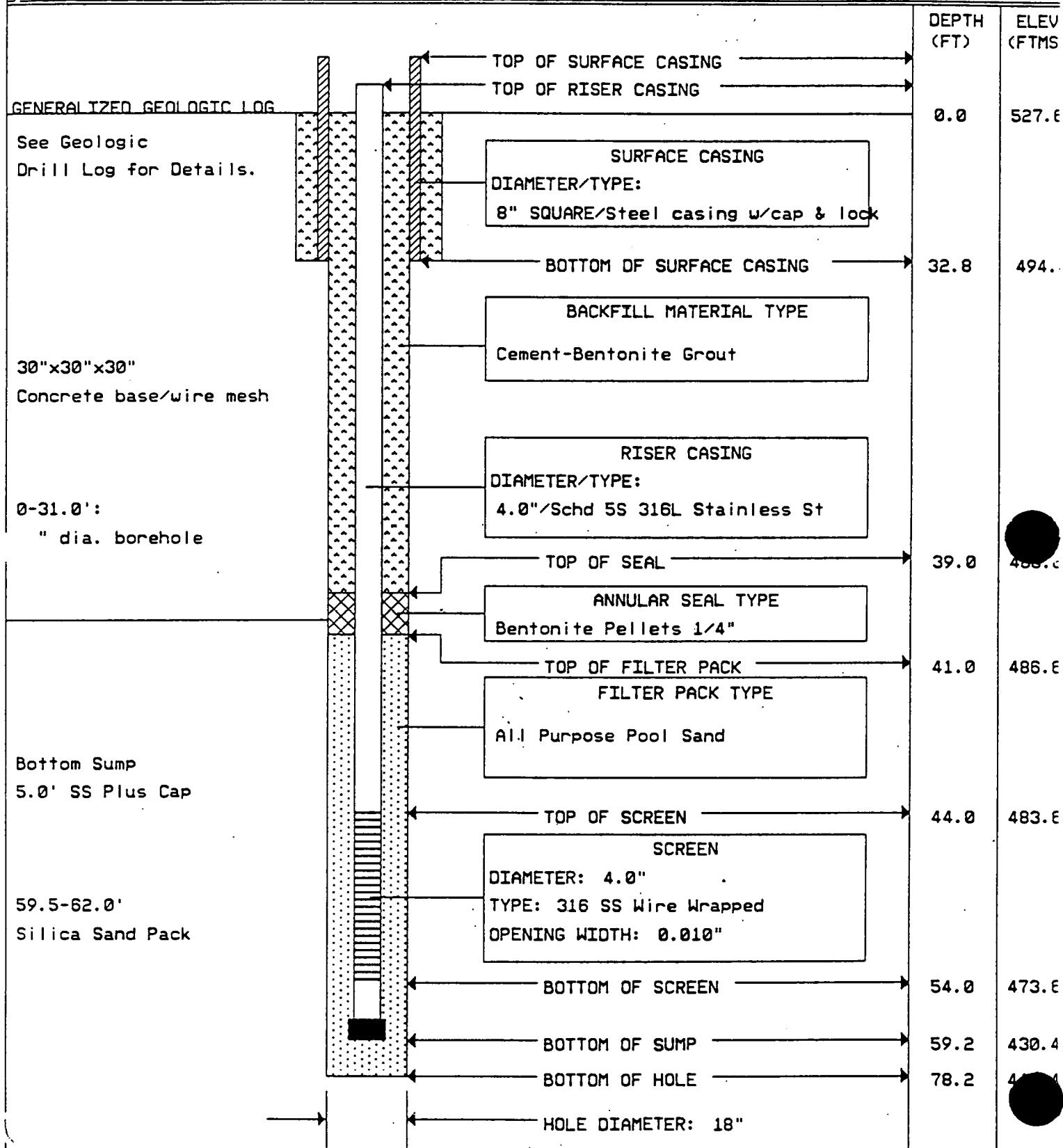
MONITORING WELL

PROJECT

WELL NO

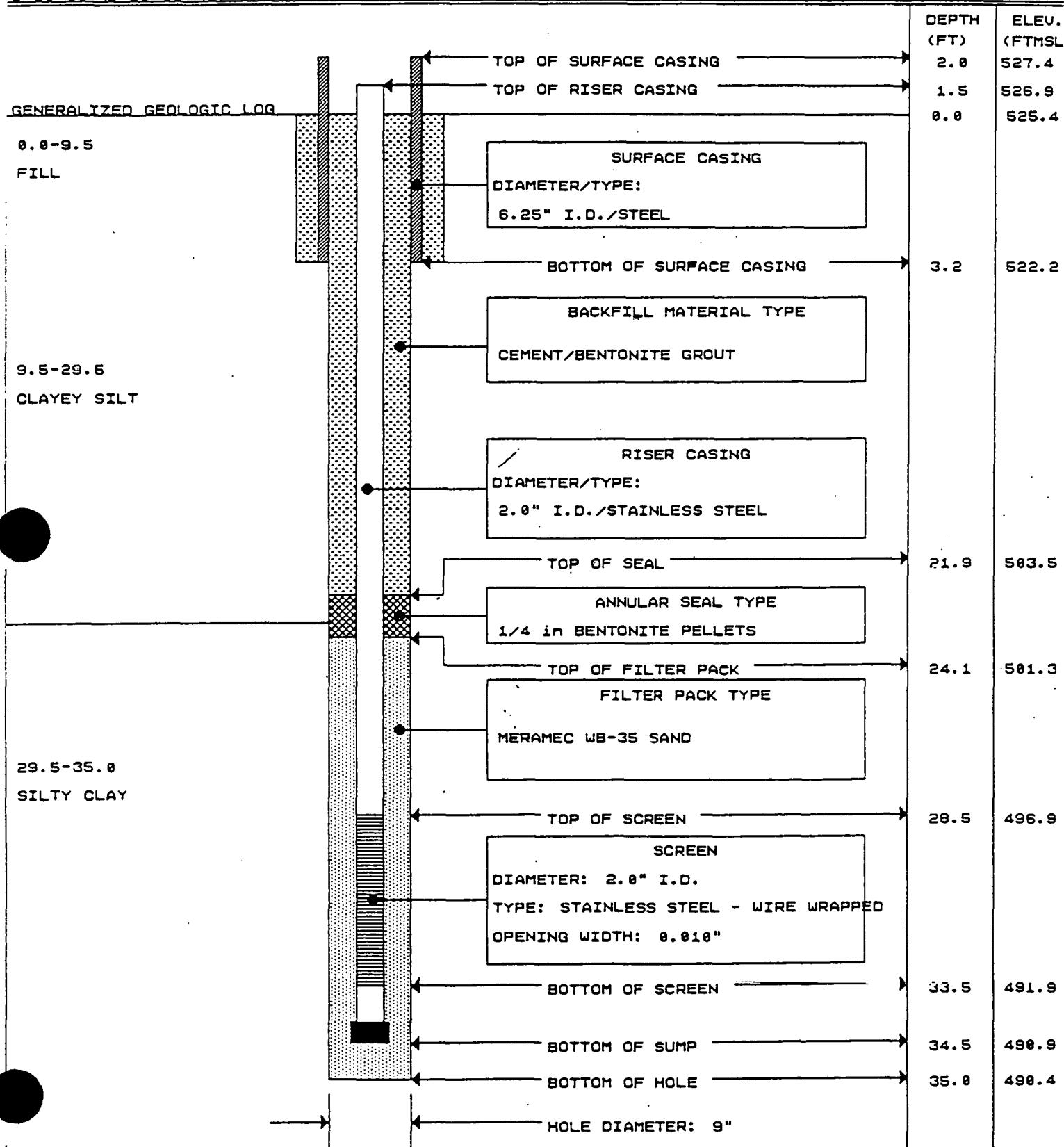
B53W1

JOB NO.	SITE	COORDINATES	
	SLAPS: Ball Fields	N 1.211.3 E 3.529.6	
0-1-92	9-29-92	J.T. Smith	Ground Surface

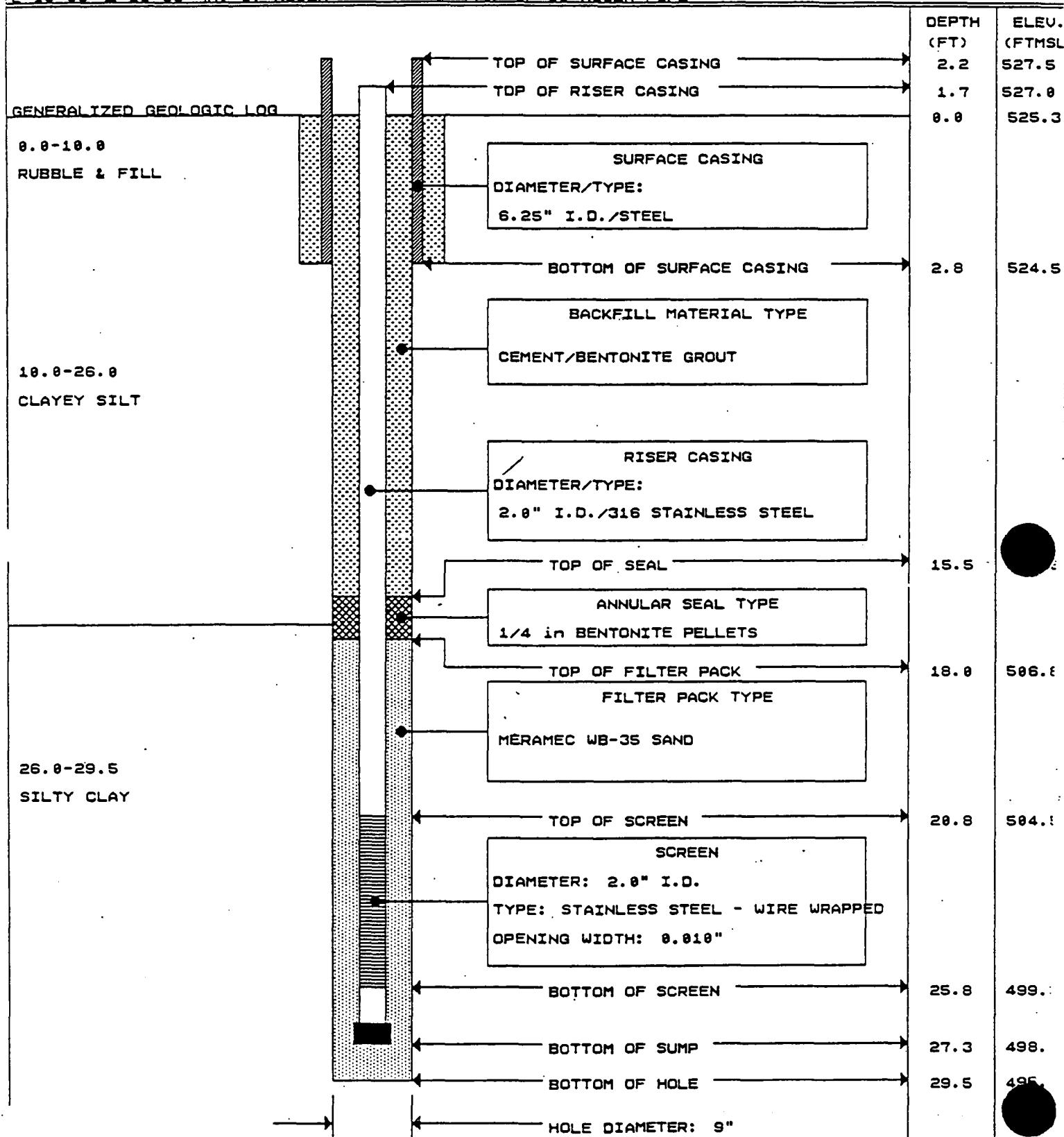


PROJECT		WELL NO.
MONITORING WELL		St. Louis Airport Site
B1-153 Ballfield Area		B53W12

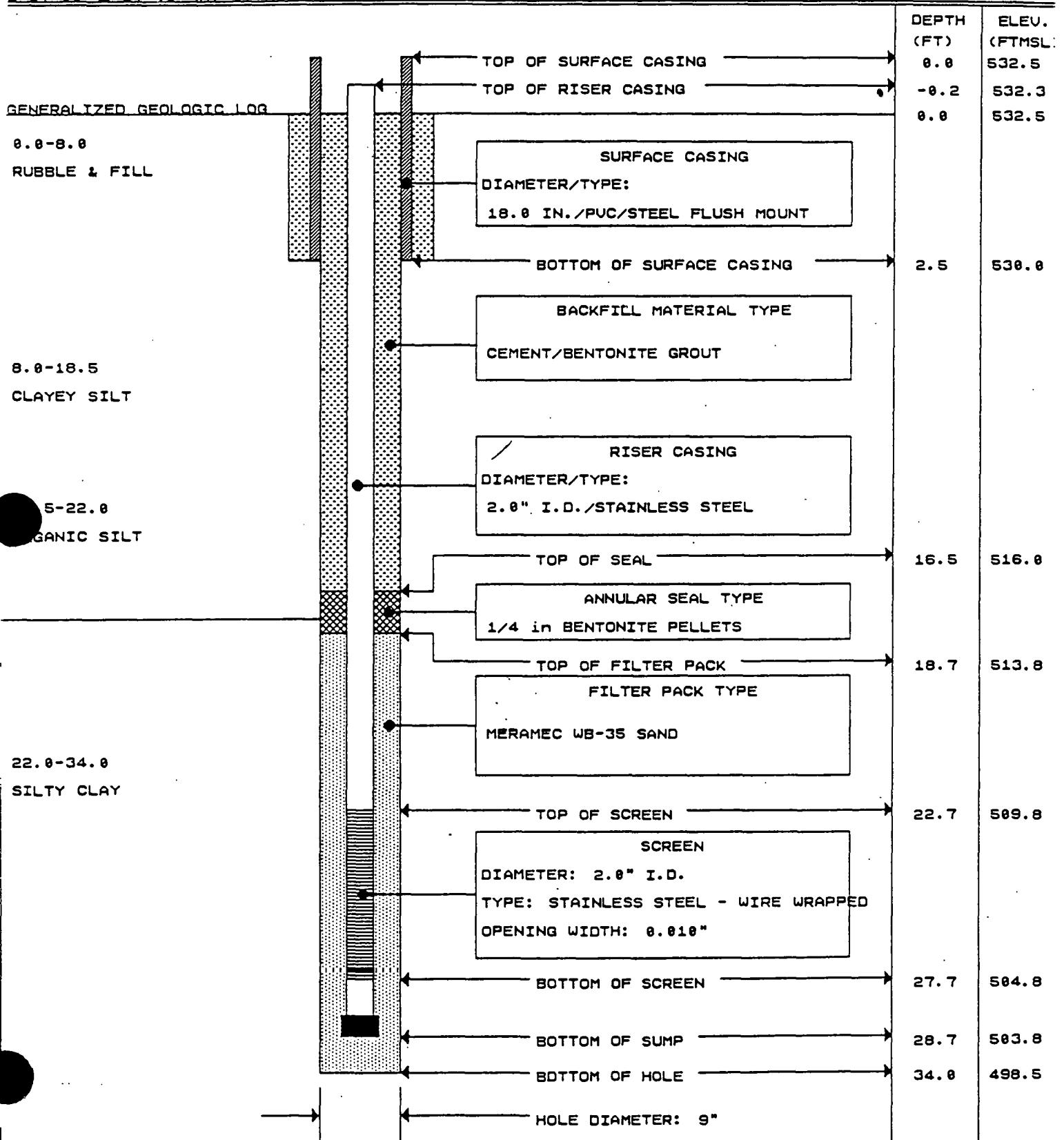
JOB NO.	SITE	COORDINATES
B1-153 Ballfield Area		N 41° 56' 55.7" E 92° 27' 4"
DATE	COMPLETE	PREPARED BY
1-19-88	1-19-88	G. CHERRY
		REFERENCE POINT FOR MEASUREMENTS
		TOP OF 2' RISER PIPE.



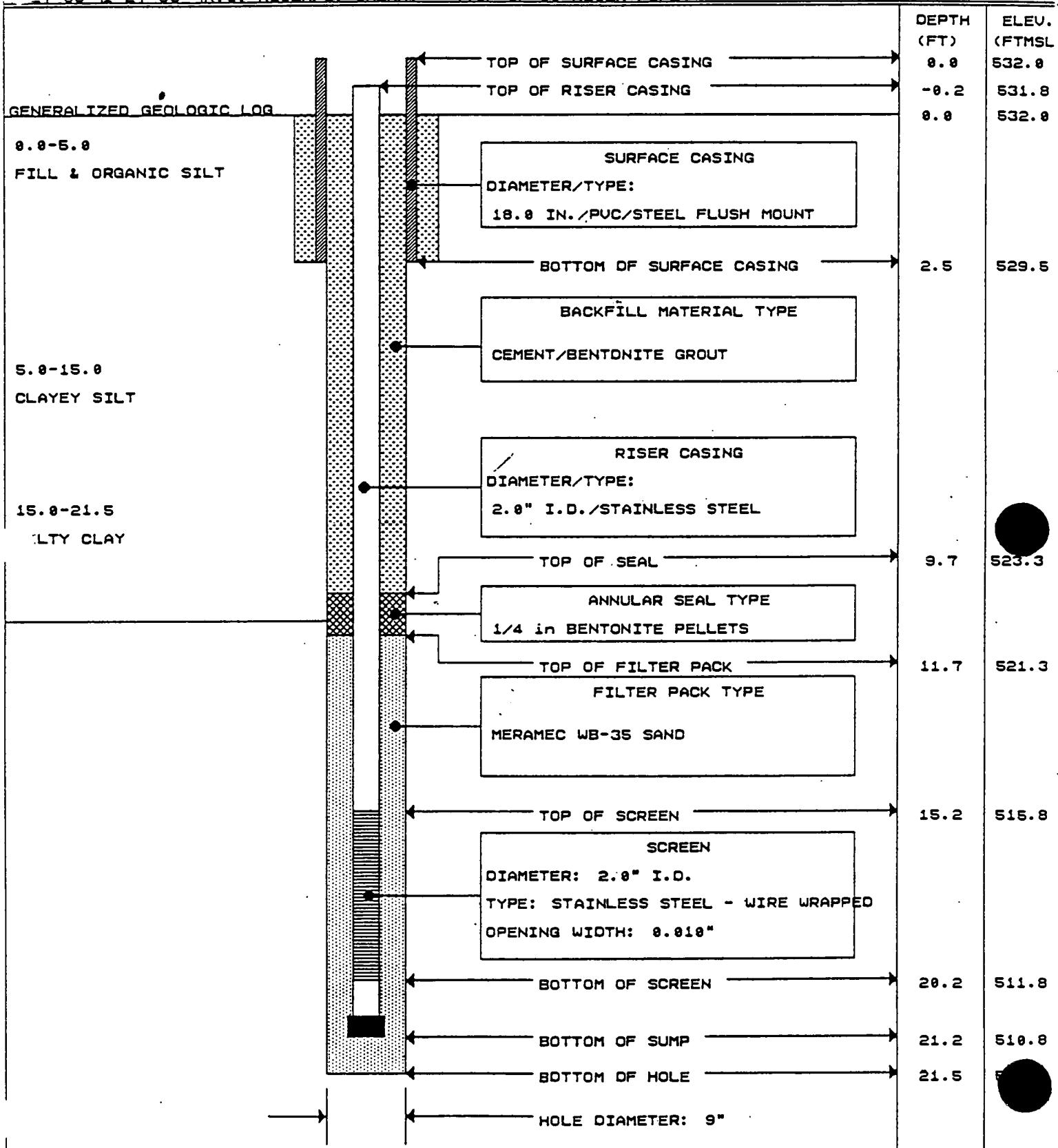
MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO. B53W13
JOB NO.	SITE	COORDINATES	
14501-153	South of Coldwater Creek	N 1.633.9 E 1.483.6	
PERGUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
8-88	2-18-88	R. C. KISER	TOP OF SS RISER PIPE



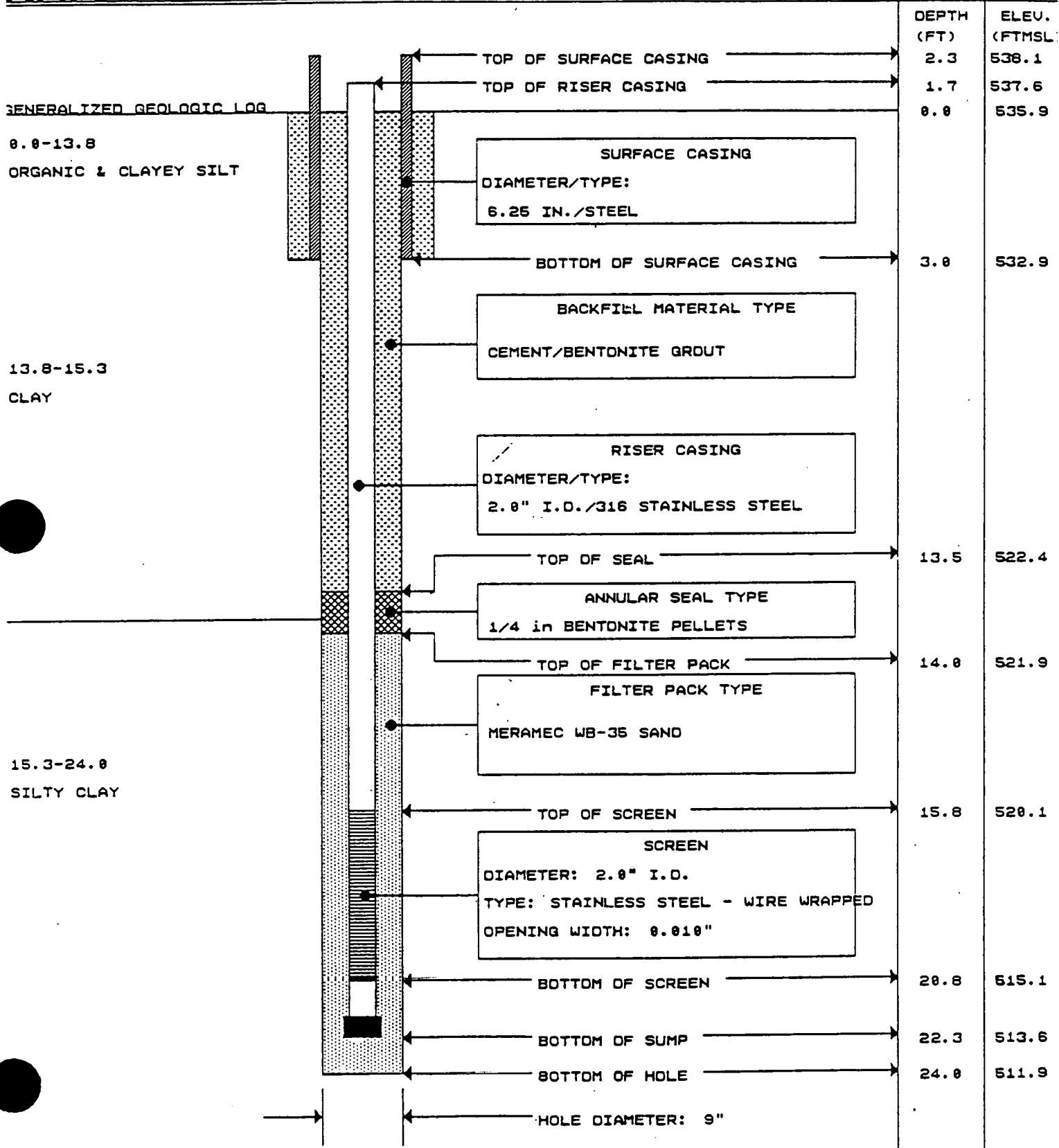
PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			BS3W14S
JOB NO.	SITE	COORDINATES	
81-153 South of Coldwater Creek		N 1.476.4 E 2.795.9	
SUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
2-17-88	2-17-88	R. C. KISER	TOP OF SS RISER PIPE



PROJECT			WELL NO.
MONITORING WELL			853W15
JOB NO.	SITE	COORDINATES	
14501-153	South of McDonnell Blvd.	N 1,069.3 E 3,304.8	
REGUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
7-88	1-27-88	R.C. KISER/G. CHERRY	TOP OF SS RISER PIPE



PROJECT			WELL NO.
MONITORING WELL			BS3W165
JOB NO.	SITE	COORDINATES	
1-153 South of McDonnell Blvd.		N 1.026.2 E 3.194.5	
GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
26-88	2-26-88	R. C. KISER	TOP OF 2" DIAM. SS RISER



MONITORING WELL

PROJECT

WELL NO.

B53W17

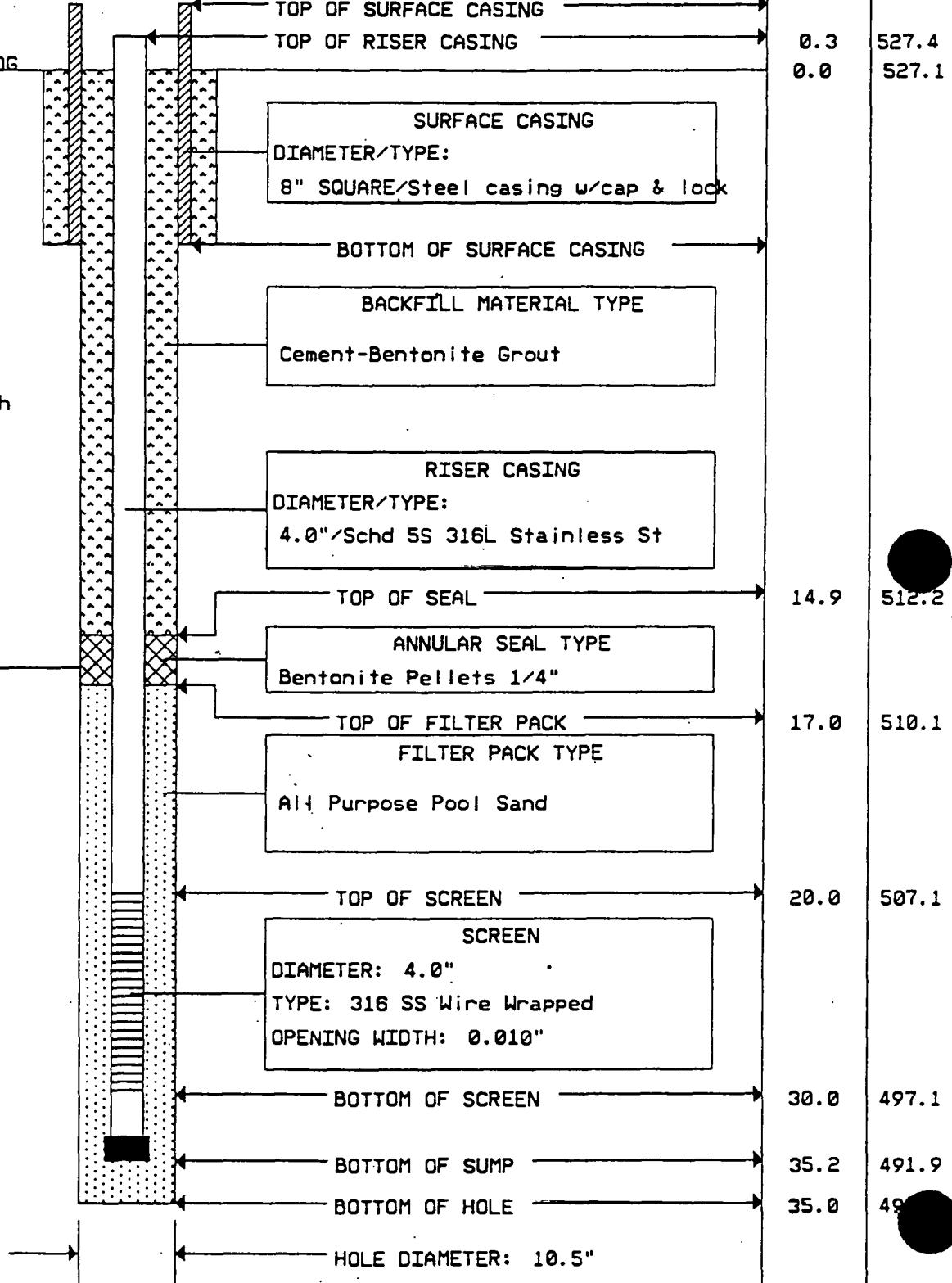
JOB NO.	SITE	COORDINATES	
	SLAPS: Ball Fields	N 1.750.8 E 1.910.0	
GUN	COMPLETE	REFERENCE POINT FOR MEASUREMENTS	
8-21-92	8-26-92	J.T. Smith	Ground Surface

GENERALIZED GEOLOGIC LOG

See Geologic
Drill Log for Details.

30"x30"x30"
Concrete base/wire mesh

SS Bottom Cap



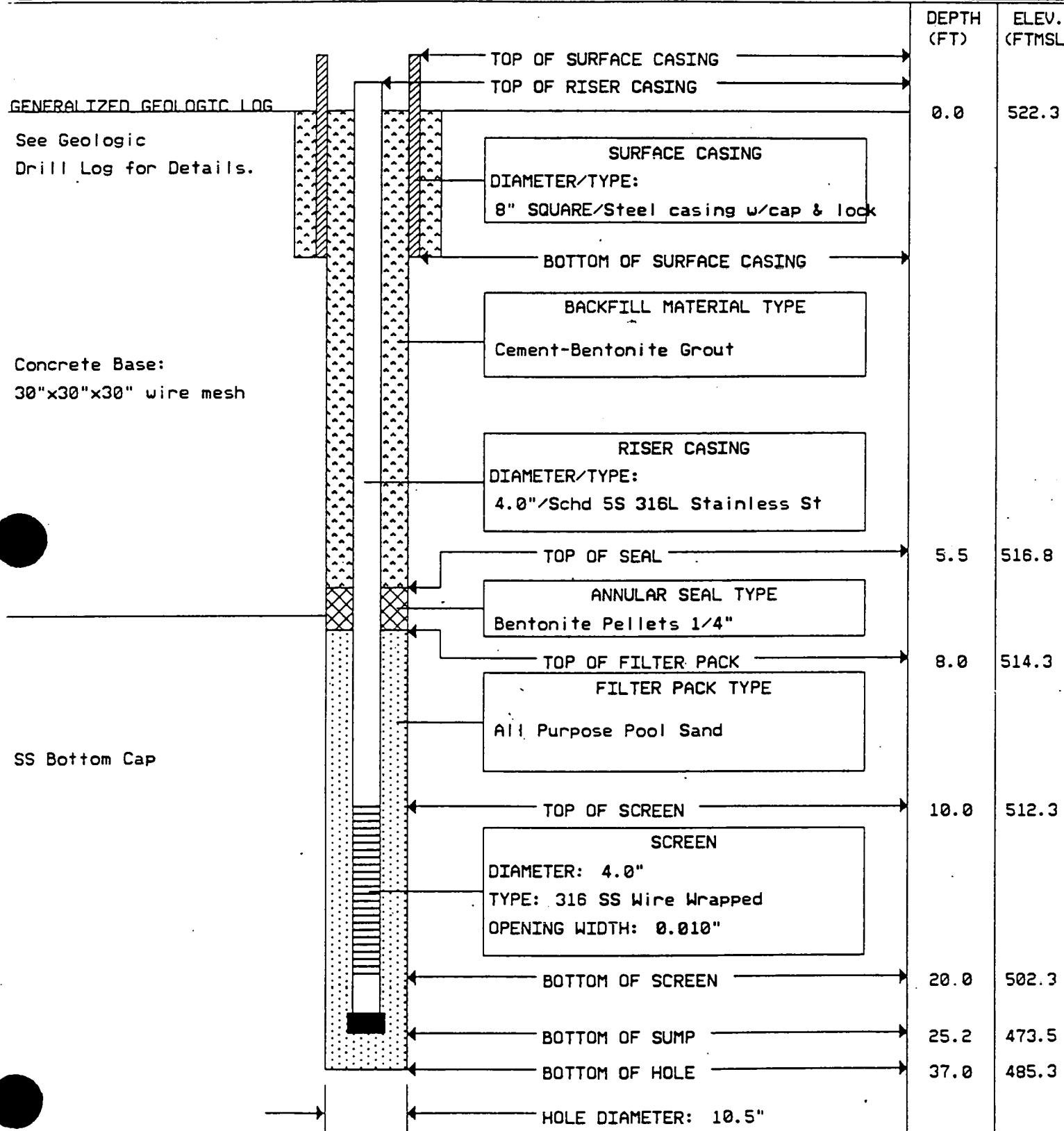
MONITORING WELL

PROJECT

WELL NO.

B53W18

JOB NO.	SITE	COORDINATES	
JUN	SLAPS: Ball Fields	N 1.561.0 E 560.1	
	COMPLETE	REFERENCE POINT FOR MEASUREMENTS	
J-26-92	9-1-92	J.T. Smith	Ground Surface



MONITORING WELL

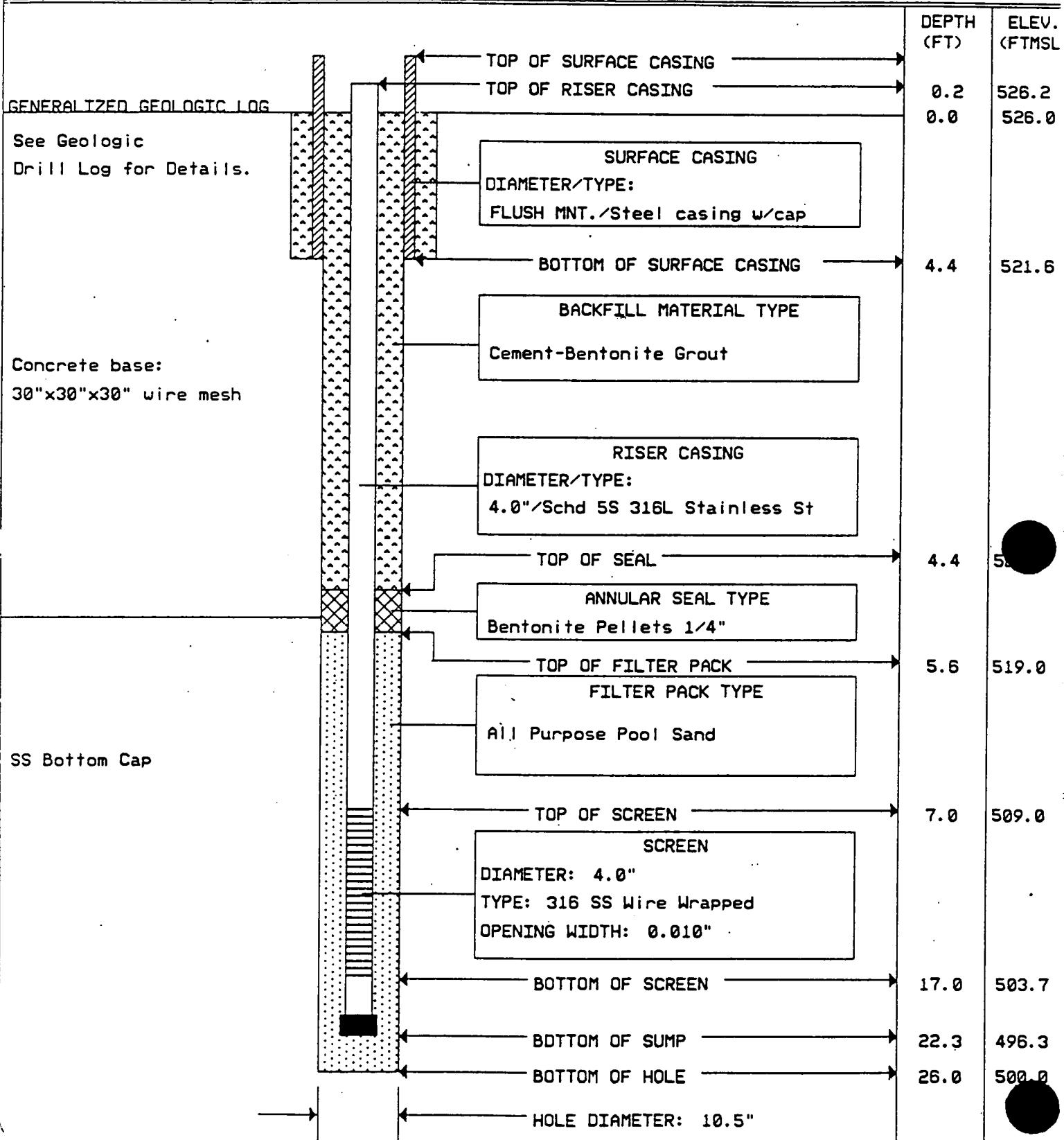
PROJECT

WELL NO.

B53W19

JOB NO.	SITE	COORDINATES
	SLAPS: Airport Margin	N 853.1 E 1,425.8
Y-8-92	9-16-92	J.T. Smith

GENERALIZED GEOLOGIC LOG
See Geologic Drill Log for Details.



MONITORING WELL

PROJECT

WELL NO.

B53W20

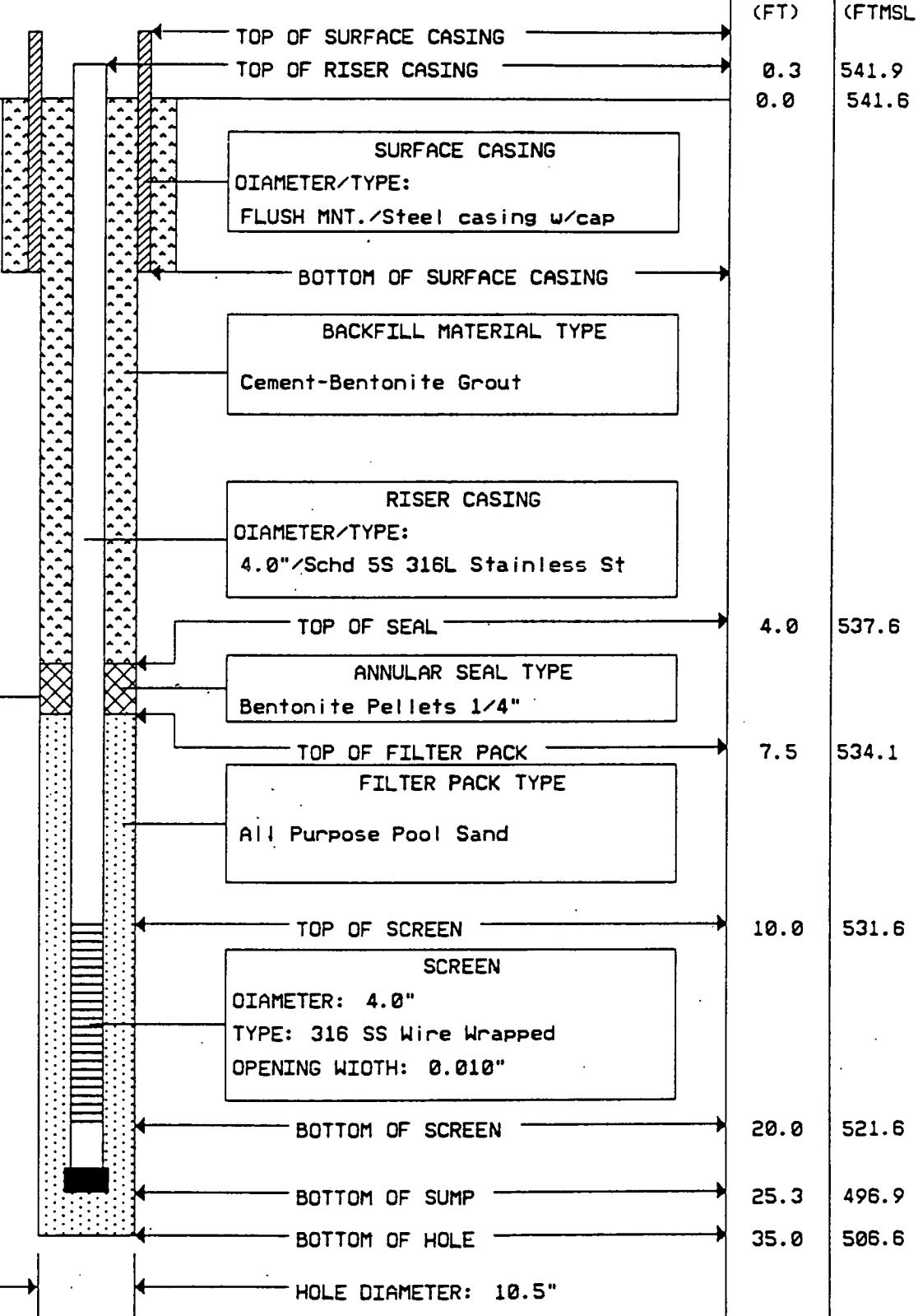
JOB NO.	SITE	COORDINATES
	SLAPS: Airport Margin	N 804.2 E 3.302.7
DATE	COMPLETE	PREPARED BY
1-3-92	9-9-92	J.T. Smith
		Ground Surface

GENERALIZED GEOLOGIC LOG

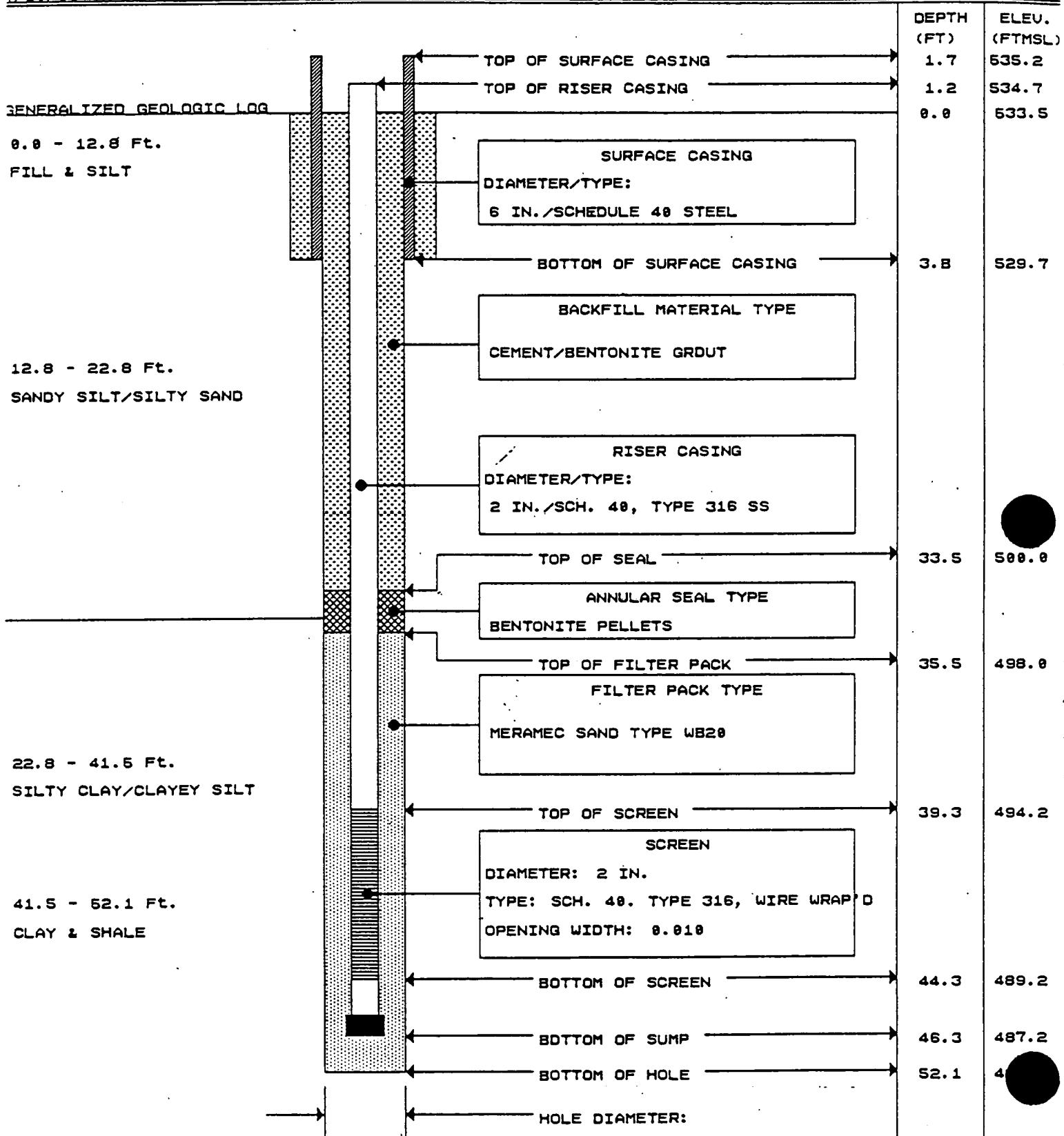
See Geologic
Drill Log for Details.

Concrete base:
30"x30"x30" wire mesh

SS Bottom Cap



PROJECT			WELL N.
MONITORING WELL St. Louis Airport Site			M18-25
JOB NO.	SITE	COORDINATES	
14501-153		N 1.012.0 E 2.598.0	
--GUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
✓ 10/86	7/11/86	R.L. SAYRE	TOP OF THE RISER PIPE



PROJECT

WELL NO.

MONITORING WELL

St. Louis Airport Site

M10-255

JOB NO. SITE

COORDINATES

N 1.009.0 E 2.500.0

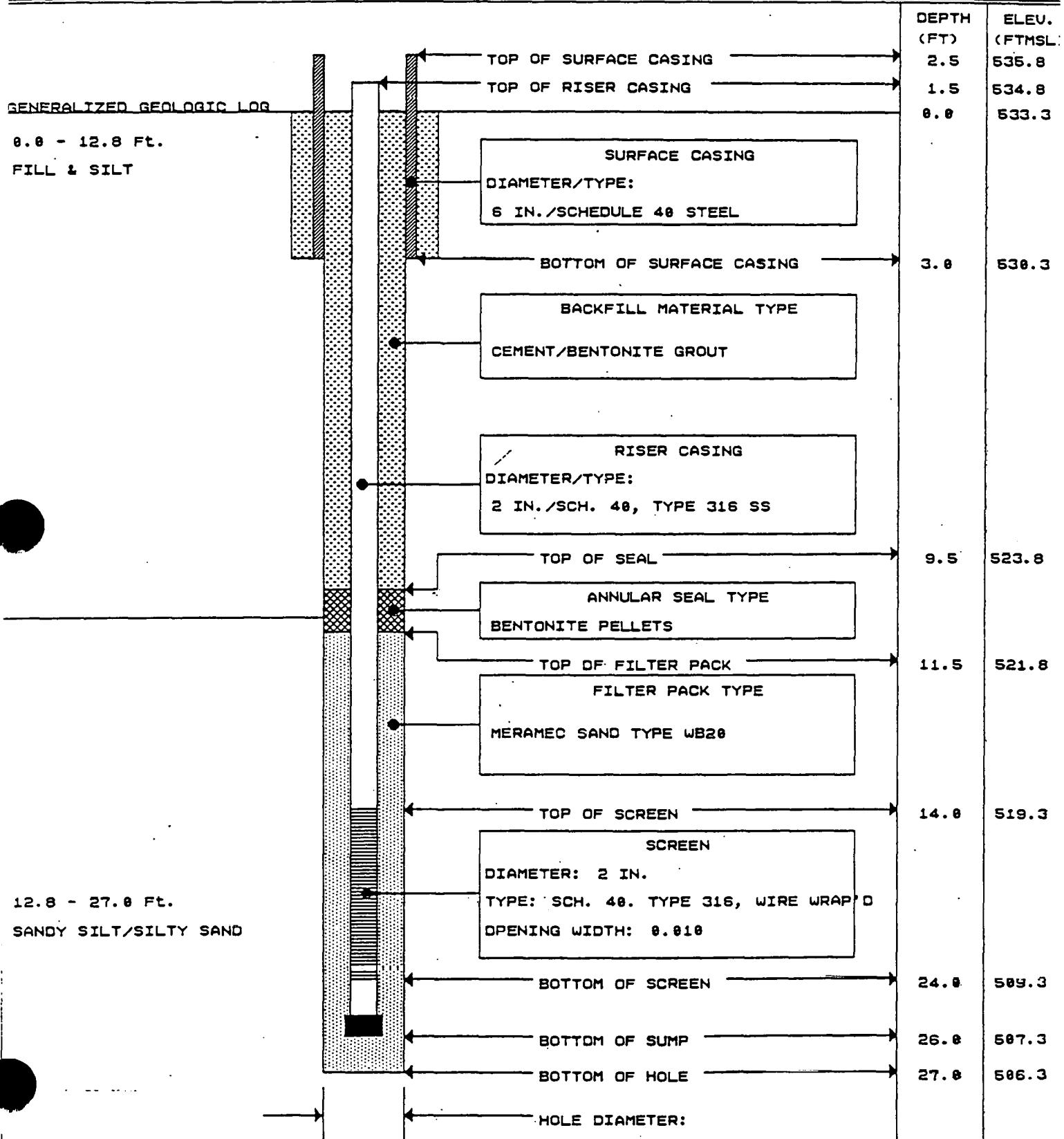
01-153

RUN COMPLETE PREPARED BY

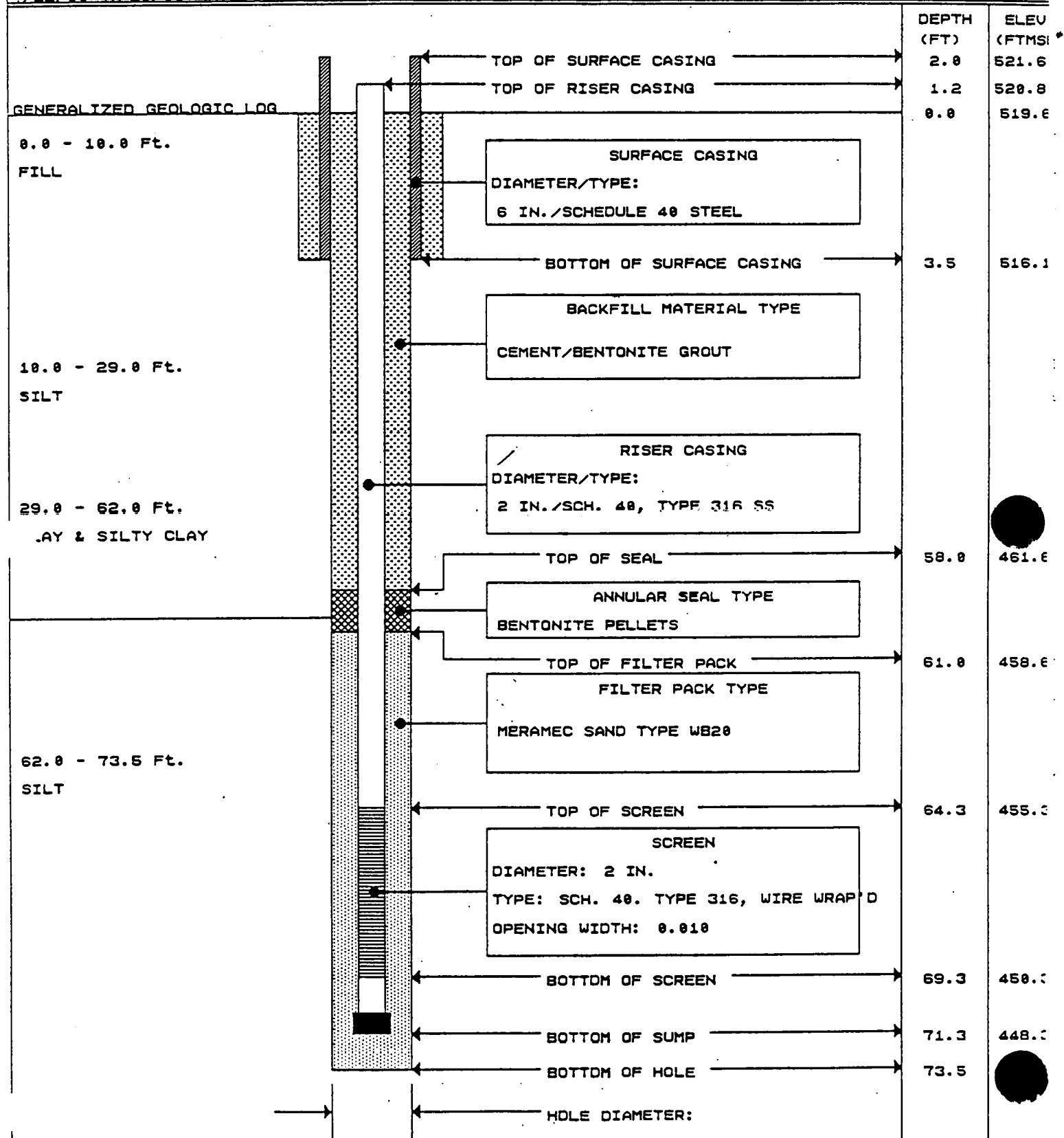
REFERENCE POINT FOR MEASUREMENTS

9/86 7/9/86 R. L. SAYRE

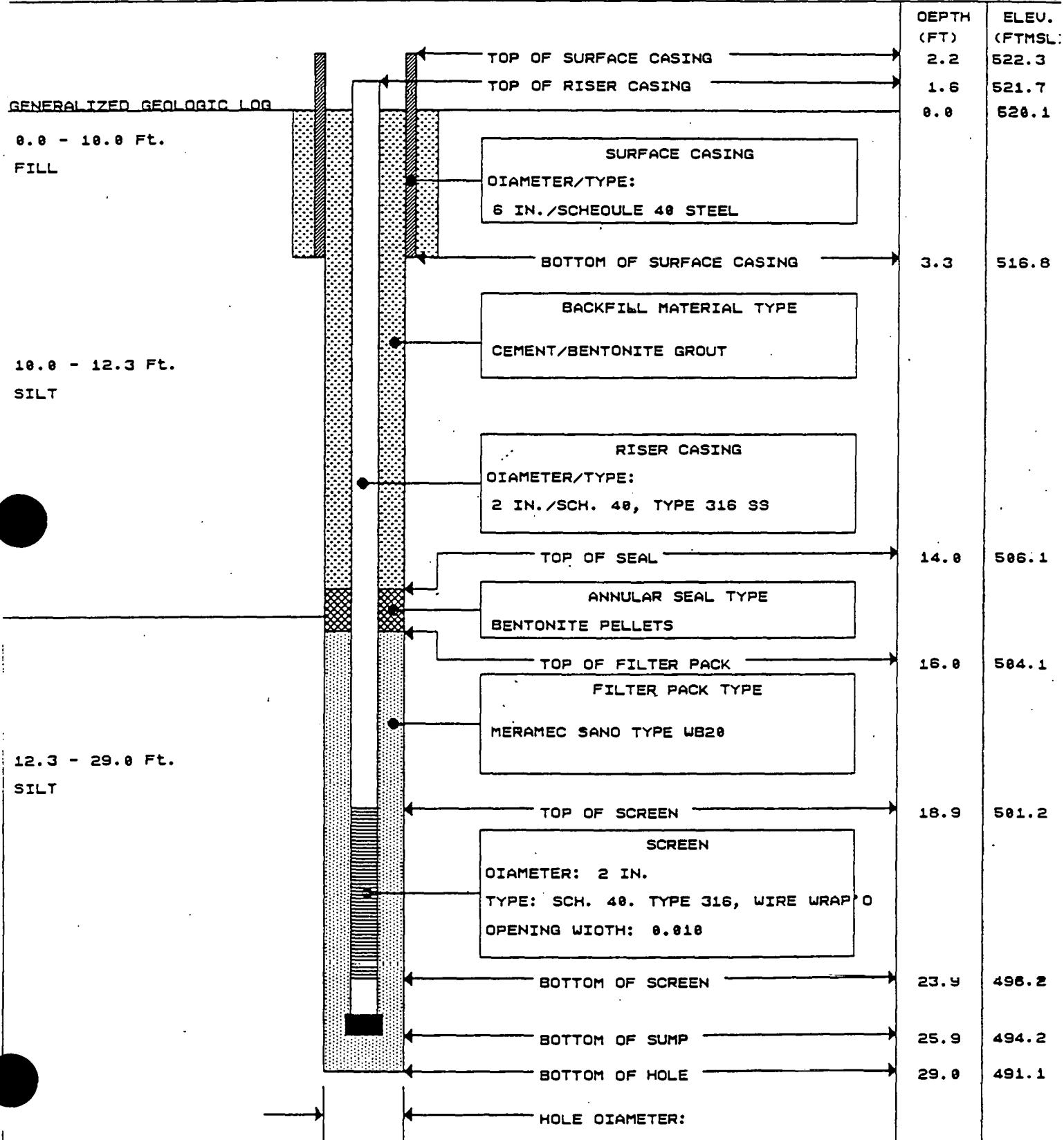
TOP OF THE RISER PIPE



MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO. M19-a
JOB NO.	SITE	COORDINATES N 40°10'5 E 88°8'		
14581-153	PEQUN	COMPLETE	PREPARED BY R.L.SAYRE/D.HARNISH	REFERENCE POINT FOR MEASUREMENTS TOP OF THE RISER PIPE
22/86	7/25/86			



MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO. M10-BS
JOB NO. 11-153	SITE GUN	COORDINATES N 41°10.0' E 80°0.0'	
COMPLETE BY 7/28/86		PREPARED BY R. L. SAYRE	REFERENCE POINT FOR MEASUREMENTS TOP OF THE RISER PIPE



MONITORING WELL			PROJECT St. Louis Airport Site	WELL NO. M10-15
JOB NO.	SITE	COORDINATES N 1.009.0 E 1.505.0		
14501-153	PFGUN	COMPLETE	PREPARED BY R. L. SAYRE	REFERENCE POINT FOR MEASUREMENTS TOP OF THE RISER PIPE
<p>GENERALIZED GEOLOGIC LOG</p> <p>The diagram illustrates the monitoring well borehole with various sections and their properties:</p> <ul style="list-style-type: none"> Surface Casing: Depth 1.9 ft (Elev. 528.1), Diameter/Type: 6 IN./SCHEDULE 40 STEEL. Backfill Material: CEMENT/BENTONITE GROUT. Riser Casing: Depth 3.6 ft (Elev. 522.6), Diameter/Type: 2 IN./SCH. 40, TYPE 316 SS. Seal: Depth 11.0 ft (Elev. 514.2), Type: ANNULAR SEAL TYPE BENTONITE PELLETS. Filter Pack: Depth 13.0 ft (Elev. 513.2), Type: FILTER PACK TYPE MERAMEC SAND TYPE WB20. Screen: Depth 14.2 ft (Elev. 512.0), Diameter: 2 IN., Type: SCH. 40, TYPE 316, WIRE WRAP'D, Opening Width: 0.016. Bottom of Screen: Depth 24.2 ft (Elev. 502.0). Bottom of Sump: Depth 26.2 ft (Elev. 500.0). Bottom of Hole: Depth 26.2 ft (Elev. 500.0). Hole Diameter: Depth 26.2 ft (Elev. 500.0). <p>Geological Units:</p> <ul style="list-style-type: none"> 0.0 - 4.3 Ft. FILL 4.3 - 13.0 Ft. SILT 13.0 - 17.5 Ft. SILT 17.5 - 29.0 Ft. CLAYEY SILT/SILTY CLAY 				

PROJECT			WELL NO.
MONITORING WELL st. Louis Airport Site			M10-150
JOB NO.	SITE	COORDINATES	
1-150		N 1.008.0 E 1.498.0	
JUN	COMPLETE	PREPARED BY	
14/86	7/22/86	R.L.SAYRE/D.HARNISH	
REFERENCE POINT FOR MEASUREMENTS			
TOP OF THE RISER PIPE			
<p>GENERALIZED GEOLOGIC LOG</p> <p>0.0 - 17.5 Ft. FILL & SILT</p> <p>17.5 - 51.5 Ft. SILTY CLAY/CLAYEY SILT</p> <p>51.5 - 79.2 Ft. Y</p> <p>79.2 - 87.1 Ft. SILTY SAND/GRAVEL</p> <p>DEPTH (FT) ELEV. (FTMSL)</p> <p>0.0 525.9</p> <p>4.2 521.7</p> <p>74.5 451.4</p> <p>77.0 448.9</p> <p>80.0 445.9</p> <p>85.0 440.9</p> <p>87.0 438.9</p> <p>87.1 438.8</p> <p>TOP OF SURFACE CASING</p> <p>TOP OF RISER CASING</p> <p>SURFACE CASING DIAMETER/TYPE: 6 IN./SCHEDULE 40 STEEL</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p> <p>RISER CASING DIAMETER/TYPE: 2 IN./SCH. 40, TYPE 316 SS</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC SAND TYPE WB20</p> <p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2 IN. TYPE: SCH. 40. TYPE 316, WIRE WRAPPED OPENING WIDTH: 0.010</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER:</p>			

PROJECT			WELL NO.
MONITORING WELL st. Louis Airport Site			M11-2
JOB NO.	SITE	COORDINATES	
14501-153		N 38° 58.8' E 2° 095.5'	
PERIOD	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
2/86	7/2/86	R. L. SAYRE	TOP OF THE RISER PIPE
<p>GENERALIZED GEOLOGIC LOG</p> <p>8.0 - 8.0 Ft. FILL & SILT</p> <p>8.0 - 23.0 Ft. SILT & CLAYEY SILT</p> <p>TOP OF SURFACE CASING</p> <p>TOP OF RISER CASING</p> <p>SURFACE CASING DIAMETER/TYPE: 6 IN./SCHEDULE 40 STEEL</p> <p>BOTTOM OF SURFACE CASING</p> <p>BACKFILL MATERIAL TYPE CEMENT/BENTONITE GROUT</p> <p>RISER CASING DIAMETER/TYPE: 2 IN./SCH. 40, TYPE 316 SS</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE BENTONITE PELLETS</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE MERAMEC SAND TYPE WB20</p> <p>TOP OF SCREEN</p> <p>SCREEN DIAMETER: 2 IN. TYPE: SCH. 40. TYPE 316, WIRE WRAP'D OPENING WIDTH: 0.010</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF SUMP</p> <p>BOTTOM OF HOLE</p> <p>HOLE DIAMETER:</p>			
DEPTH (FT)	ELEV. (FTMSL)		
2.3	530.8		
1.7	530.2		
0.0	528.5		
3.2	525.3		
9.8	519.5		
11.8	517.5		
13.8	514.7		
18.8	509.7		
20.8	507.7		
23.0	504.7		

MONITORING WELL

PROJECT

St. Louis Airport Site

WELL NO.

M11-9

JOB NO. SITE

COORDINATES

81-153

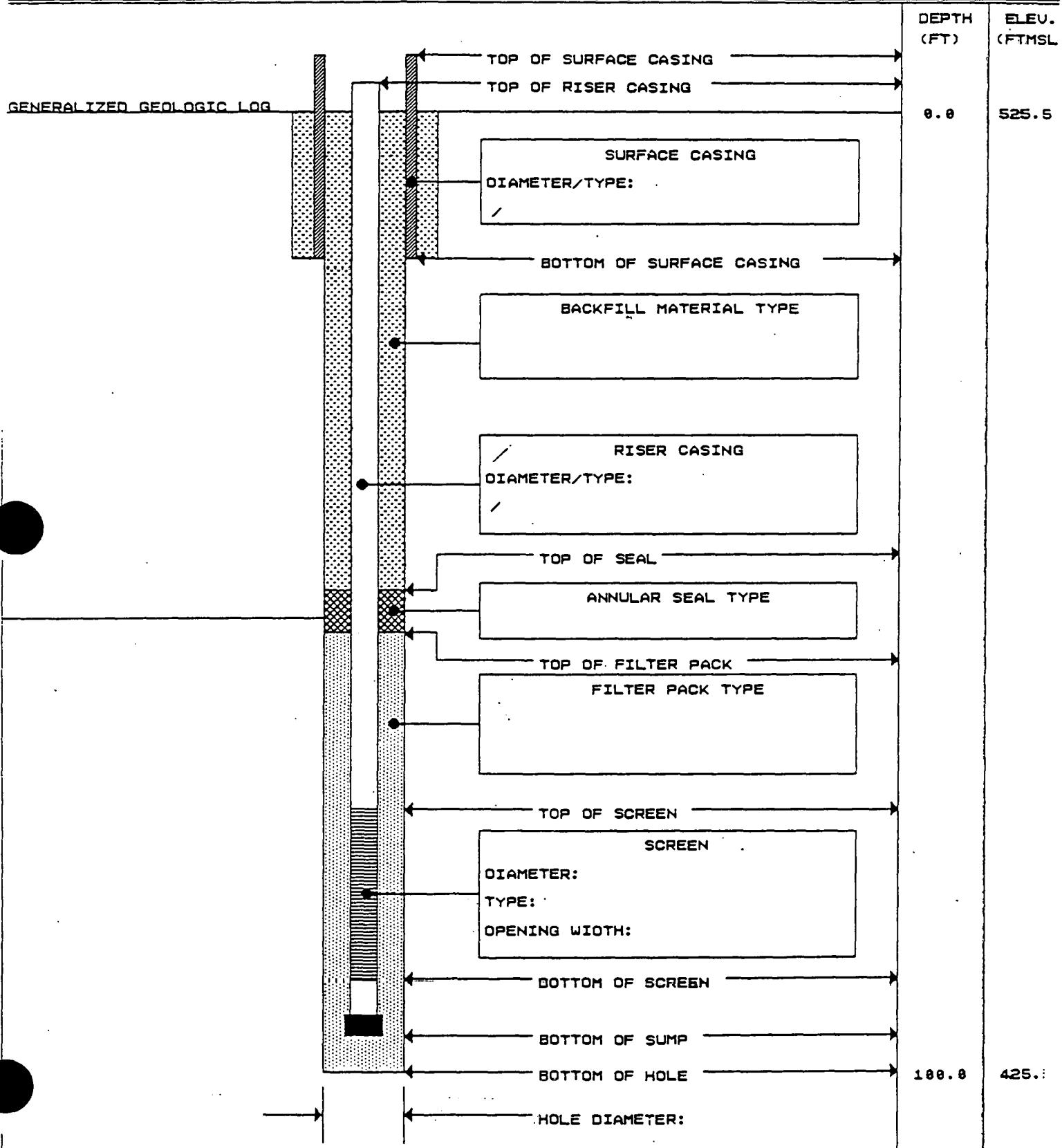
BUN

COMPLETE

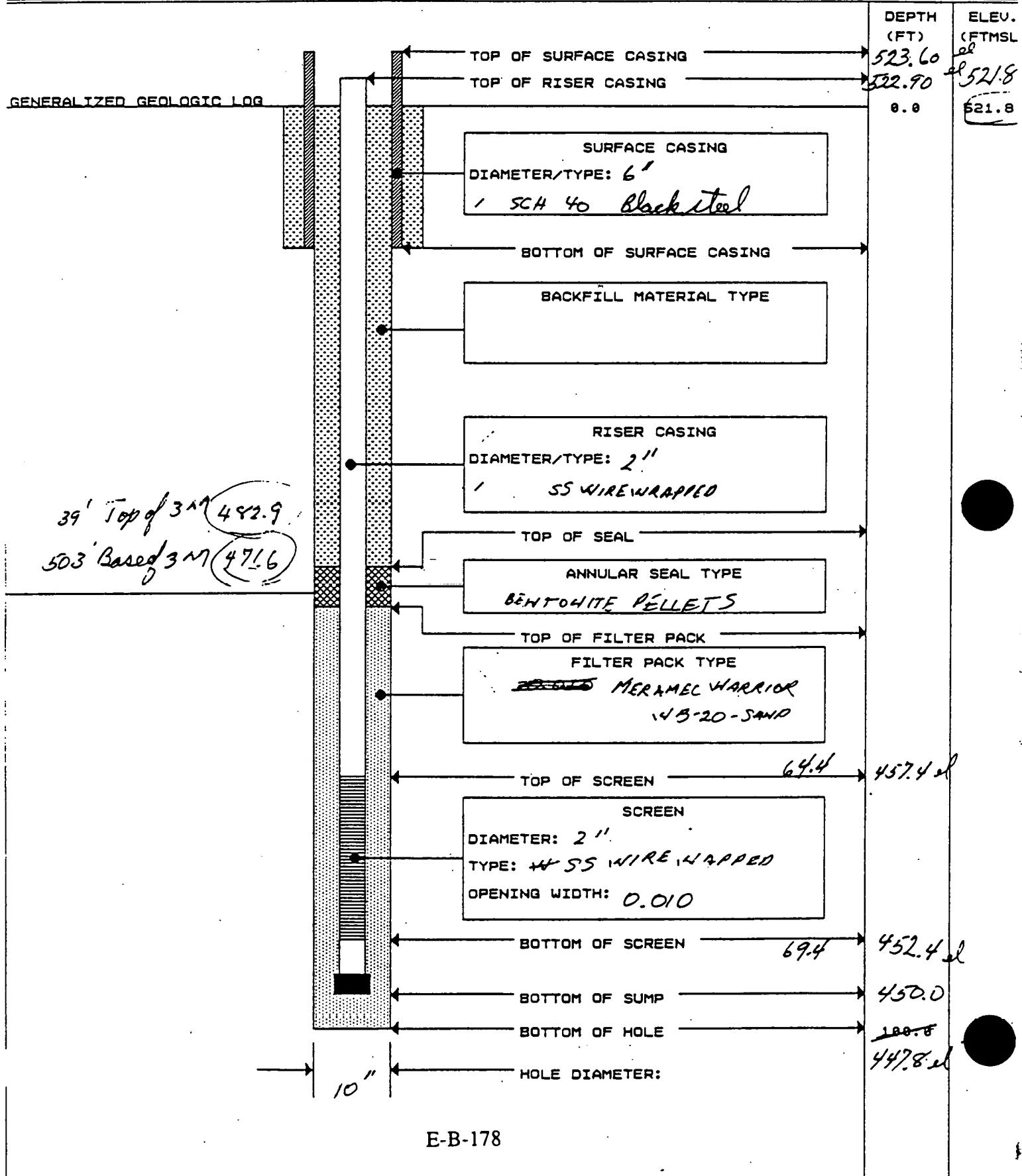
PREPARED BY

I. Doe Know

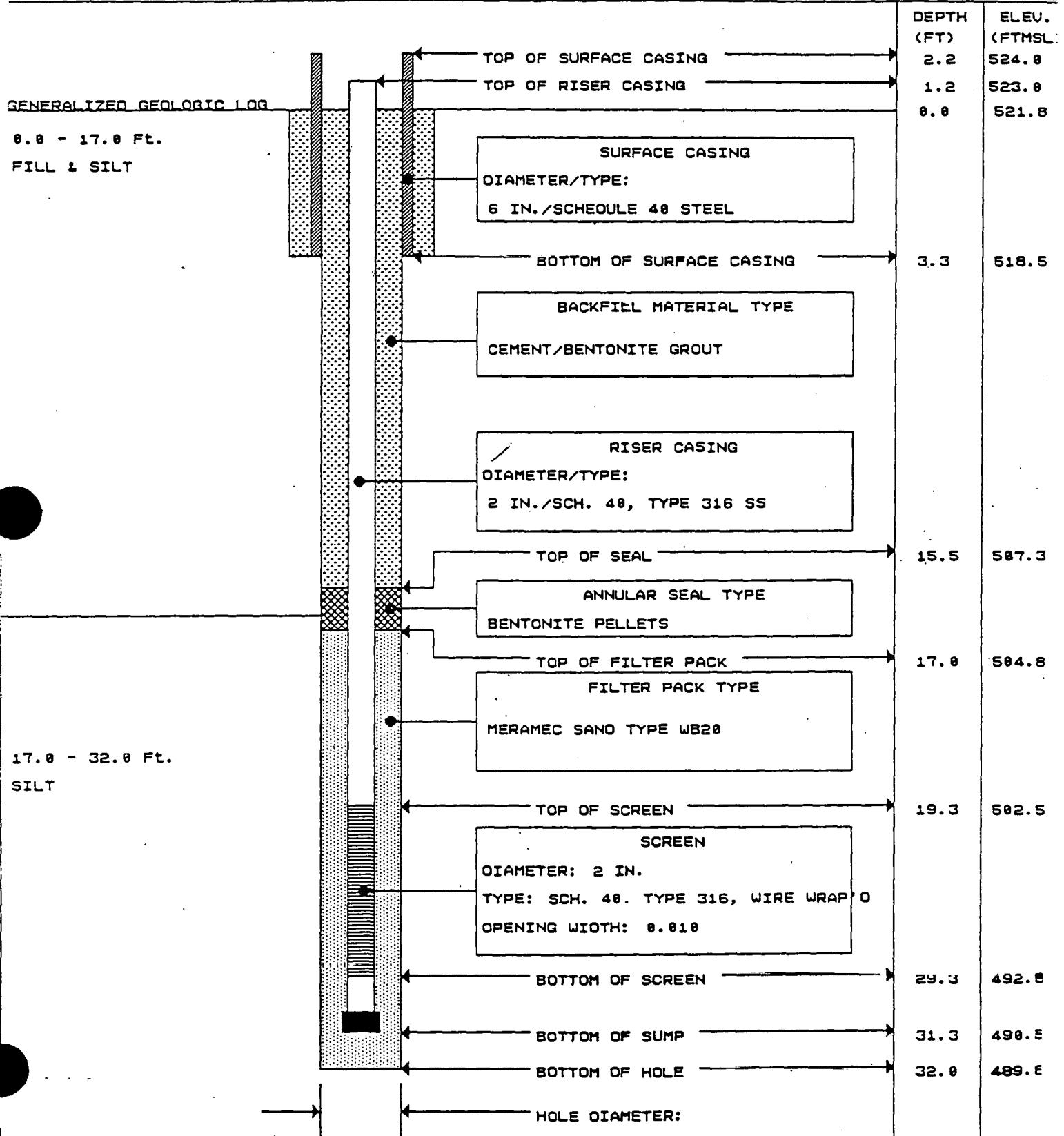
REFERENCE POINT FOR MEASUREMENTS



MONITORING WELL		PROJECT St. Louis Airport Site	WELL NO. M13-8
JOB NO. 14501-153	SITE 13-8	COORDINATES N 1339 E 8635 863.5	
RUN	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS



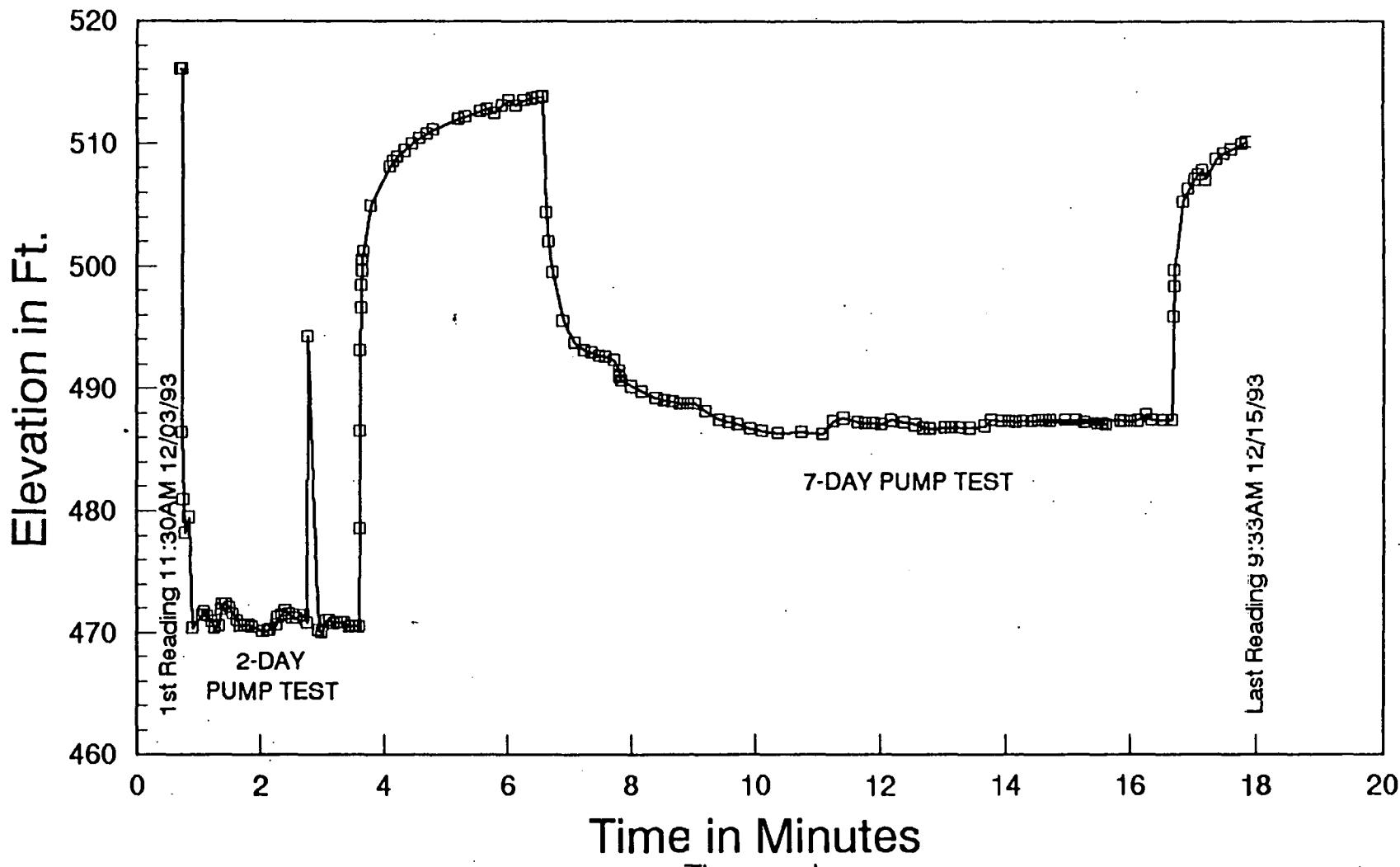
PROJECT			WELL NO.
MONITORING WELL St. Louis Airport Site			M13-85
DRILL NO.	SITE	COORDINATES	
11-153		N 41° 33' 0" E 854' 0"	M13-85
DATE	COMPLETE	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
7/30/86	7/31/86	D. HARNISH	TOP OF THE RISER PIPE



ATTACHMENT E-C: Water Level Data from Manual Readings with Plots

SLAPS/BALL FIELD HYDROGRAPH

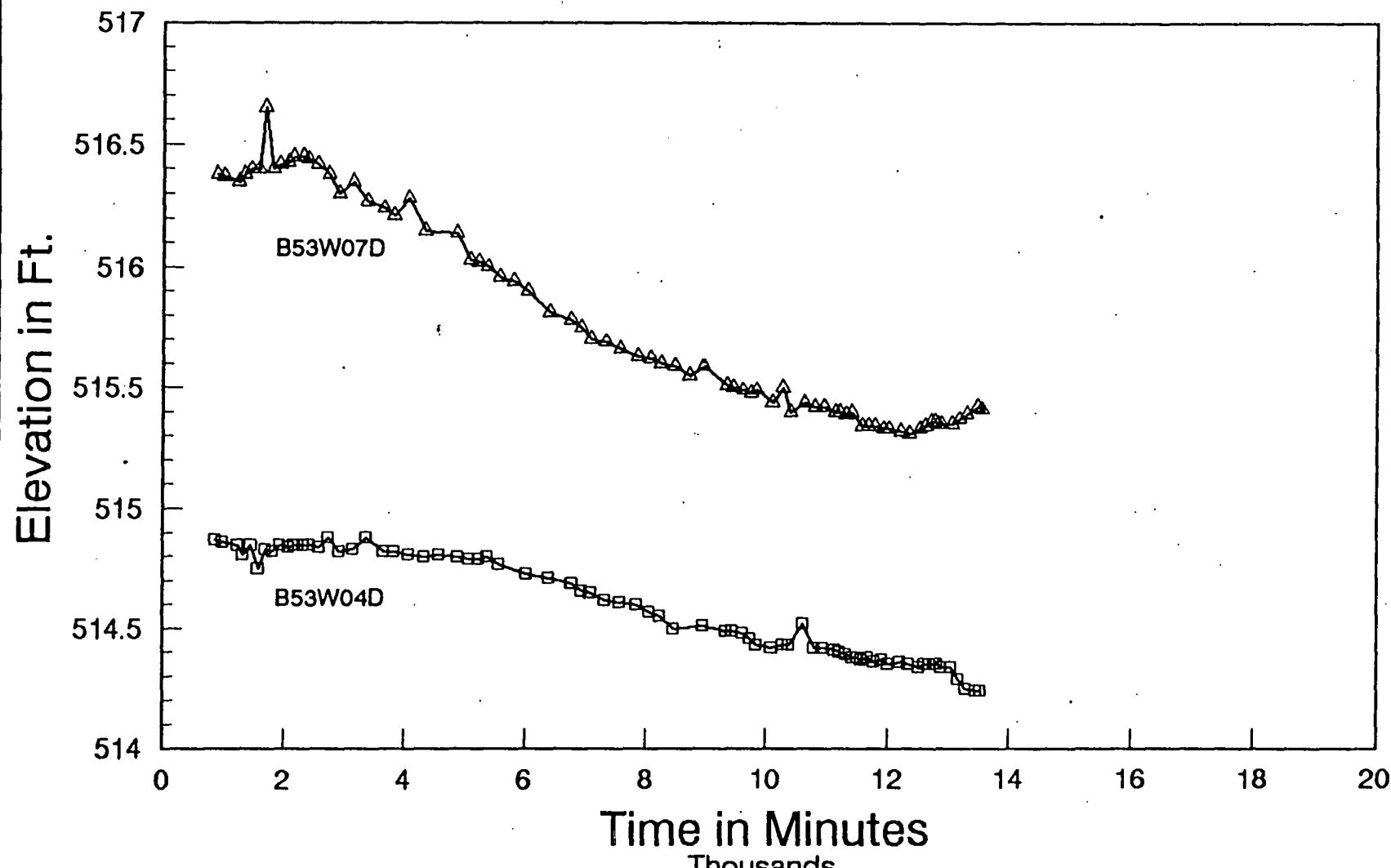
B53W06D WATER LEVELS



WATER LEVELS TAKEN MANUALLY USING A DOWNHOLE ELECTRIC WATER LEVEL PROBE

SLAPS/BALL FIELD HYDROGRAPH

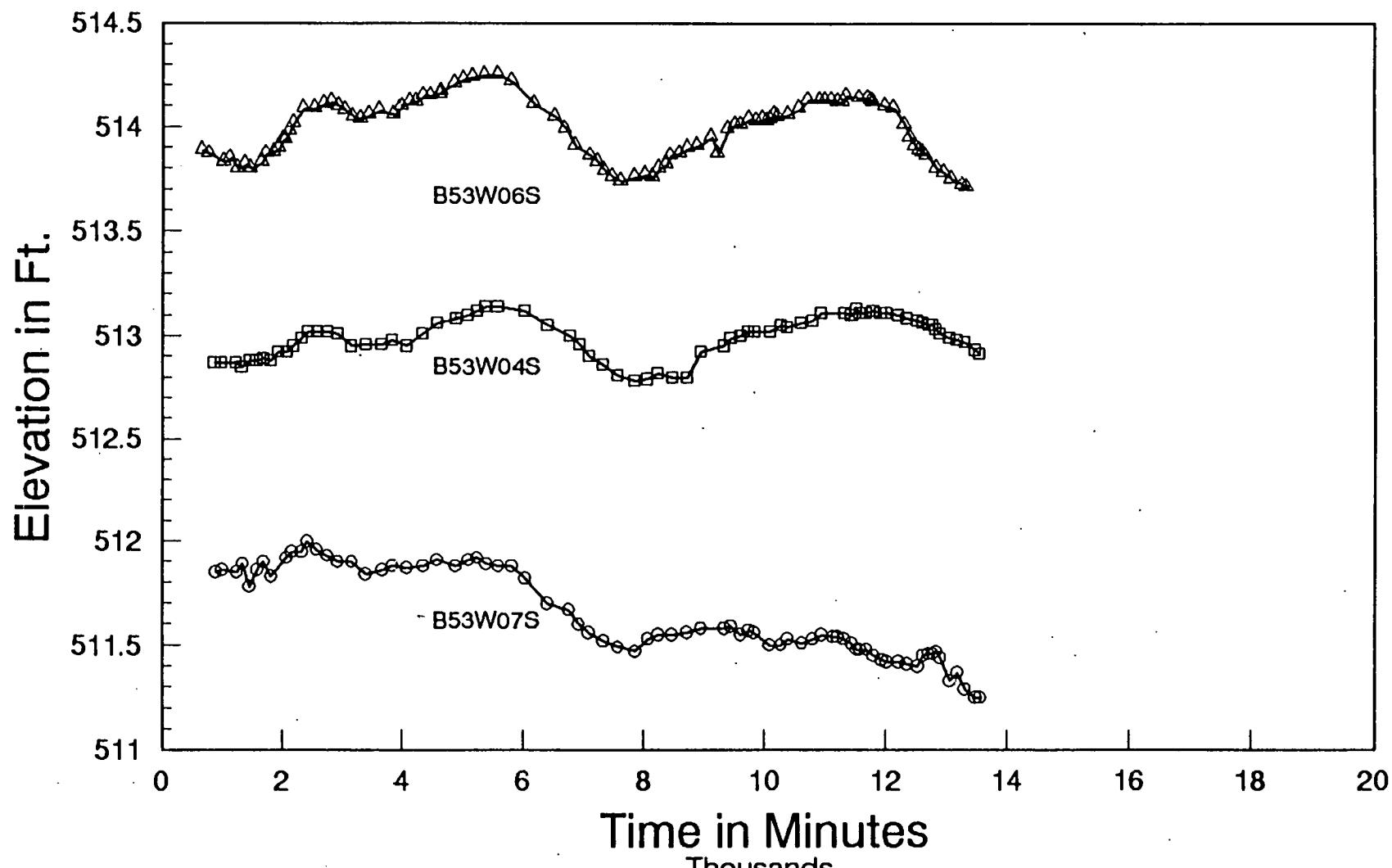
B53W04D and B53W07D WATER LEVELS



WATER LEVELS TAKEN MANUALLY USING A DOWNHOLE ELECTRIC WATER LEVEL PROBE

SLAPS/BALL FIELD HYDROGRAPH

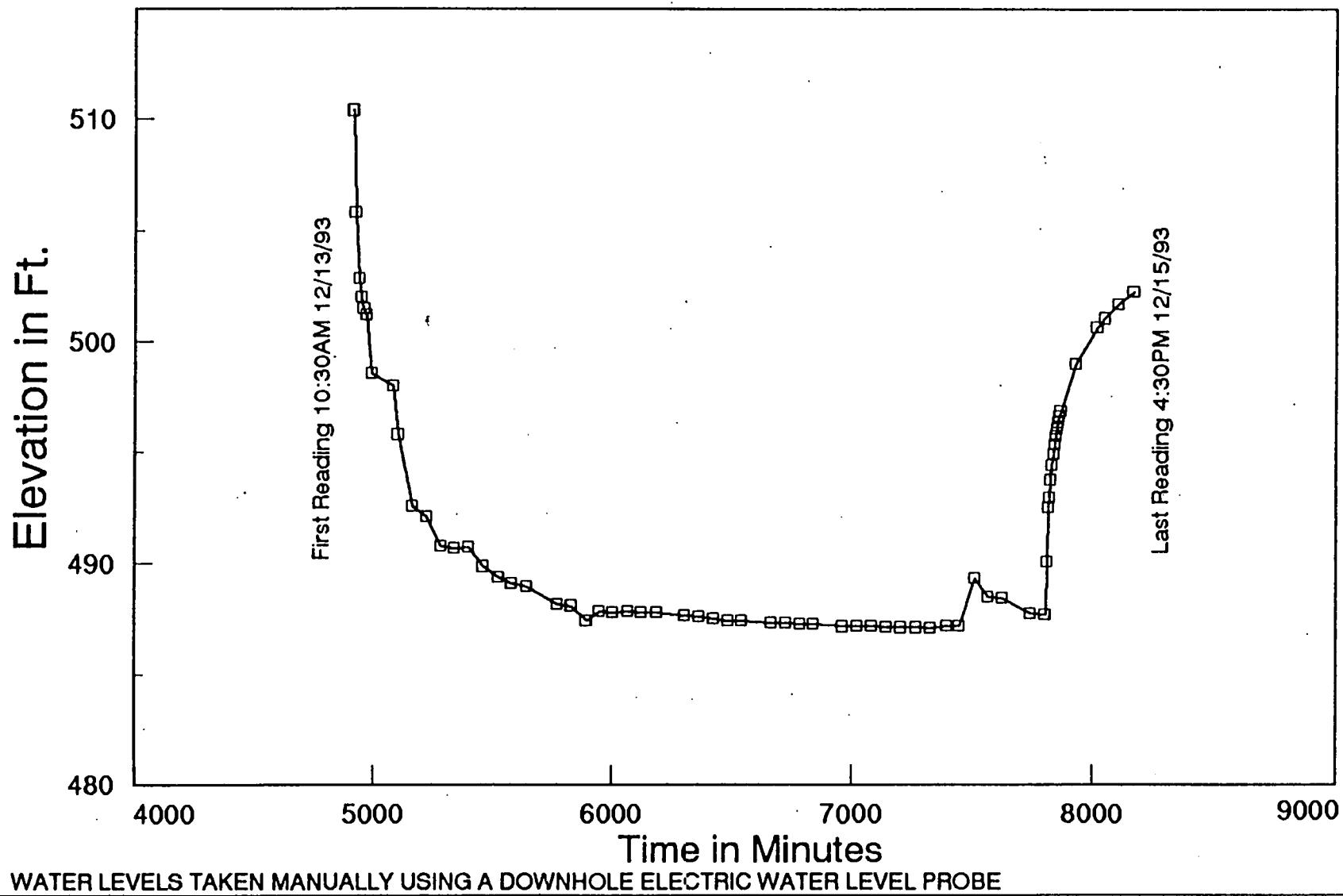
B53W04S, B53W06S and B53W07S WATER LEVELS



WATER LEVELS TAKEN MANUALLY USING A DOWNHOLE ELECTRIC WATER LEVEL PROBE

SLAPS HYDROGRAPH

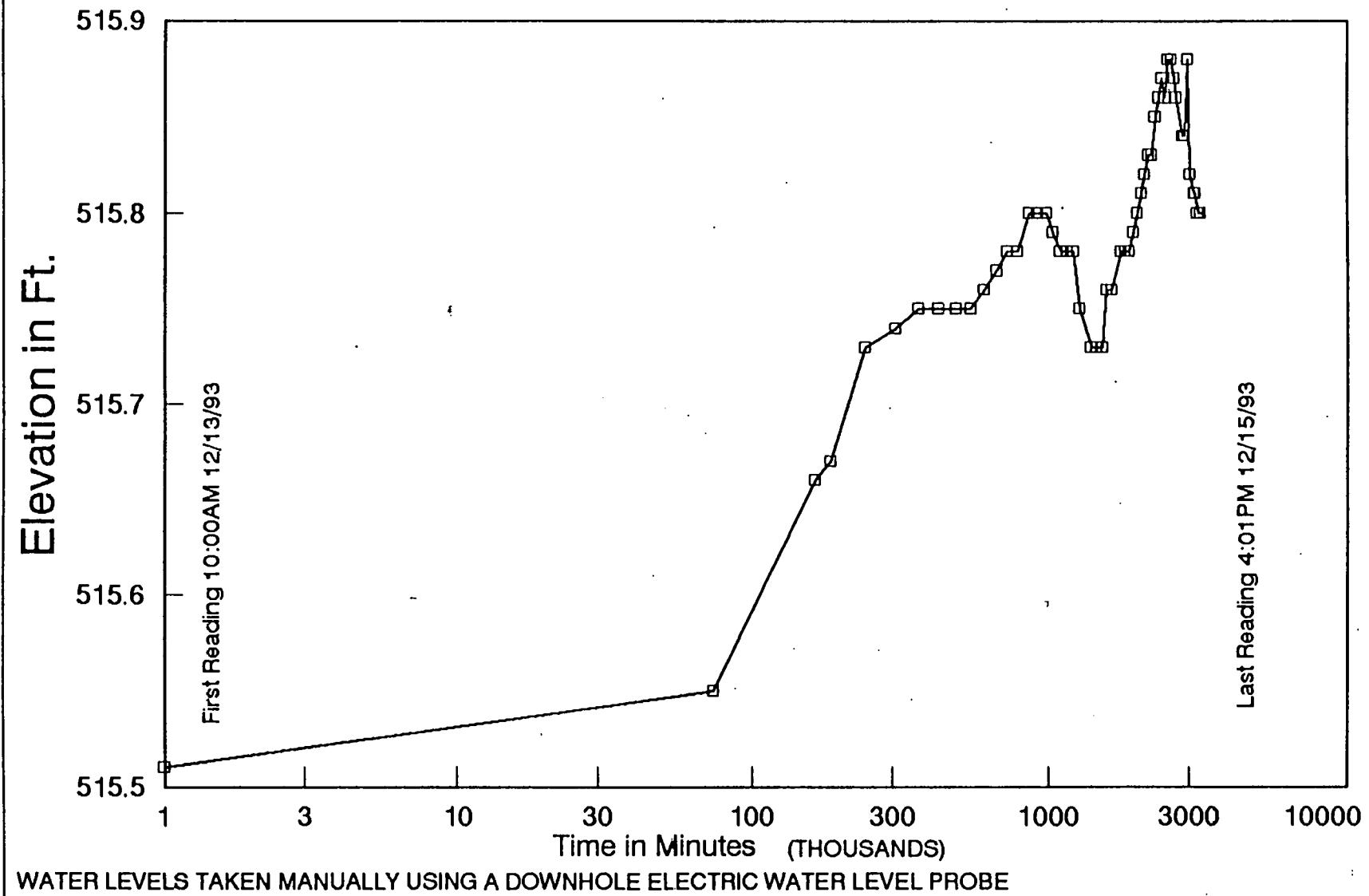
M11-13.5-8.5D WATER LEVELS



WATER LEVELS TAKEN MANUALLY USING A DOWNHOLE ELECTRIC WATER LEVEL PROBE

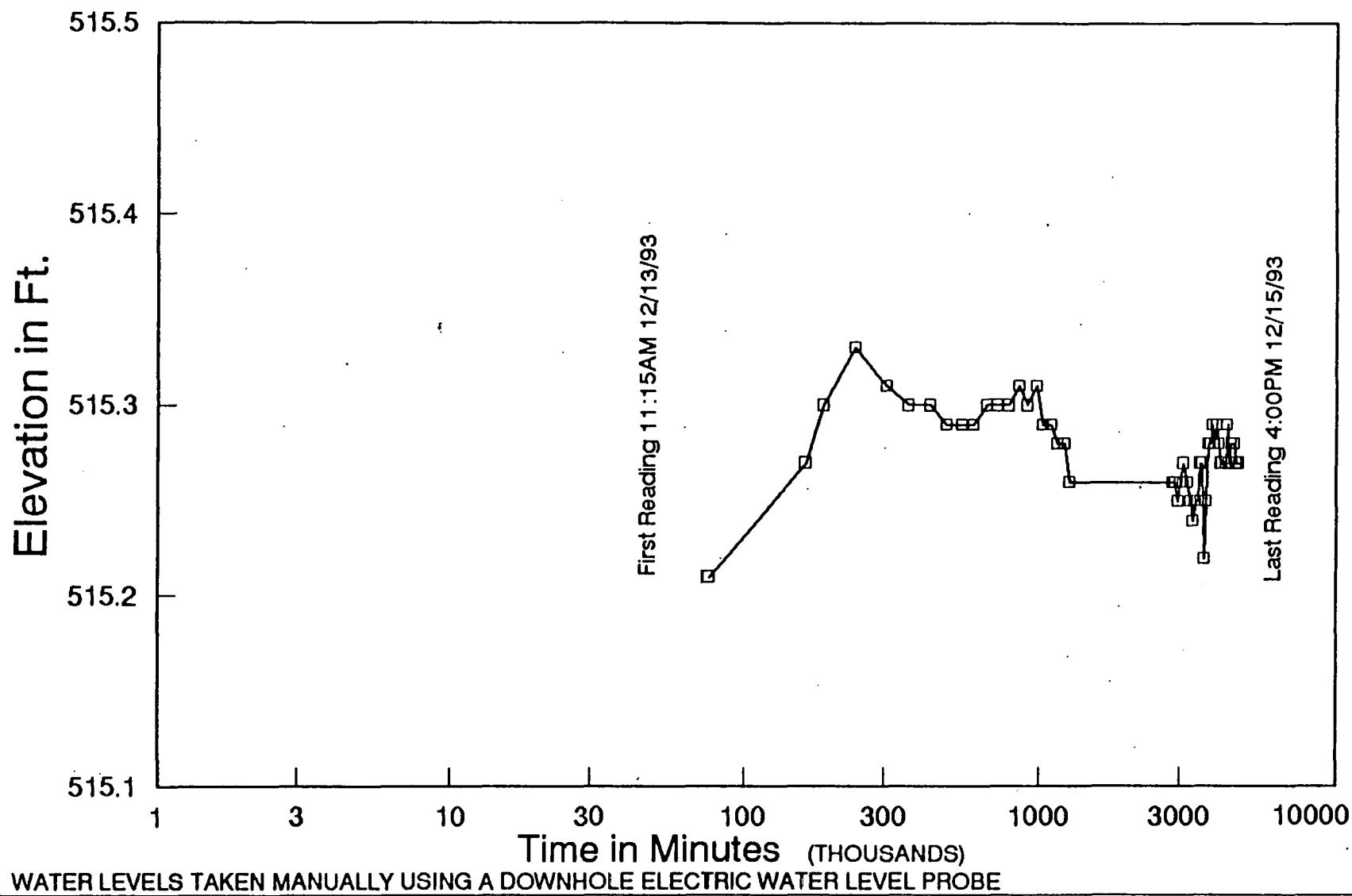
SLAPS HYDROGRAPH

M13.5-8.5S WATER LEVELS



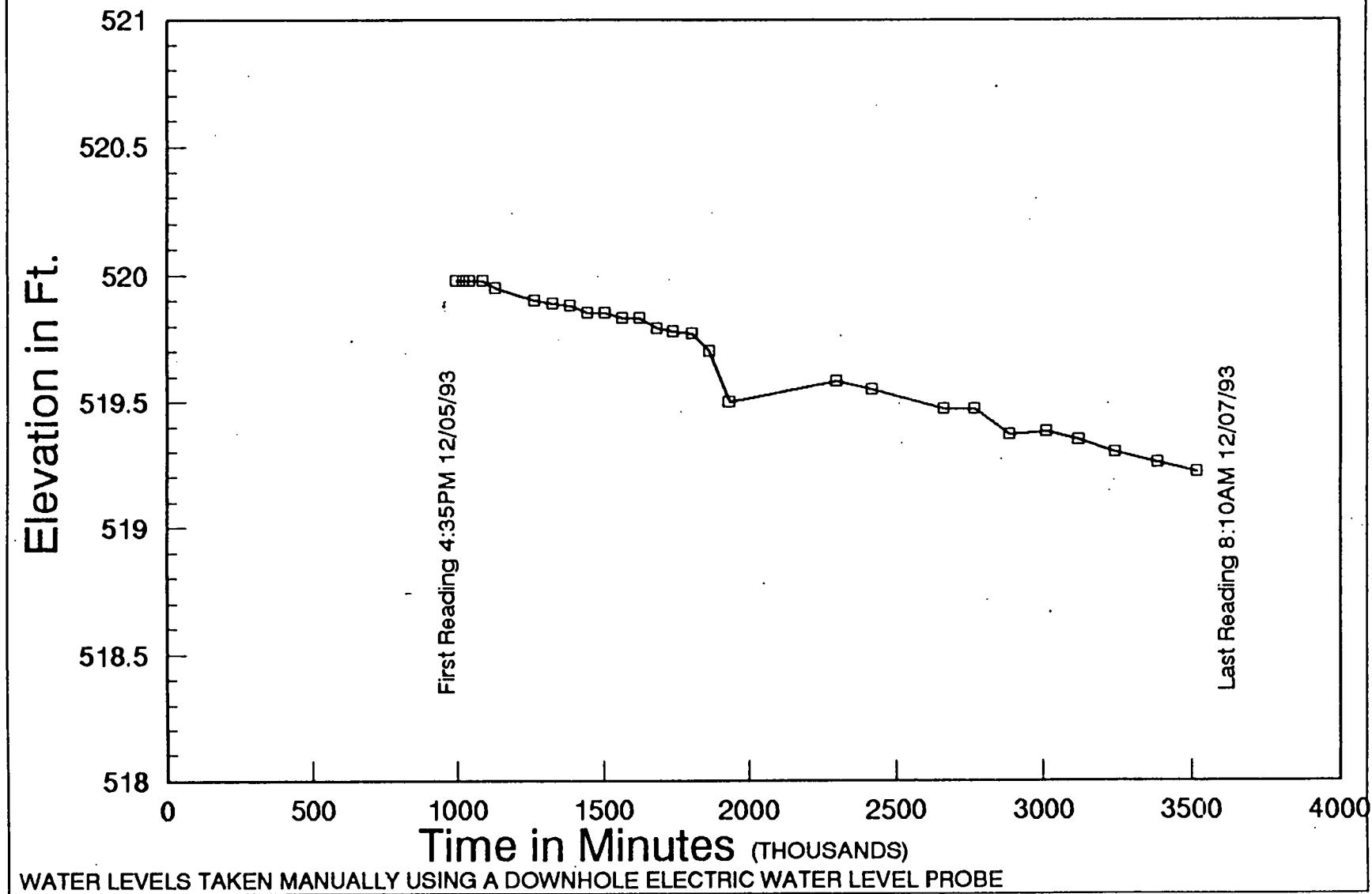
SLAPS HYDROGRAPH

WELL C WATER LEVELS



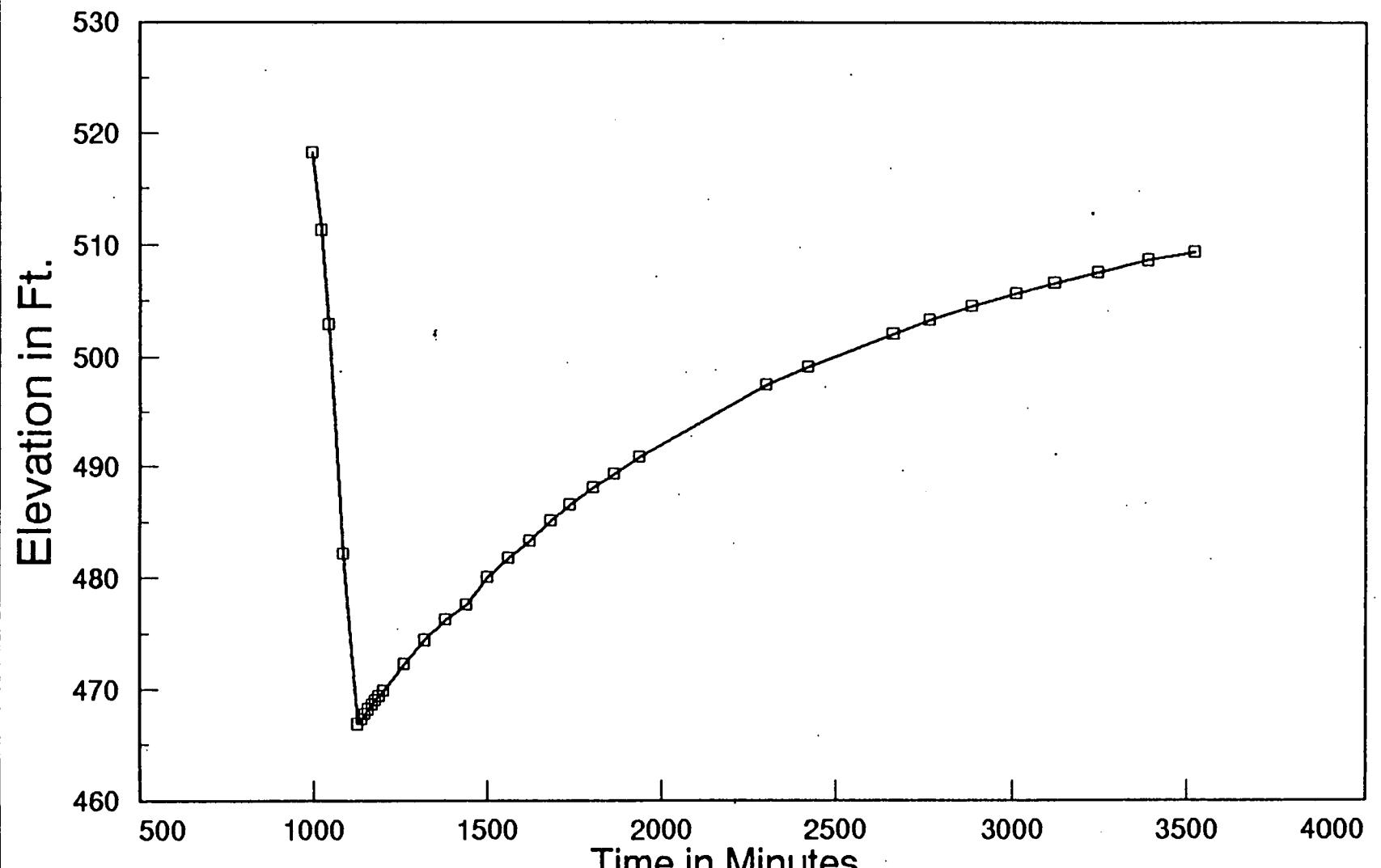
SLAPS HYDROGRAPH

B53W11S WATER LEVELS



SLAPS/BALLFIELD HYDROGRAPH

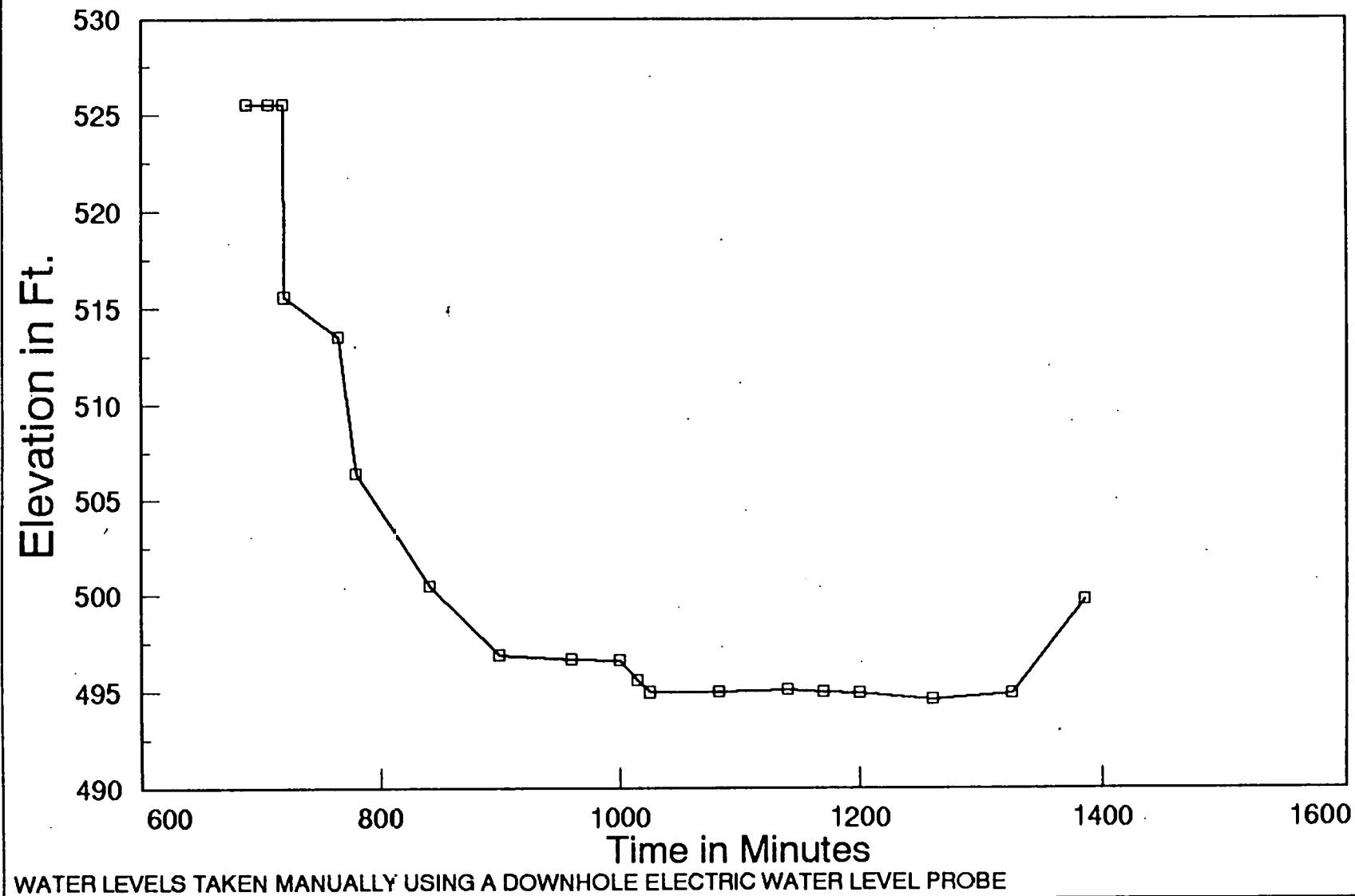
B53W09D WATER LEVELS



WATER LEVELS TAKEN MANUALLY USING A DOWNHOLE ELECTRIC WATER LEVEL PROBE

SLAPS HYDROGRAPH

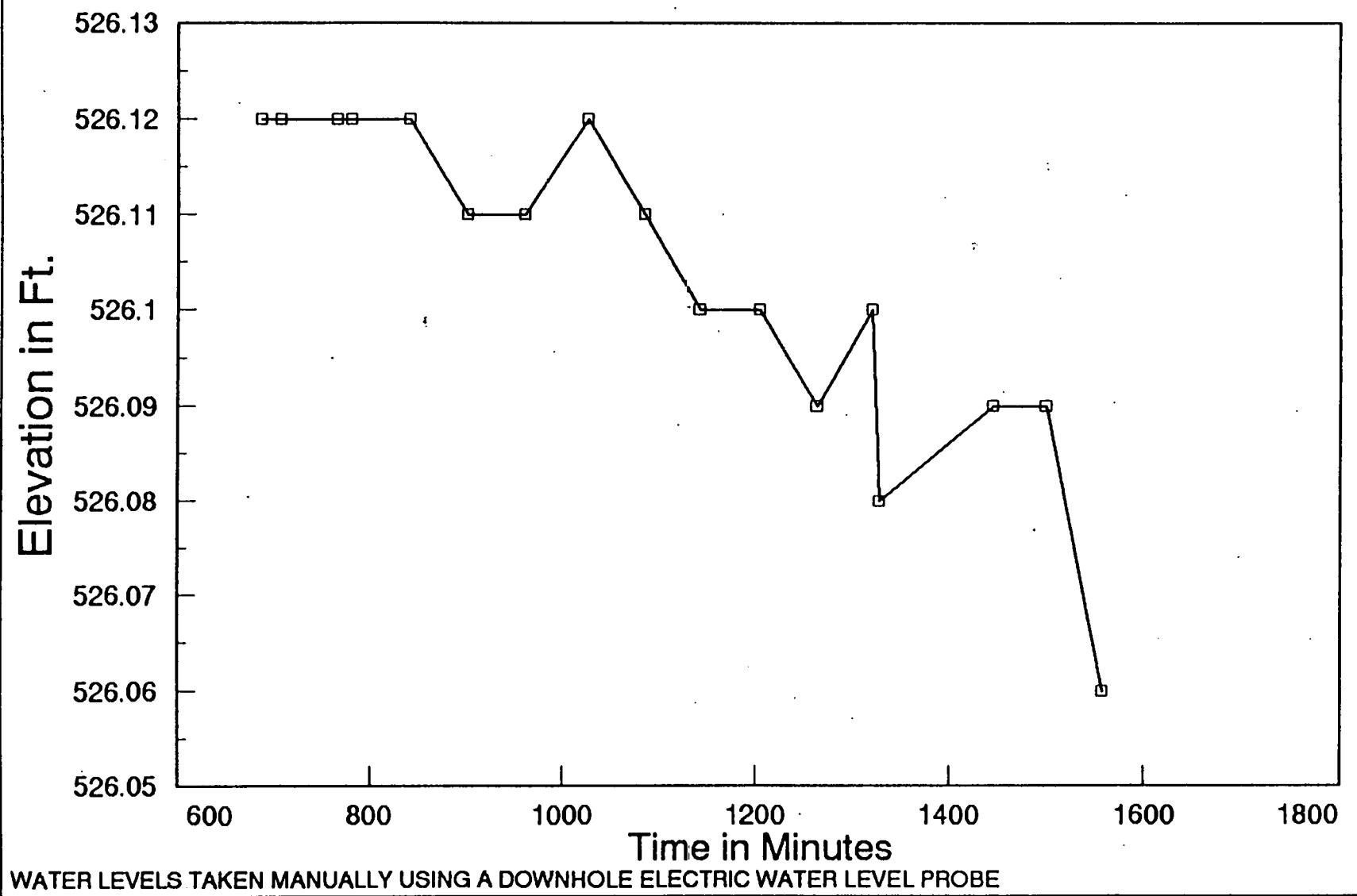
M10-25D WATER LEVELS



E-C-9

SLAPS HYDROGRAPH

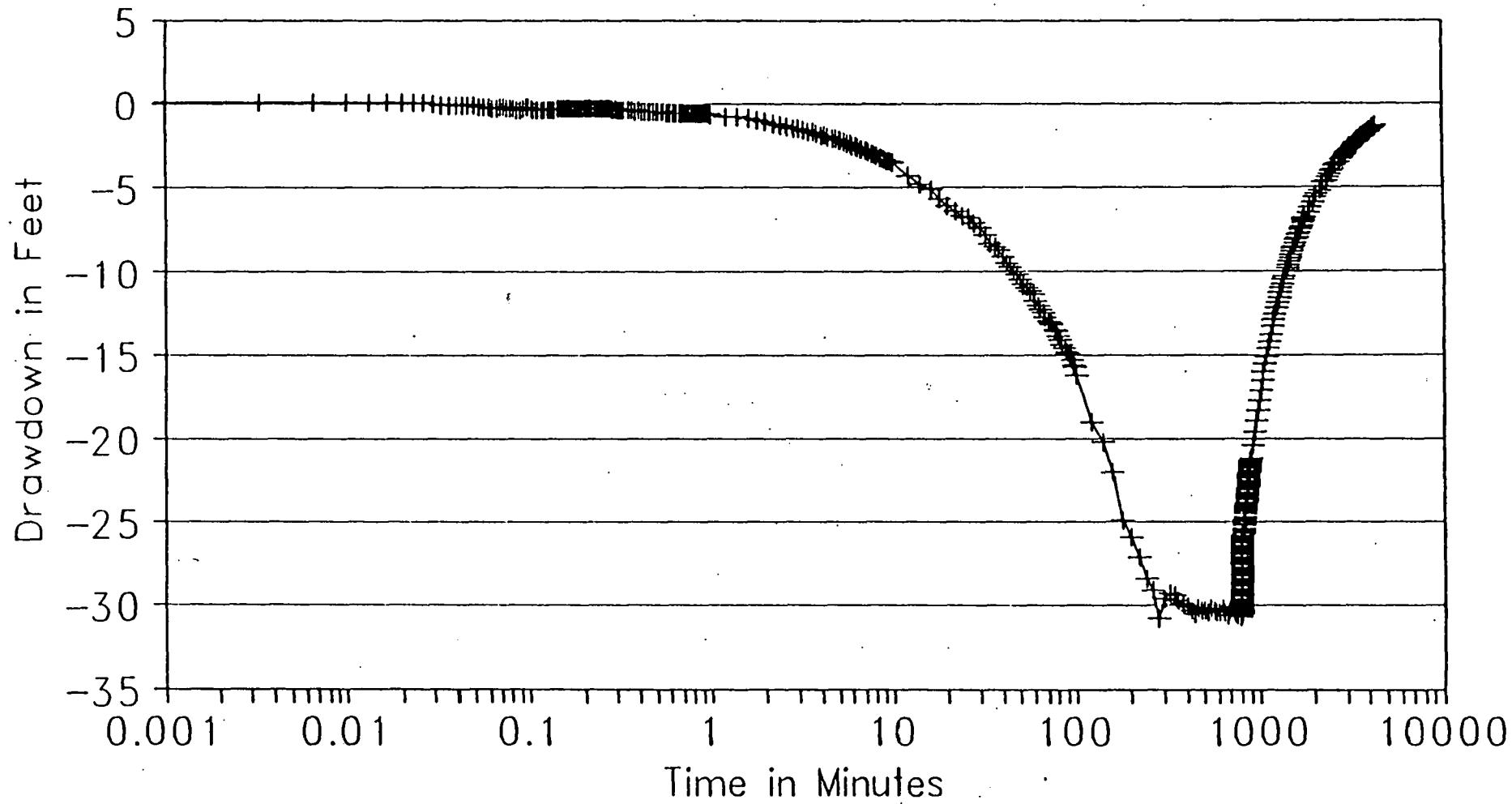
M10-25S WATER LEVELS



E-C-10

SLAPS HYDROGRAPH

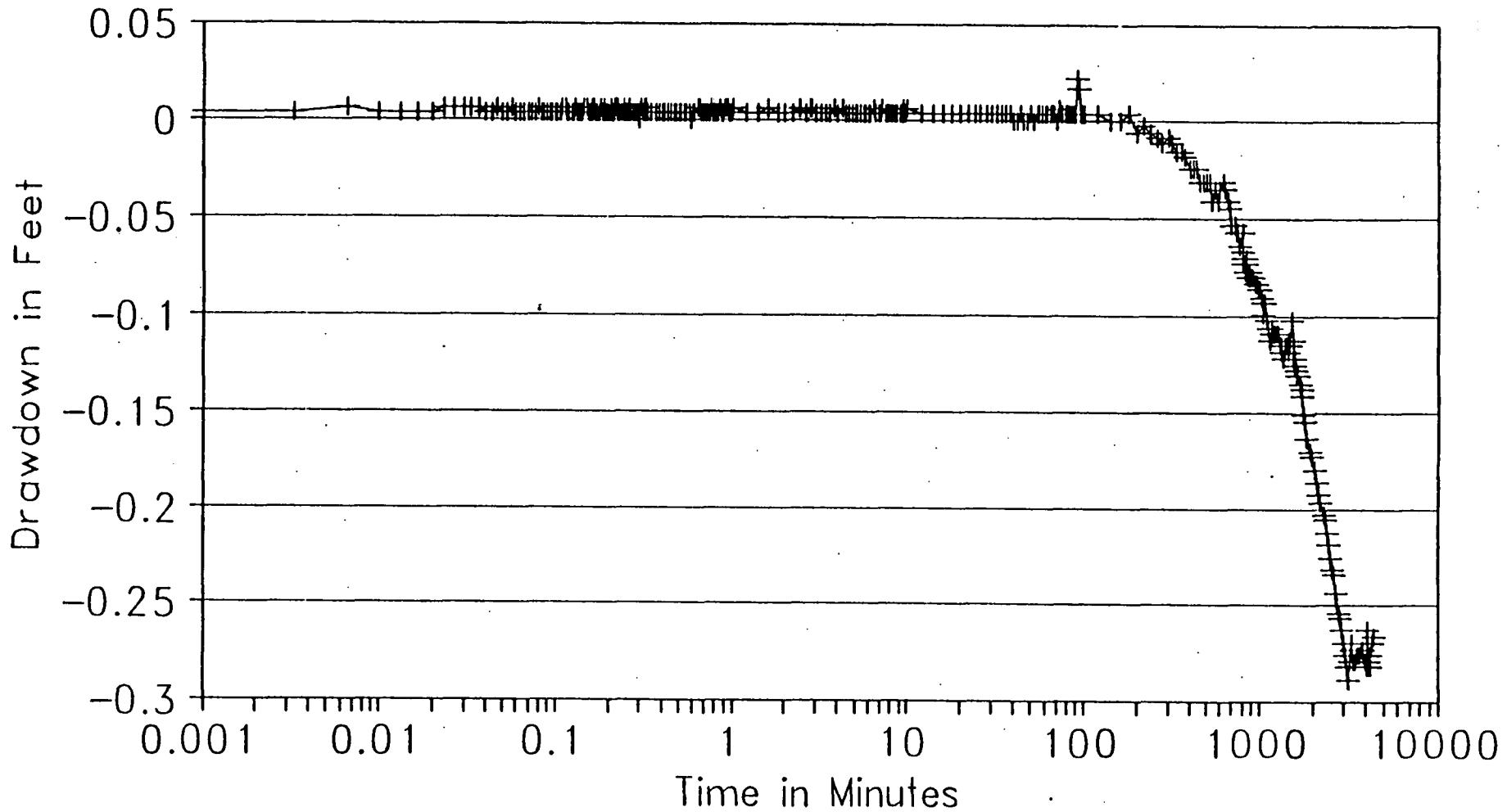
M10-25D



—+— M10-25D

SLAPS HYDROGRAPH

M10-25S



ATTACHMENT E-D: Meteorological Data

SLAPS DAILY PRECIPITATION AND BAROMETRIC PRESSURE

DAILY PRECIPITATION		11/29/93	11/30/93	12/01/93	12/02/93	12/03/93	12/04/93	12/05/93	12/06/93
HOUR		BAROMETRIC PRESSURE							
12:55AM		3000	3041	3040	3013	3021	2984	2994	2987
1:55AM		3003	3042	3039	3017	3020	2982	2994	2989
2:55AM		3005	3043	3039	3012	3020	2980	2993	2992
3:55AM		3007	3044	3038	3013	3020	2979	2993	2995
4:55AM		3009	3044	3037	3011	3019	2979	2996	2997
5:55AM		3012	3046	3036	3011	3019	2979	2999	3001
6:55AM		3015	3048	3036	3012	3019	2977	2994	3004
7:55AM		3017	3049	3036	3013	3019	2977	2996	3006
8:55AM		3020	3050	3035	3015	3019	2979	2994	3010
9:55AM		3023	3051	3034	3017	3018	2979	2997	3012
10:55AM		3025	3050	3033	3018	3015	2978	2993	3013
11:55AM		3025	3048	3030	3017	3011	2976	2990	3015
12:55PM		3025	3045	3027	3016	3008	2976	2984	3014
1:55PM		3026	3044	3024	3016	3003	2976	2981	3015
2:55PM		3027	3043	3022	3017	3001	2979	2976	3017
3:55PM		3029	3043	3020	3018	3000	2981	2979	3019
4:55PM		3031	3044	3019	3019	2999	2984	2979	3021
5:55PM		3033	3044	3019	3020	2998	2987	2980	3024
6:55PM		3035	3044	3019	3021	2997	2988	2981	3025
7:55PM		3036	3045	3016	3021	2996	2989	2983	3025
8:55PM		3038	3044	3017	3022	2992	2990	2983	3023
9:55PM		3039	3044	3015	3022	2991	2993	2984	3023
10:55PM		3039	3043	3014	3022	2988	2995	2986	3025
11:55PM		3040	3041	3012	3023	2986	2994	2987	3026

SLAPS DAILY PRECIPITATION AND BAROMETRIC PRESSURE

DAILY PRECIPITATION		12/07/93	12/08/93	12/09/93	12/10/93	12/11/93	12/12/93	12/13/93	12/14/93
HOUR		0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.35
		BAROMETRIC PRESSURE							
12:55AM		3024	3012	2999	2974	3025	3017	2986	2957
1:55AM		3024	3012	2999	2975	3028	3017	2988	2957
2:55AM		3024	3014	2999	2977	3030	3016	2988	2956
3:55AM		3024	3016	2996	2979	3032	3013	2984	2956
4:55AM		3022	3018	2994	2980	3034	3011	2979	2957
5:55AM		3019	3021	2996	2983	3036	3009	2981	2958
6:55AM		3021	3023	2995	2985	3037	3007	2981	2959
7:55AM		3020	3023	2994	2988	3039	3008	2979	2959
8:55AM		3019	3023	2994	2990	3040	3007	2982	2961
9:55AM		3018	3022	2994	2993	3041	3007	2982	2963
10:55AM		3017	3022	2992	2994	3041	3005	2979	2963
11:55AM		3012	3020	2988	2993	3037	2999	2976	2962
12:55PM		3007	3017	2985	2993	3033	2996	2969	2961
1:55PM		3003	3014	2983	2994	3033	2992	2958	2962
2:55PM		3001	3014	2979	2997	3031	2992	2962	2964
3:55PM		3002	3012	2978	3001	3029	2991	2963	2966
4:55PM		3001	3012	2979	3005	3029	2991	2962	2968
5:55PM		3001	3011	2978	3007	3030	2989	2962	2970
6:55PM		3002	3010	2979	3009	3029	2990	2963	2971
7:55PM		3005	3008	2977	3013	3028	2988	2962	2972
8:55PM		3007	3006	2976	3017	3025	2987	2961	2974
9:55PM		3008	3006	2976	3020	3022	2985	2960	2975
10:55PM		3010	3004	2975	3023	3021	2984	2959	2976
11:55PM		3011	3002	2975	3024	3019	2986	2958	2977

SLAPS DAILY PRECIPITATION AND BAROMETRIC PRESSURE

DAILY PRECIPITATION		12/15/93	12/16/93	12/17/93	12/18/93
HOUR		T BAROMETRIC PRESSURE	T BAROMETRIC PRESSURE	0.01 BAROMETRIC PRESSURE	0.00 BAROMETRIC PRESSURE
12:55AM		2977	3004	3016	3007
1:55AM		2979	3005	3015	3006
2:55AM		2980	3007	3016	3007
3:55AM		2980	3009	3014	3006
4:55AM		2982	3010	3015	3005
5:55AM		2984	3011	3015	3006
6:55AM		2987	3013	3016	3007
7:55AM		2989	3015	3016	3007
8:55AM		2991	3016	3016	3007
9:55AM		2993	3018	3017	3009
10:55AM		2994	3017	3017	3010
11:55AM		2992	3015	3014	3008
12:55PM		2992	3013	3012	3008
1:55PM		2992	3012	3010	3008
2:55PM		2993	3013	3010	3009
3:55PM		2994	3013	3009	3010
4:55PM		2997	3014	3009	3011
5:55PM		2999	3015	3009	3013
6:55PM		3000	3015	3008	3013
7:55PM		3001	3015	3007	3014
8:55PM		3001	3015	3007	3014
9:55PM		3003	3016	3005	3013
10:55PM		3004	3015	3007	3013
11:55PM		3003	3015	3006	3012

ATTACHMENT E-E: Water Quality Data

Water Quality Parameters

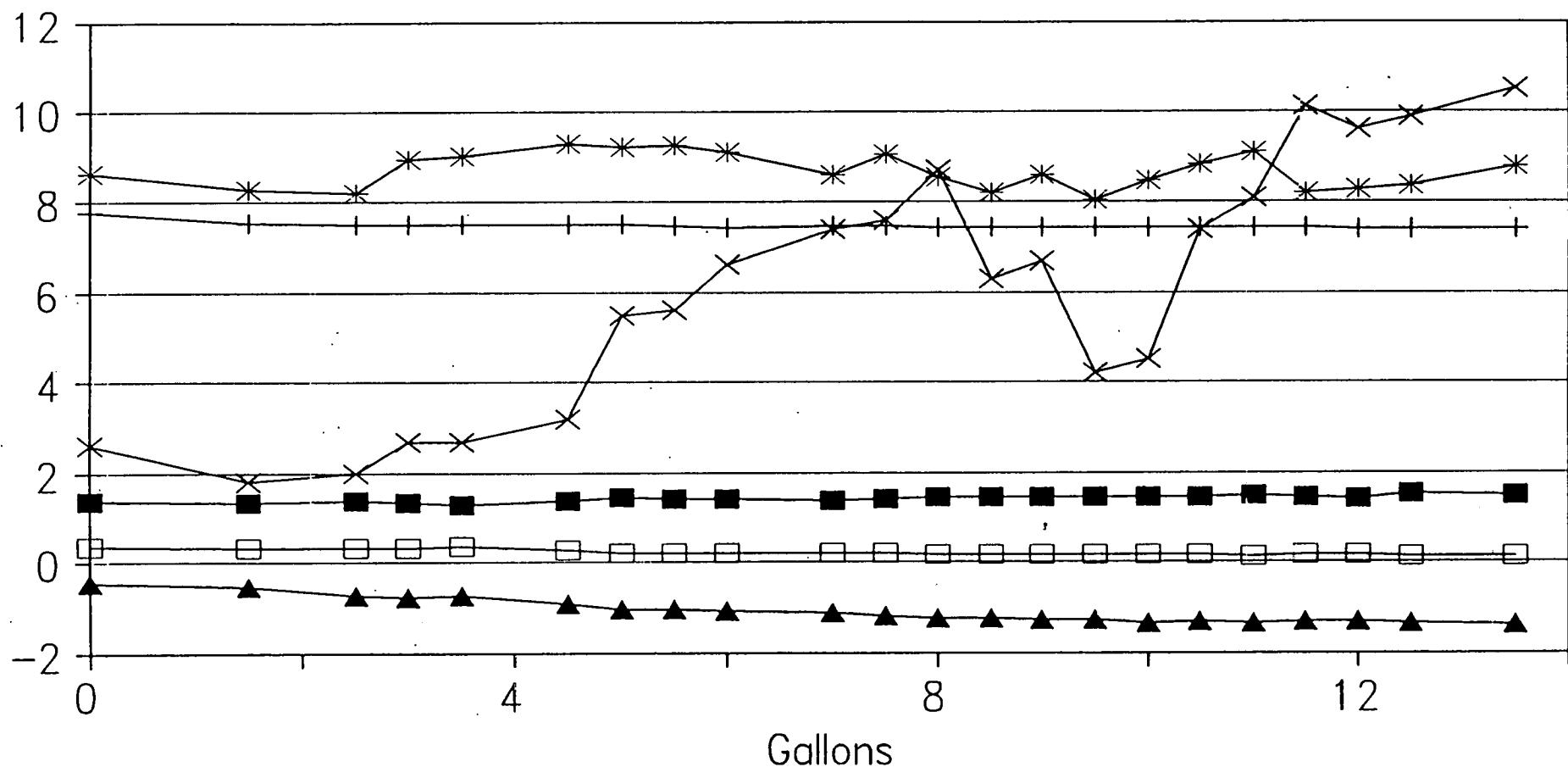
Parameters	B53W06D	B53W06S	B53W09D	B53W11S	M10-15D	M10-15S	M13.5-8.5D	M13.5-8.5S	M13.5-8.5S (Dup.)
Cations (mg/l)									
Calcium	77	270	100	89.5	80.1	250	89.6	309	297
Magnesium	40.3	106	34.9	43.1	29.9	124	36.4	91.4	87.5
Sodium	49.1	34.1	75.8	16	31.5	69.7	54.7	65.1	58.1
Potassium	2	2.66	4.7	1.46	4.9	0.905	1.96	4	3.42
Iron	5.19	1.61	0.543	0.107	10.1	0.235	8.01	16.6	16
Anions (mg/L)									
Bicarbonate (calculated)	270	276	288	204	348	228	300	408	402
Chloride	1.1	61.6	1.9	8.6	2.4	37.7	2.4	28.1	29.1
Fluoride	0.38	0.14	0.56	0.24	0.26	0.27	0.24	0.21	0.21
Sulfate	2.5	378	85	91.8	2.5	166	2.5	481	526
Nitrate	0.5	11.9	0.580	.072	1.8	174	0.1	20	38.2
Alkalinity (Calcium Carbonate)	450	460	480	340	580	380	500	680	670
Charge imbalance (%)	2.77	11.3	0.64	1.18	16.1	14.4	0.96	3.95	0.57
TDS	440	488	628	528	614	1750	488	1550	1630
Possible precipitate	Hematite Calcite Dolomite	Hematite Calcite	Hematite Calcite	Hematite Calcite	Hematite Calcite	Hematite	Hematite Calcite	Hematite Calcite	Hematite Calcite

Note: Calculation used field measurements for pH, eH, and temperature.

ATTACHMENT E-F: Data Tables for Historic Comparison

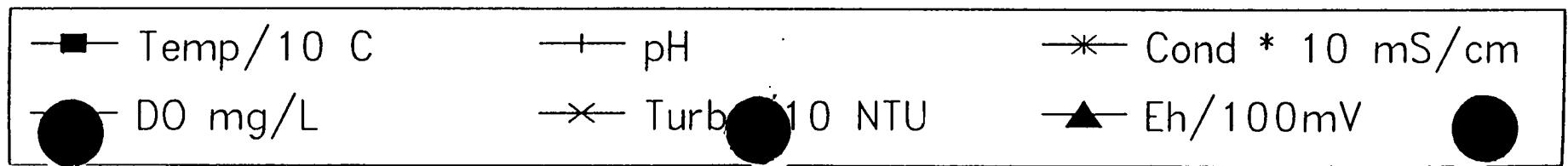
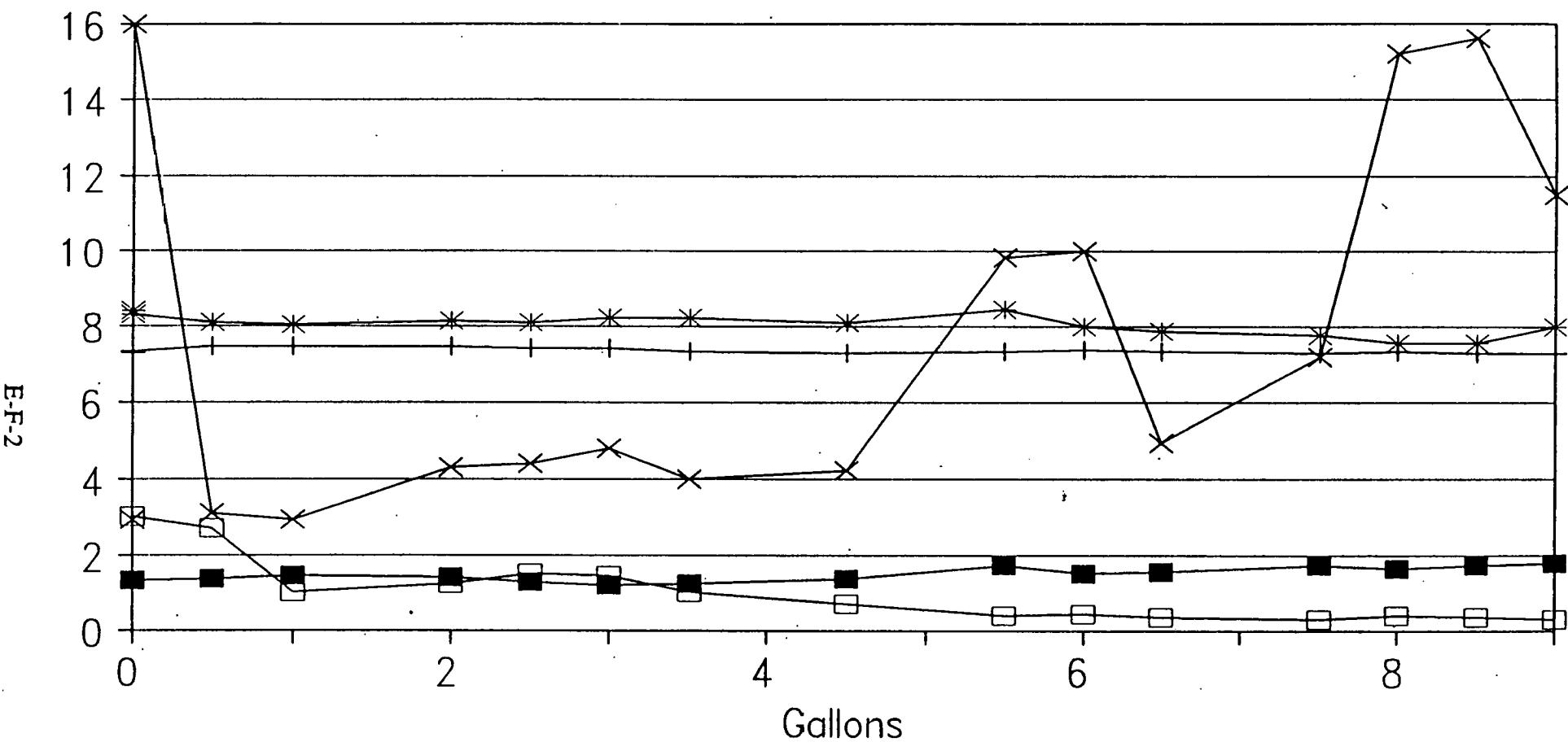
B53W04D

Purging Parameters



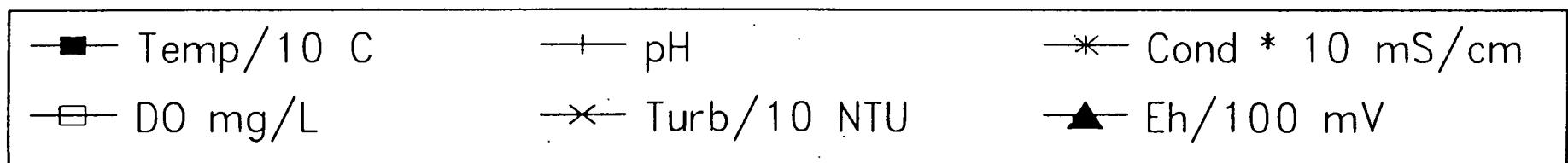
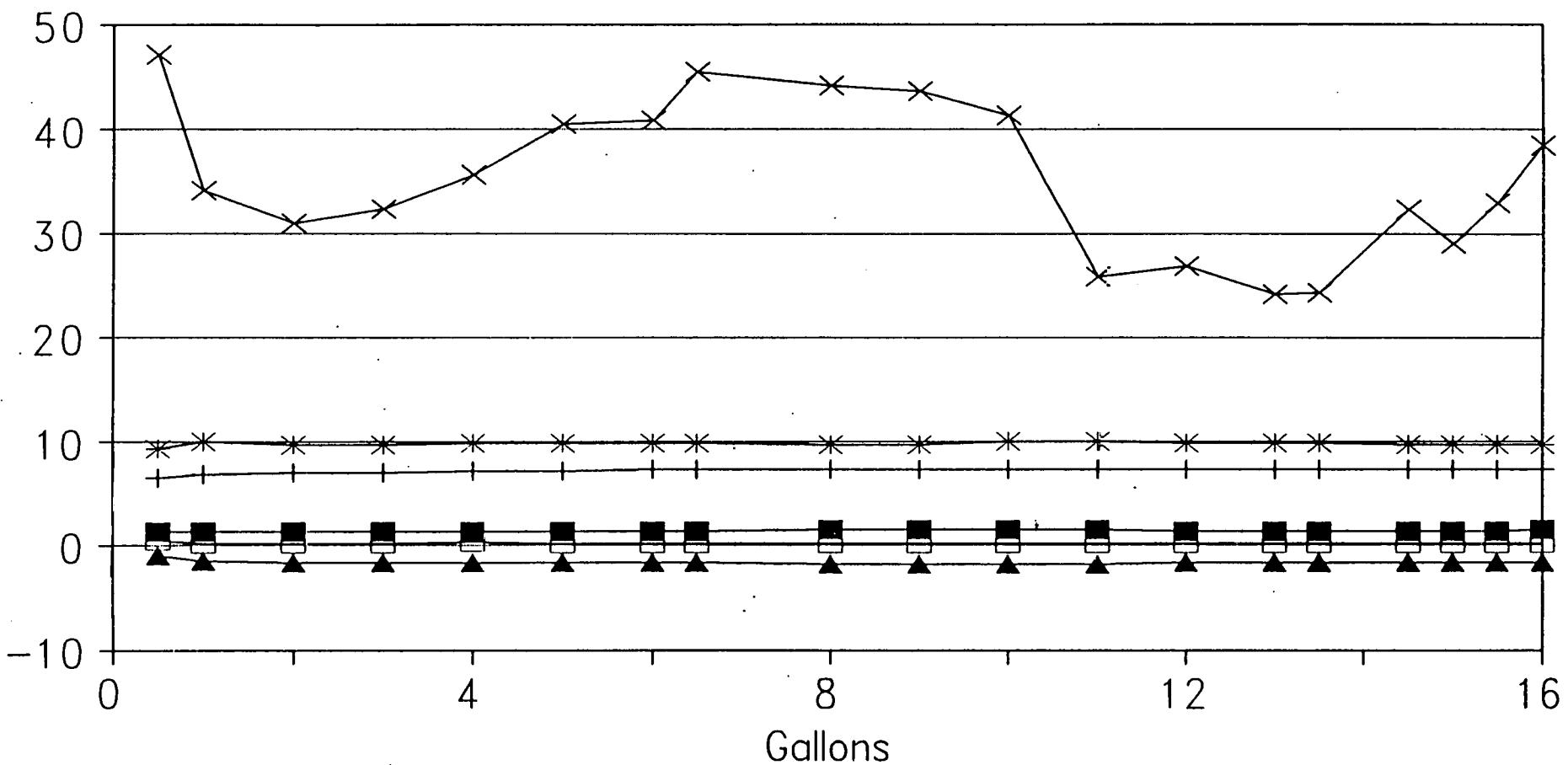
■ Temp / 10 °C	✚ pH	＊ Cond * 10 mS/cm
□ DO mg/L	✖ Turb / 10 NTU	▲ Eh / 100mV

B53W04S
Purging Parameters



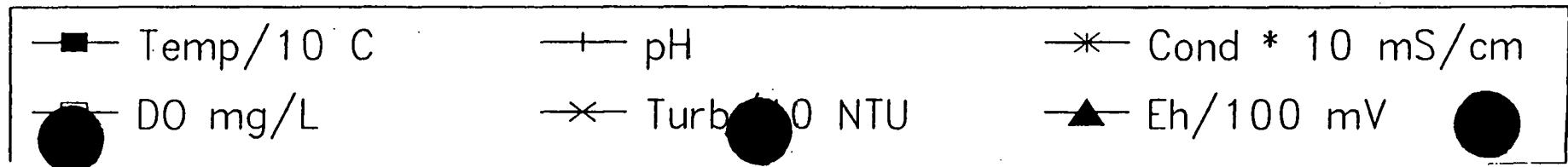
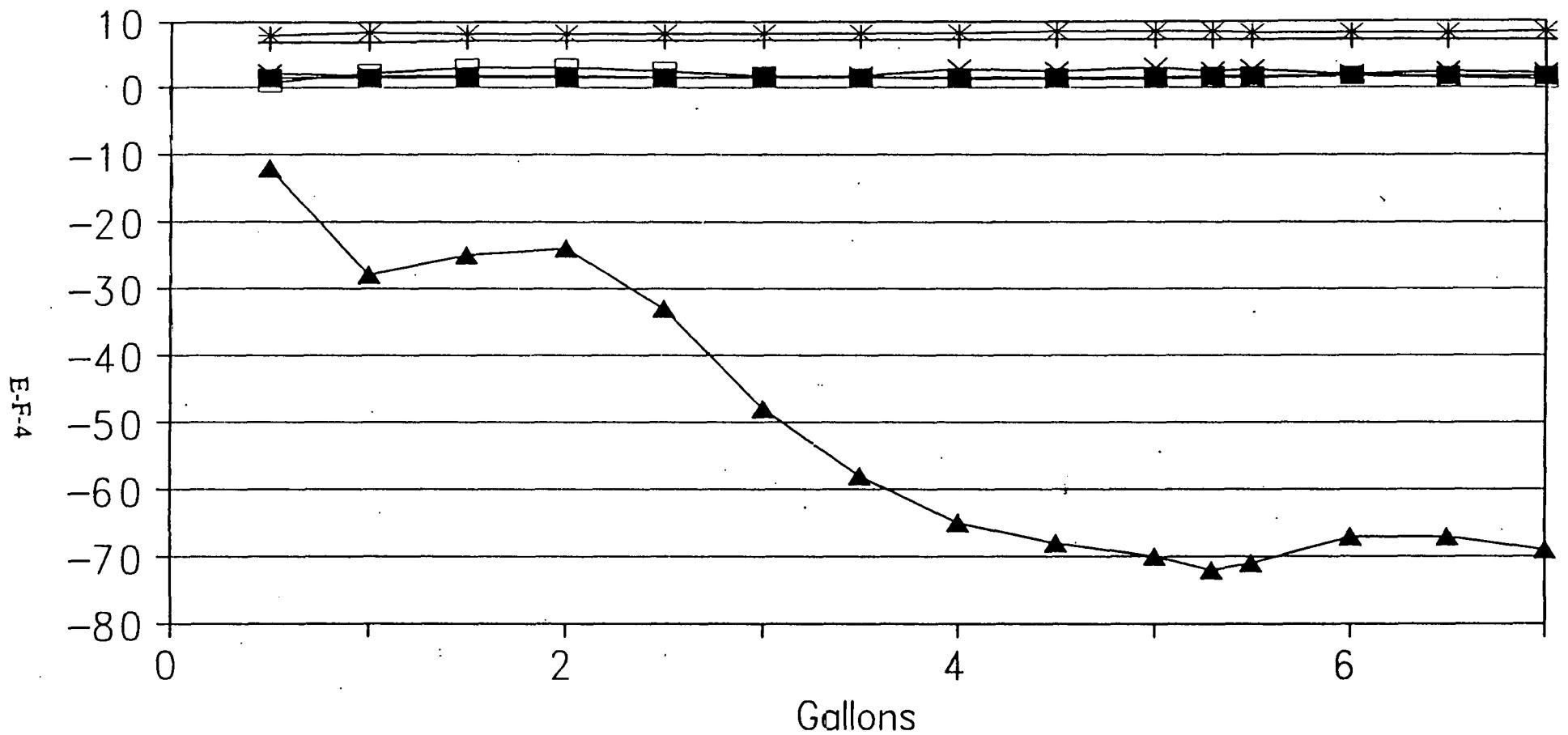
B53W05D
Purging Parameters

E-F-3



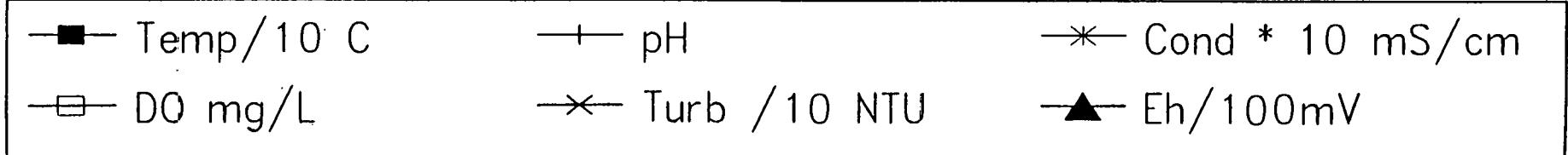
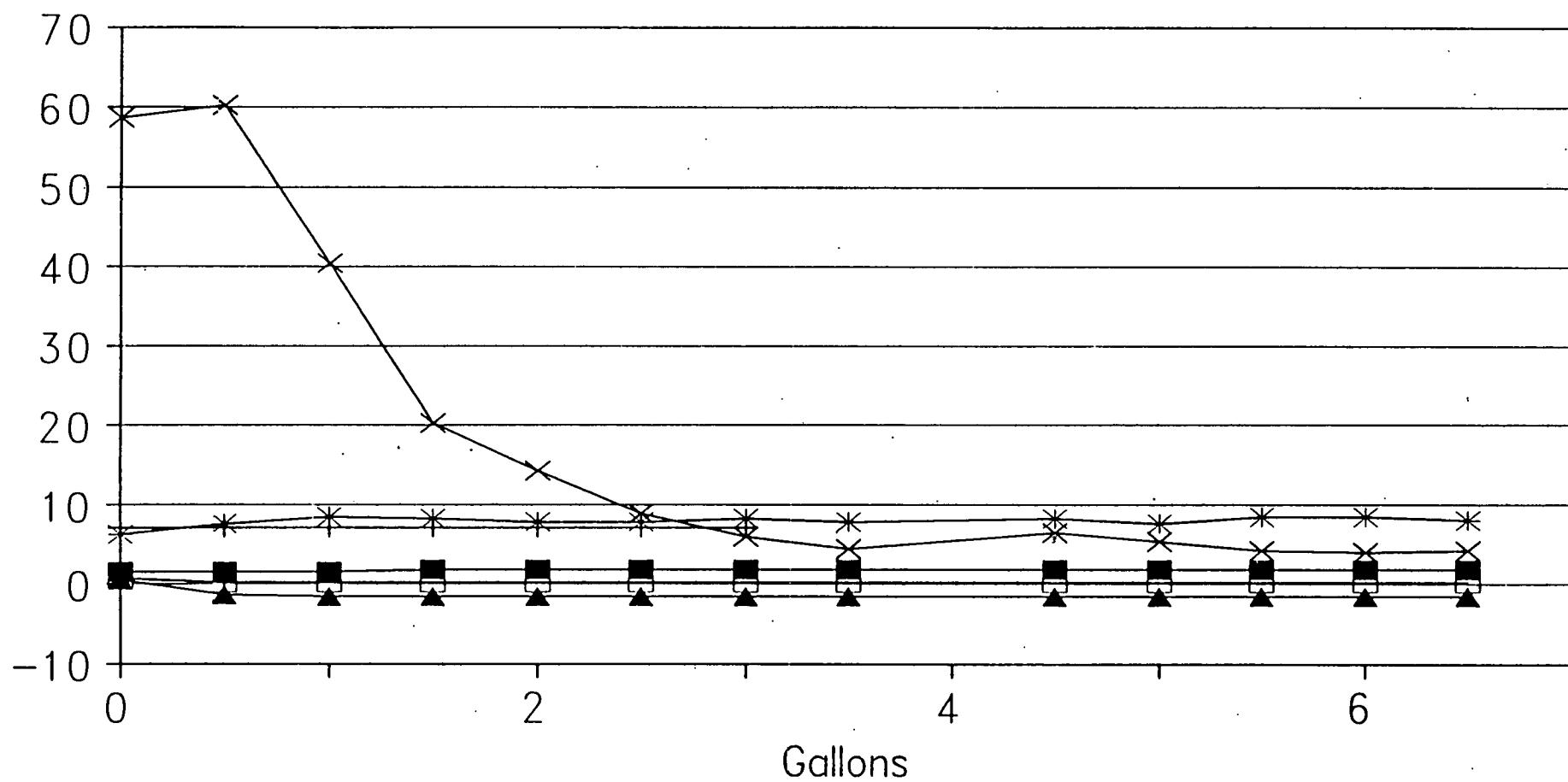
B53W05S

Purging Parameters



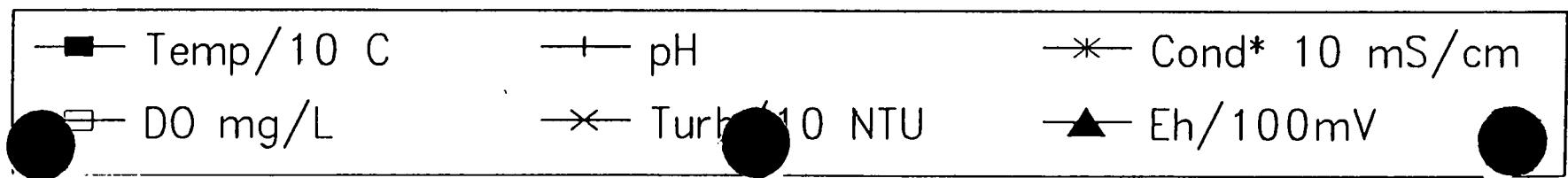
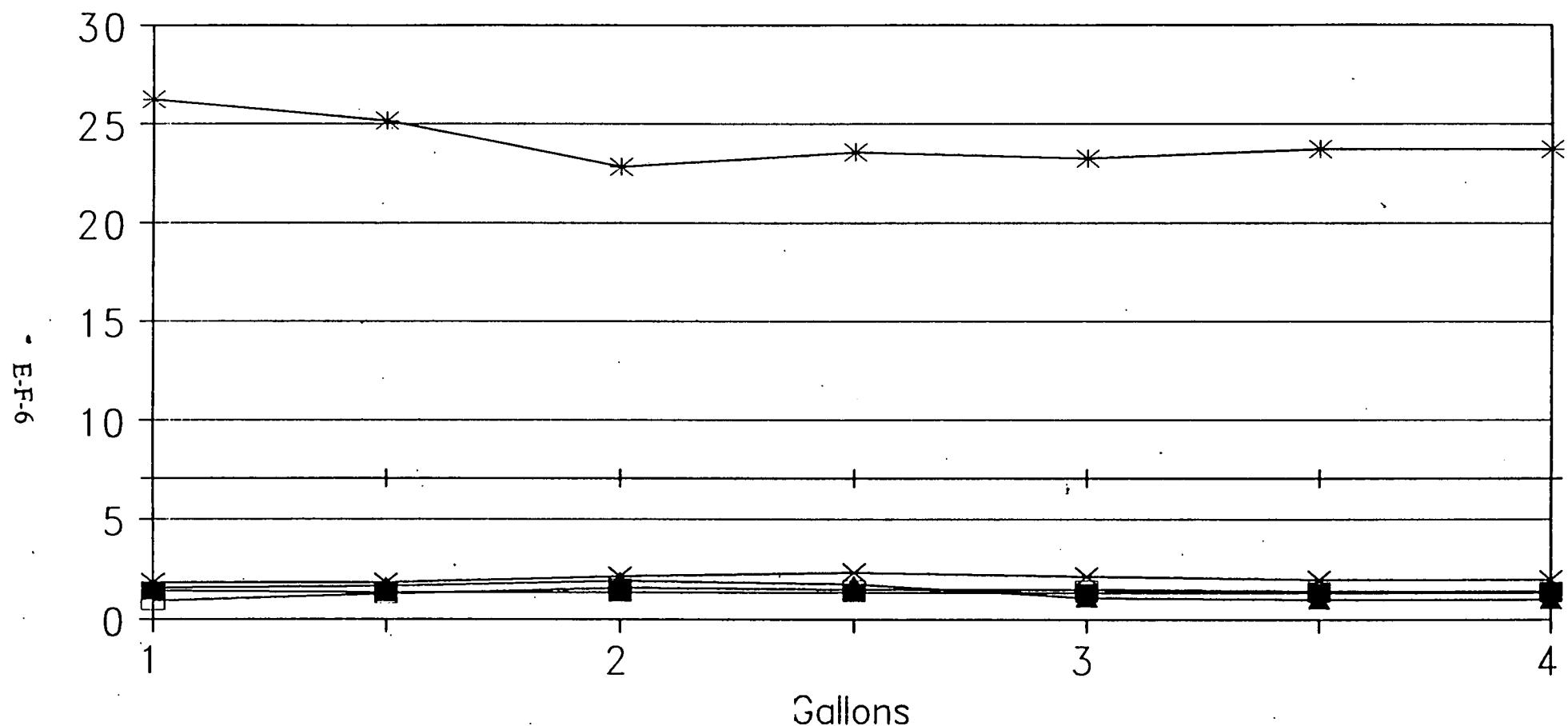
B53W06D
Purging Parameters

E-F-5



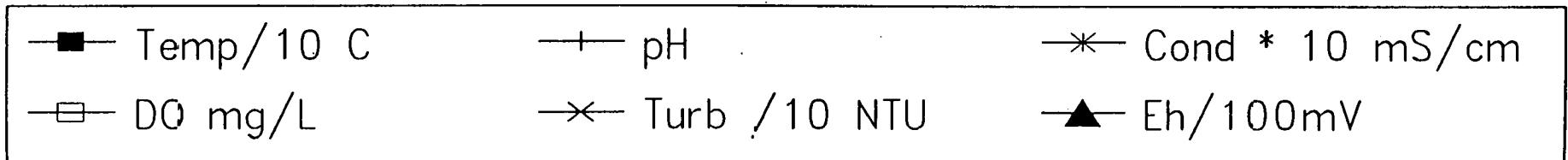
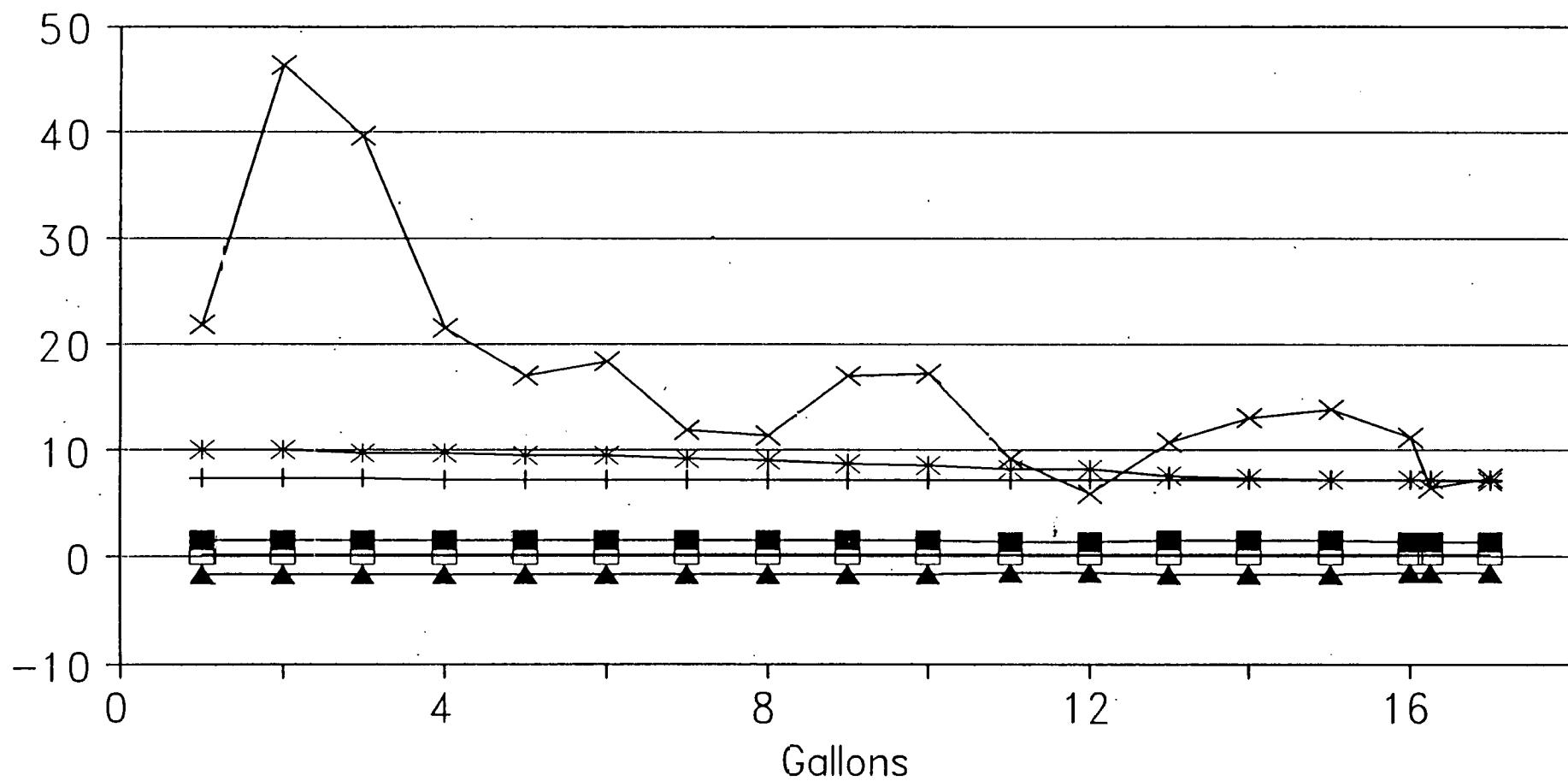
B53W06S

Purging Parameters



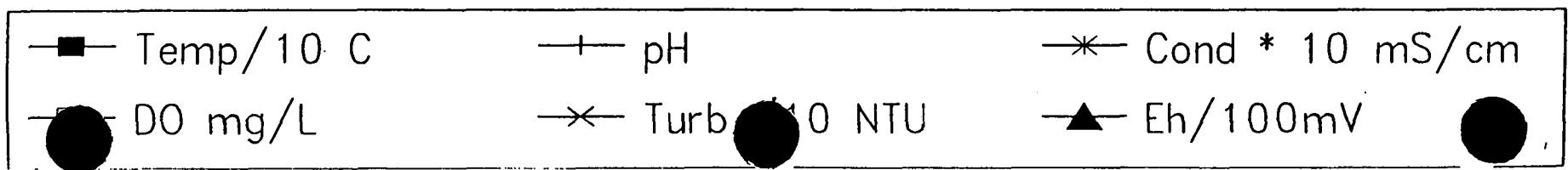
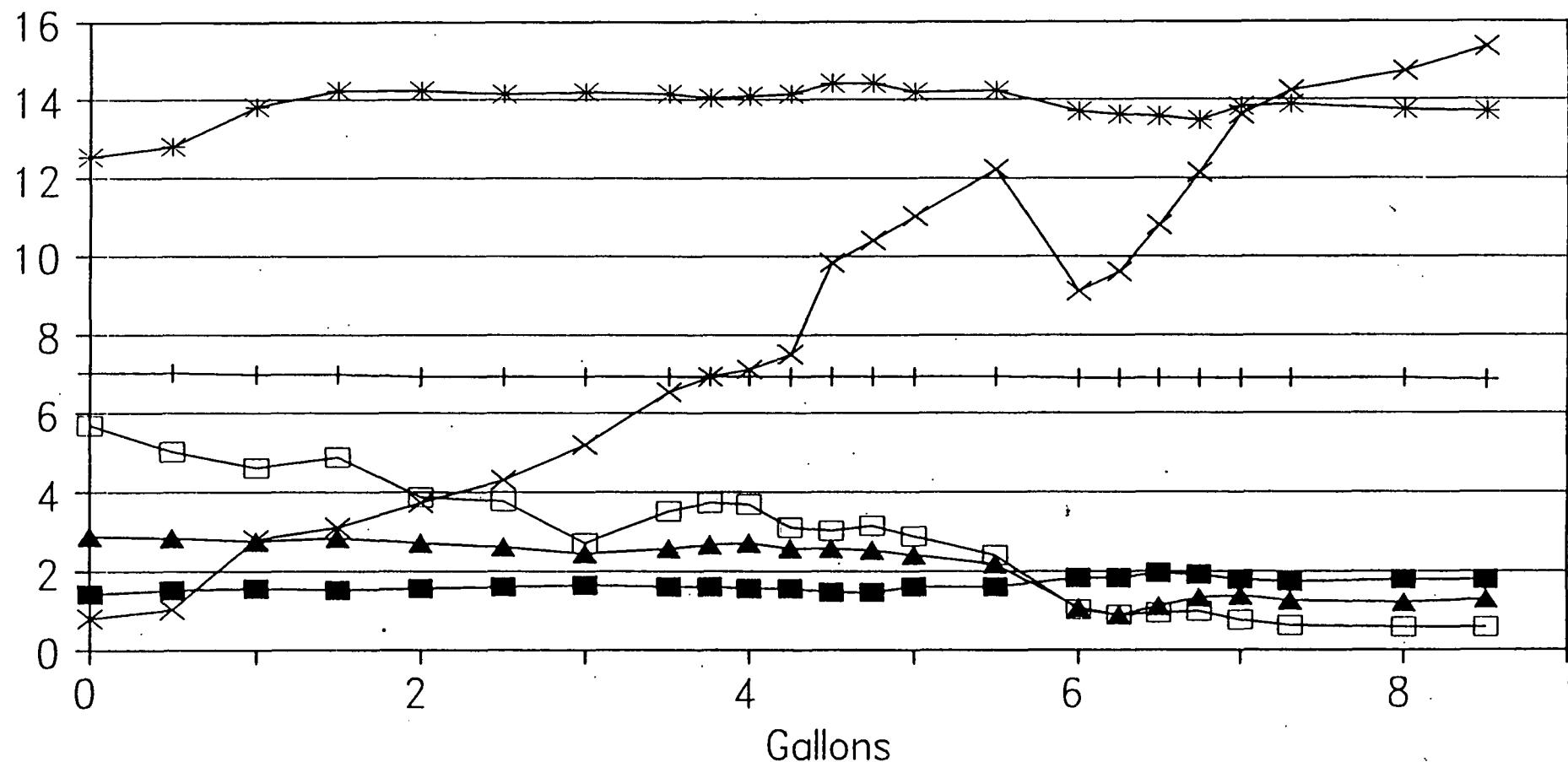
B53W07D
Purging Parameters

E-F-7

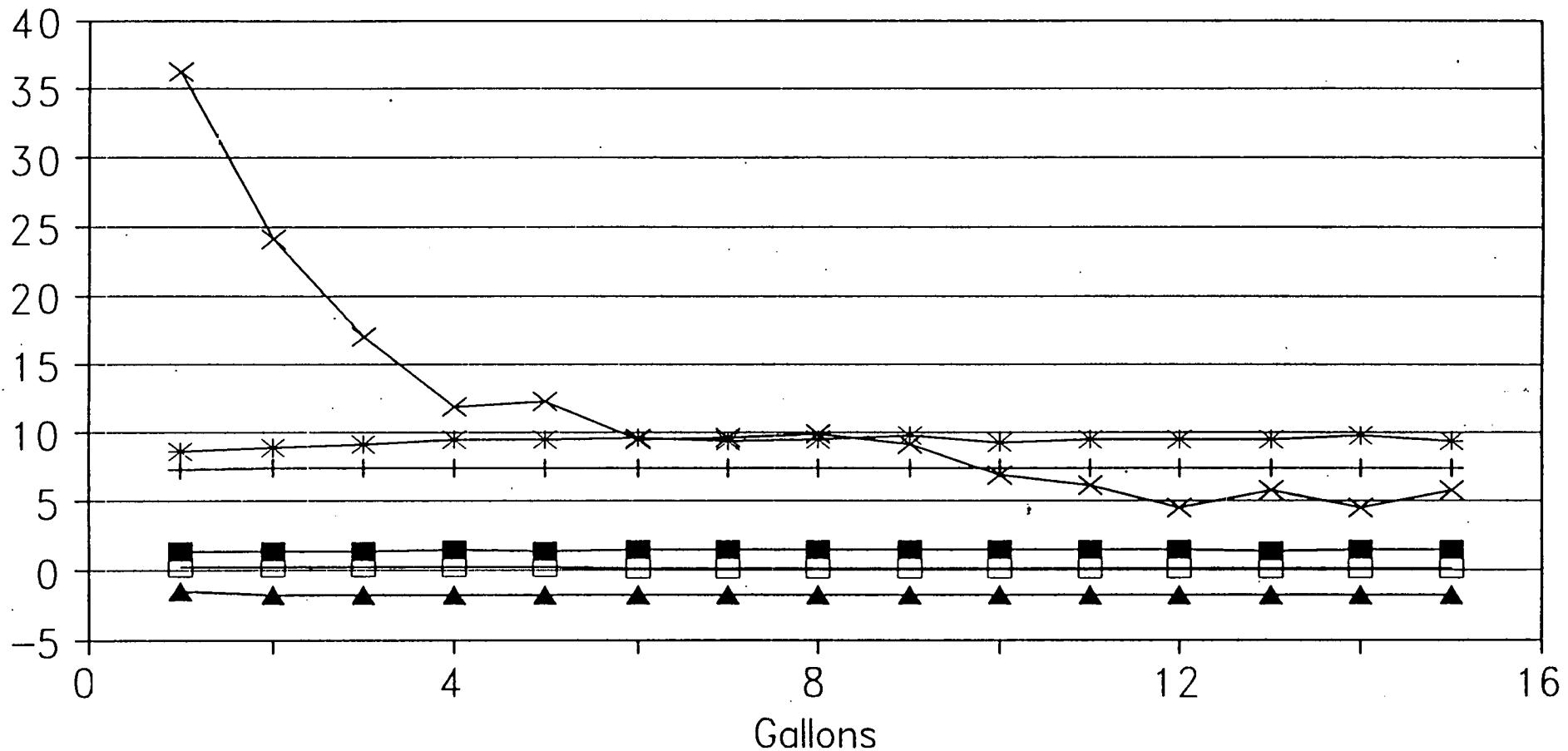


B53W07S

Purging Parameters



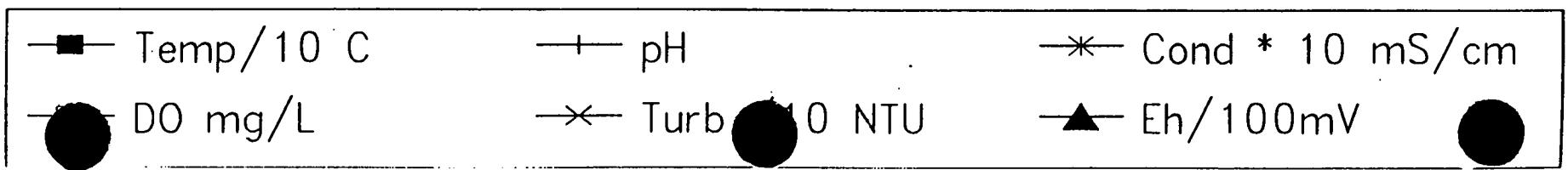
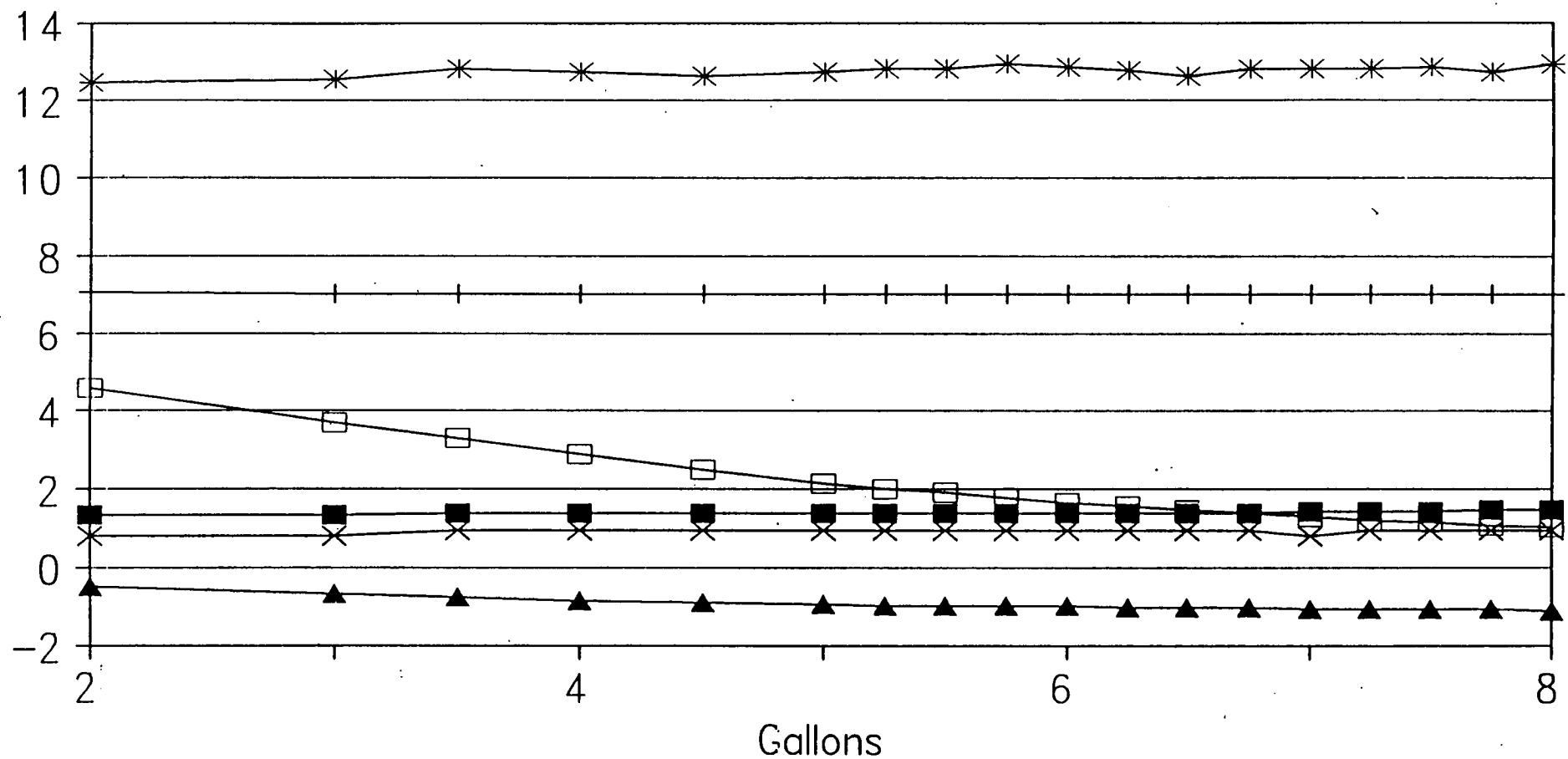
B53W08D
Purging Parameters



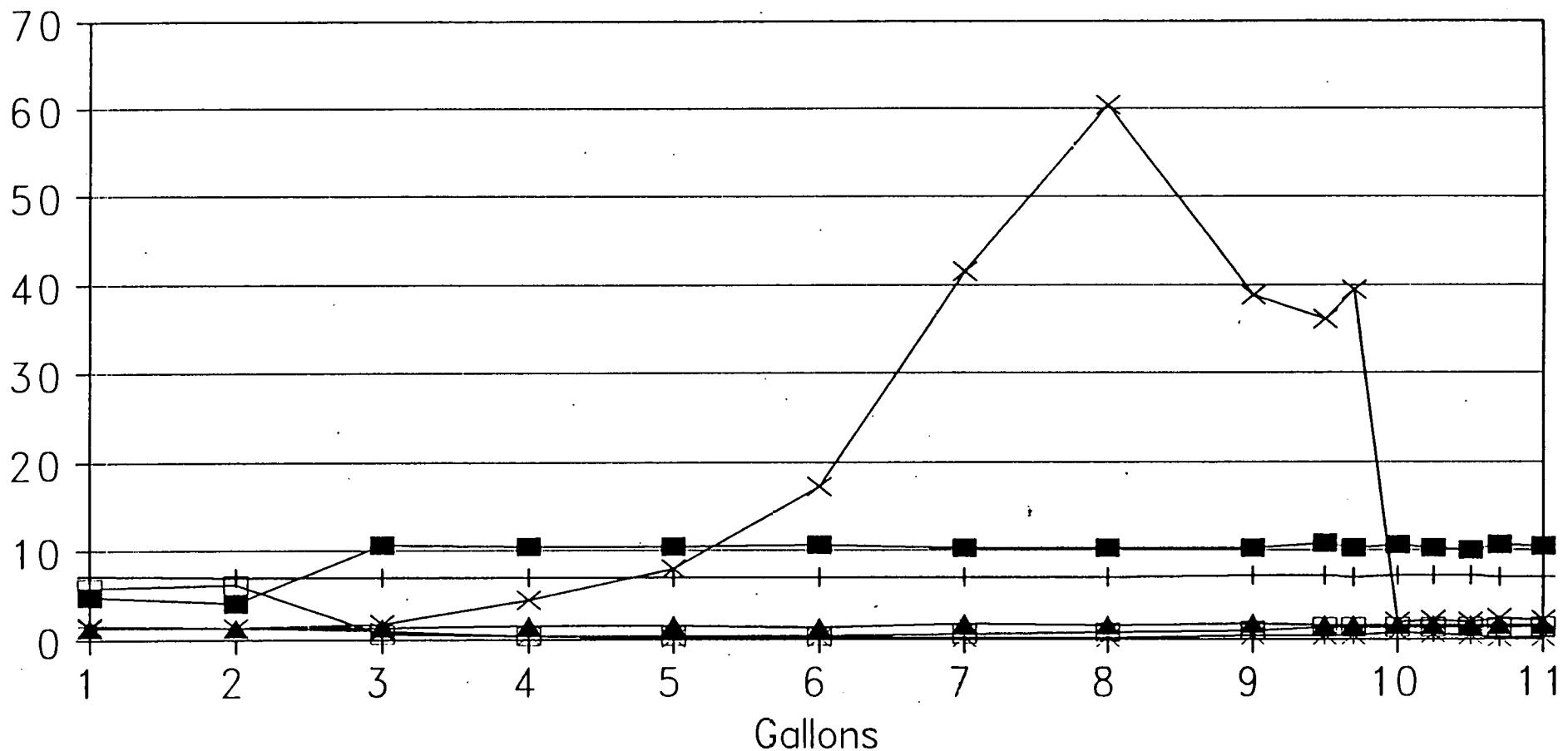
■ Temp/10 C	✚ pH	* Cond * 10 mS/cm
□ DO mg/L	✖ Turb /10 NTU	▲ Eh/100mV

B53W08S

Purging Parameters



B53W09D
Purging Parameters

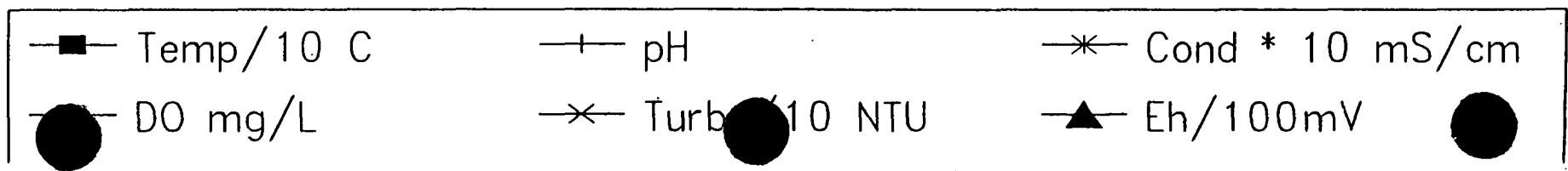
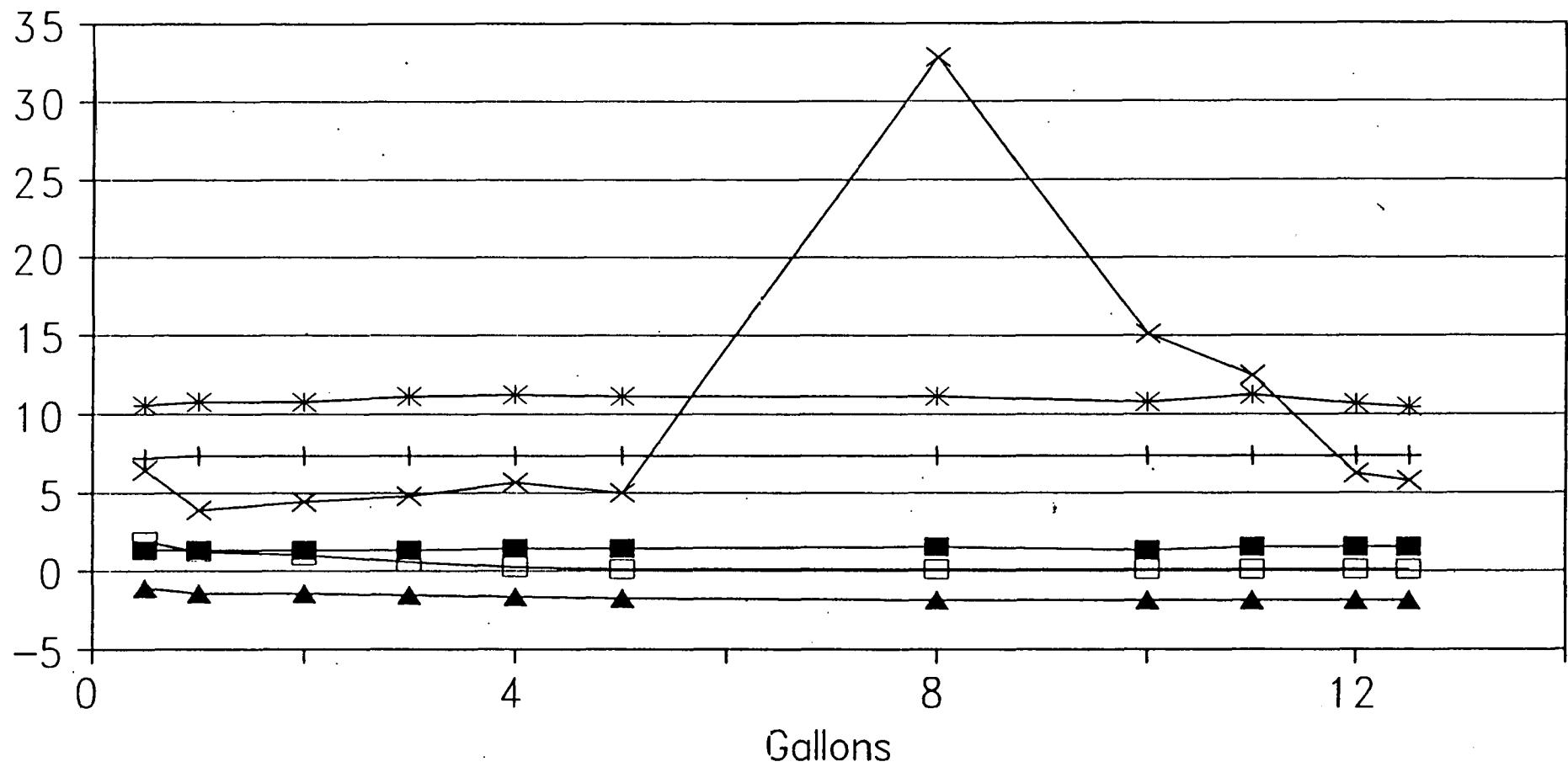


■ Cond* 10 mS/cm + pH * Eh/100 mV
□ DO mg/L → Turb/10 NTU ▲ Temp/10C

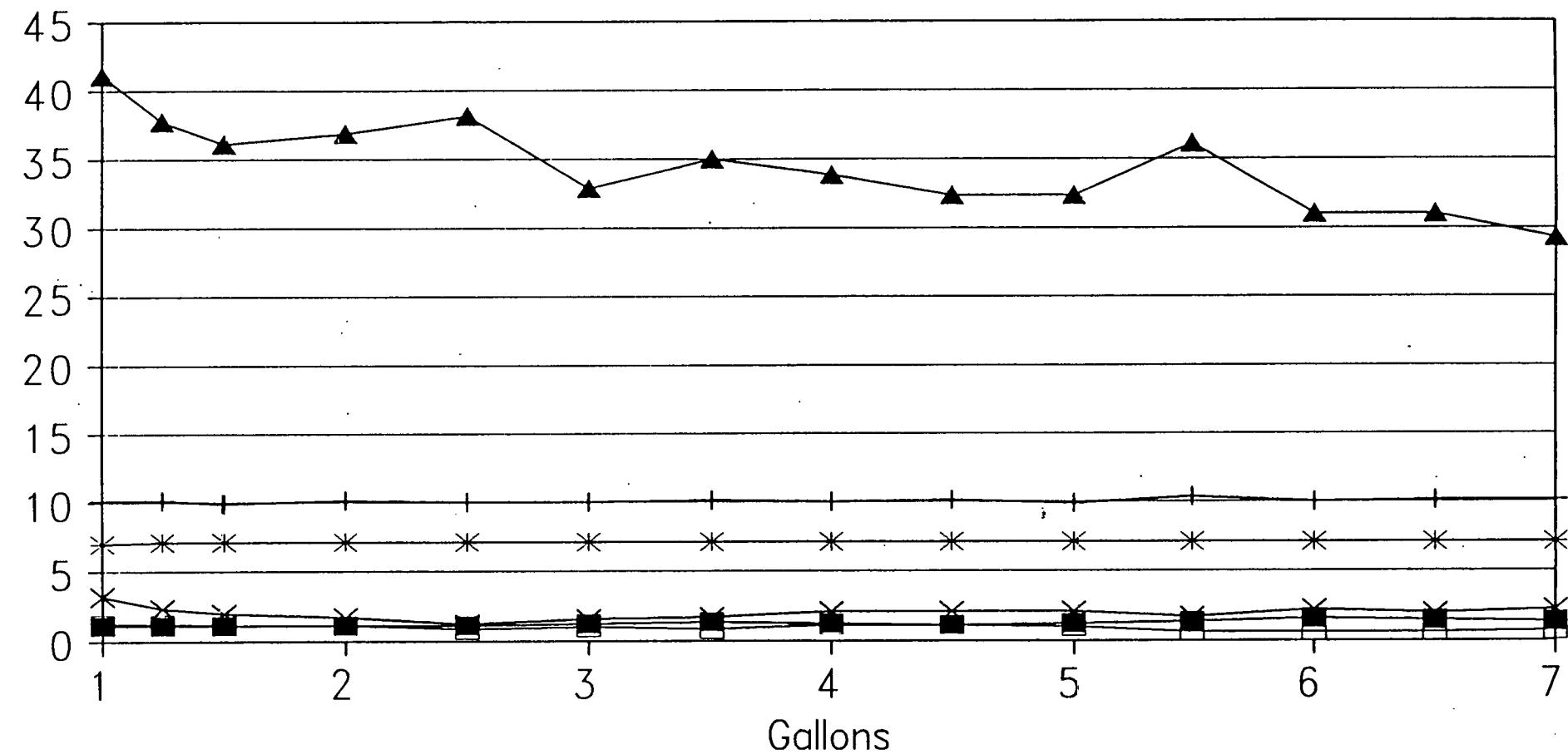
B53W010D

Purging Parameters

E-F-12

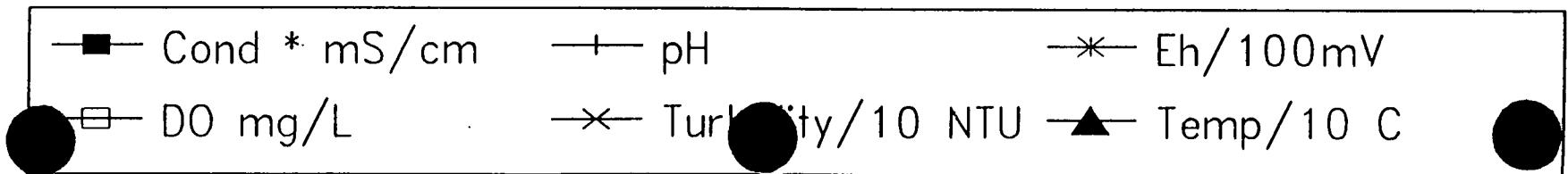
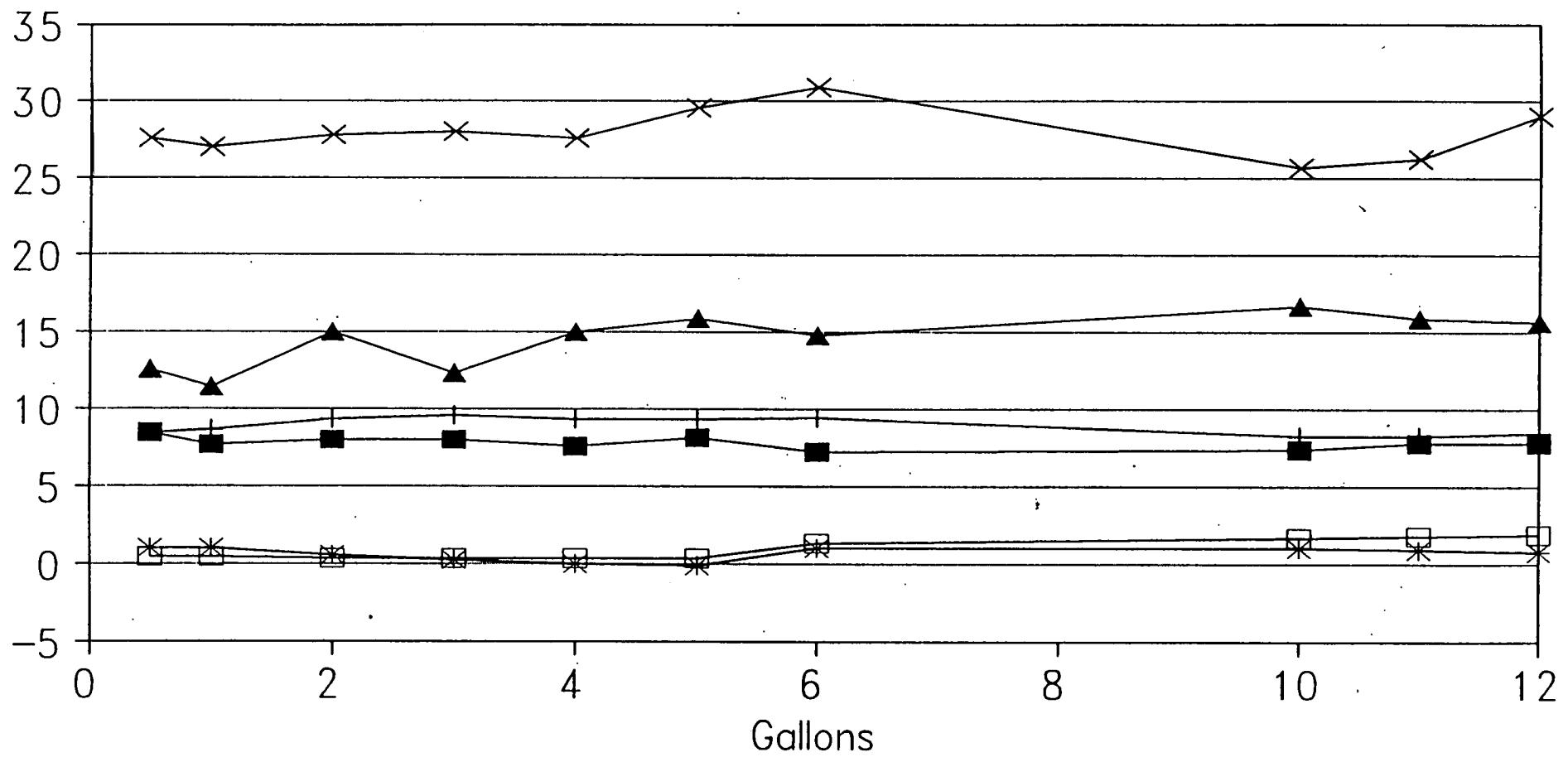


B53W10S
Purging Parameters

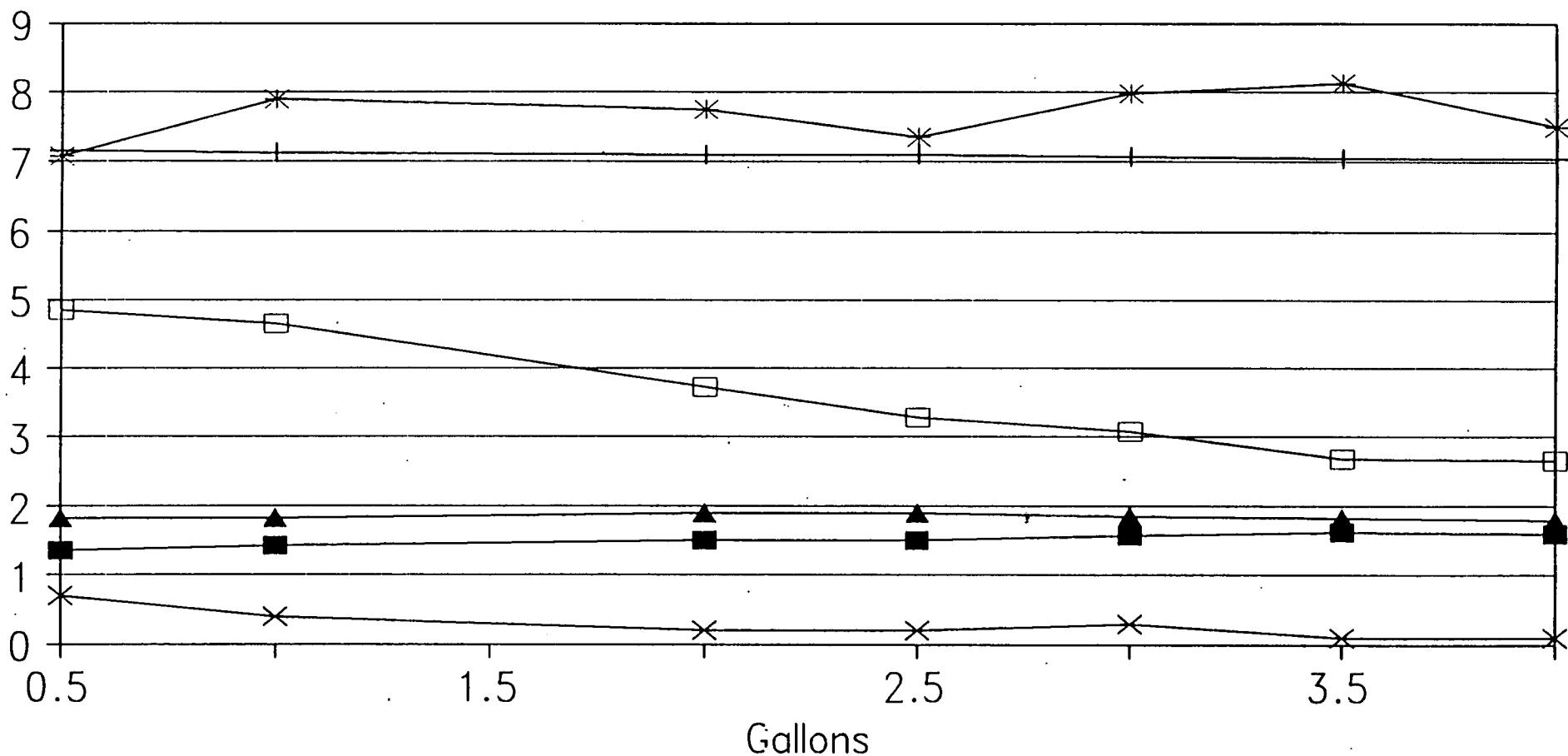


■ Temp/10 °C + Cond * 10mS/cm * pH
□ Eh /100 mV × DO mg/L ▲ Turbidity/10NTU

B53W11D
Purging Parameters



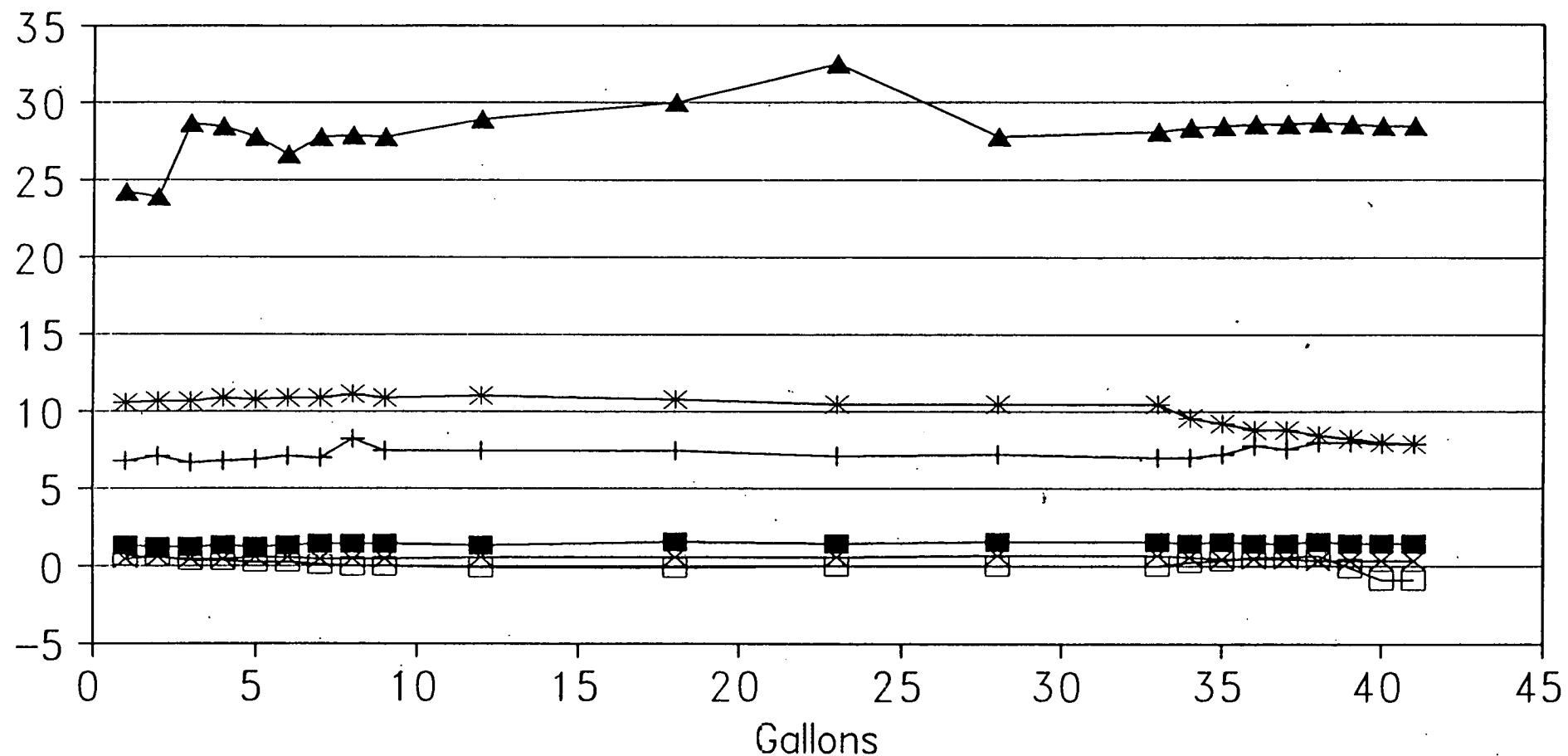
B53W11S
Purging Parameters



■ Temp/10 °C + pH * Cond * 10 mS/cm
□ DO mg/L × Turb /10 NTU ▲ Eh/100mV

B53W12D

Purging Parameters

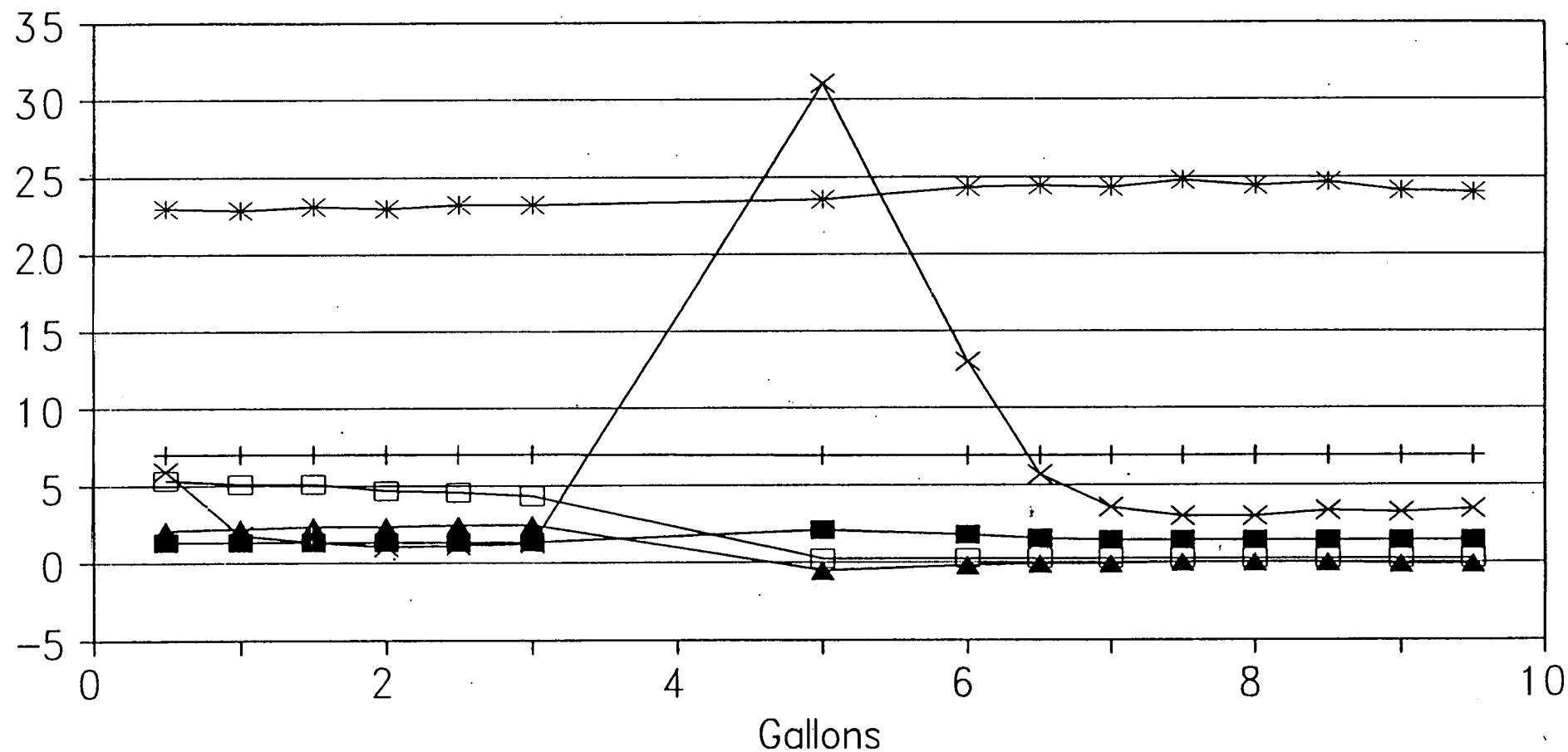


■ Temp / 10C + Cond * 10mS/cm * pH
□ Eh / 100mV × DO / L ▲ Turbidity / 10NTU

B53W012S

Purging Parameters

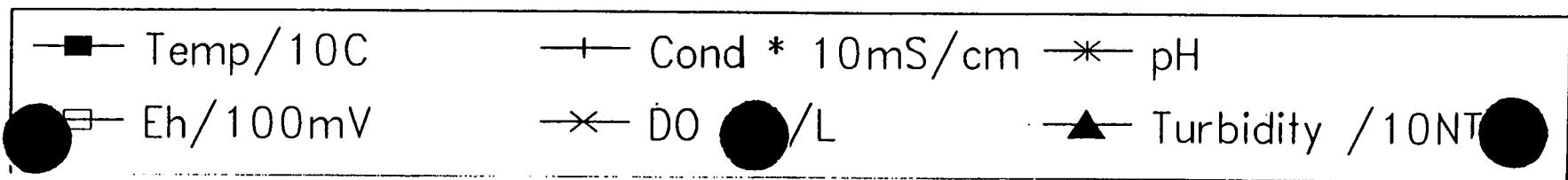
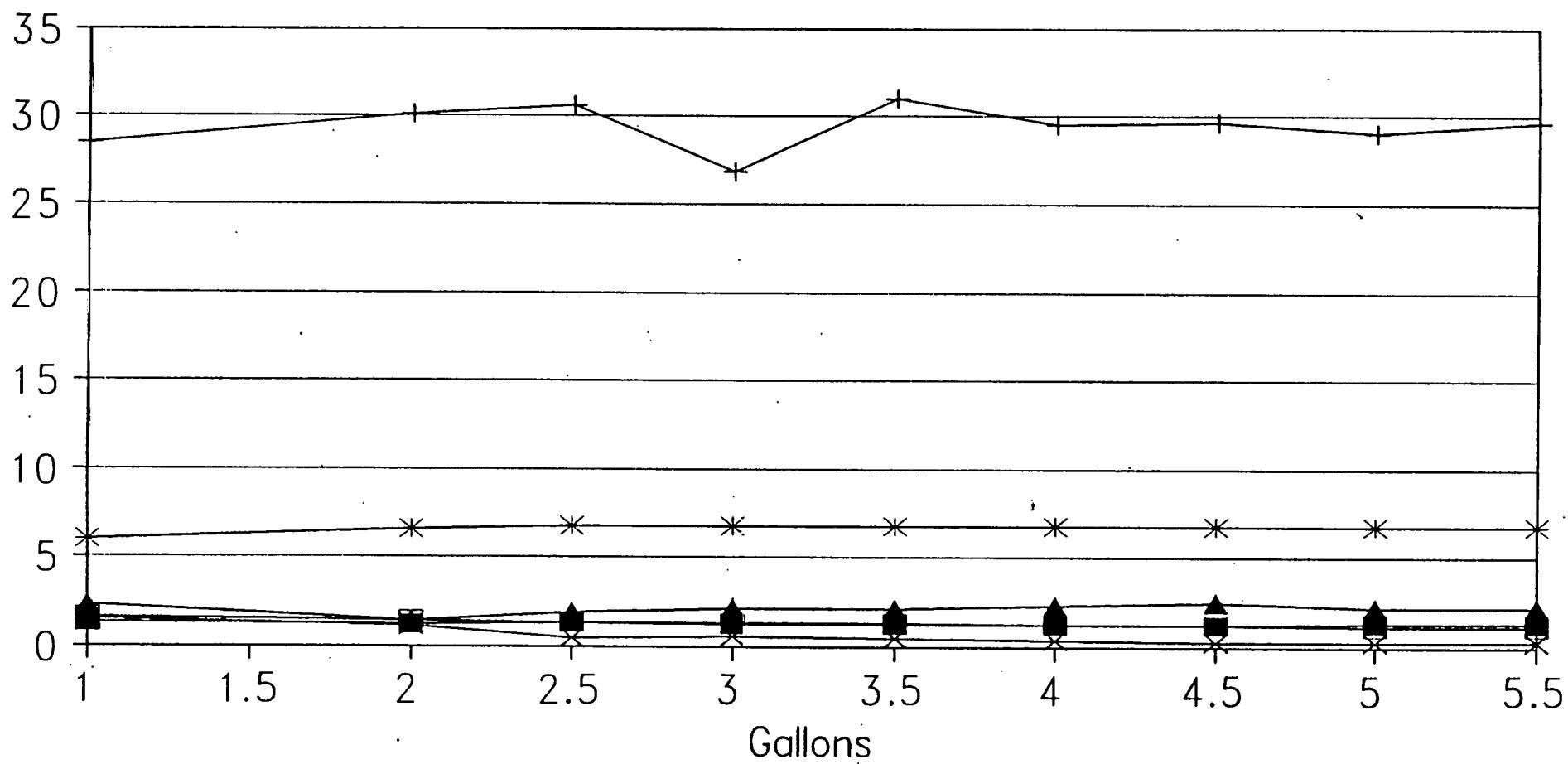
E-F-17



■ Temp / 10 °C + pH * Cond * 10 mS/cm
□ DO mg/L × Turb / 10 NTU ▲ Eh / 100mV

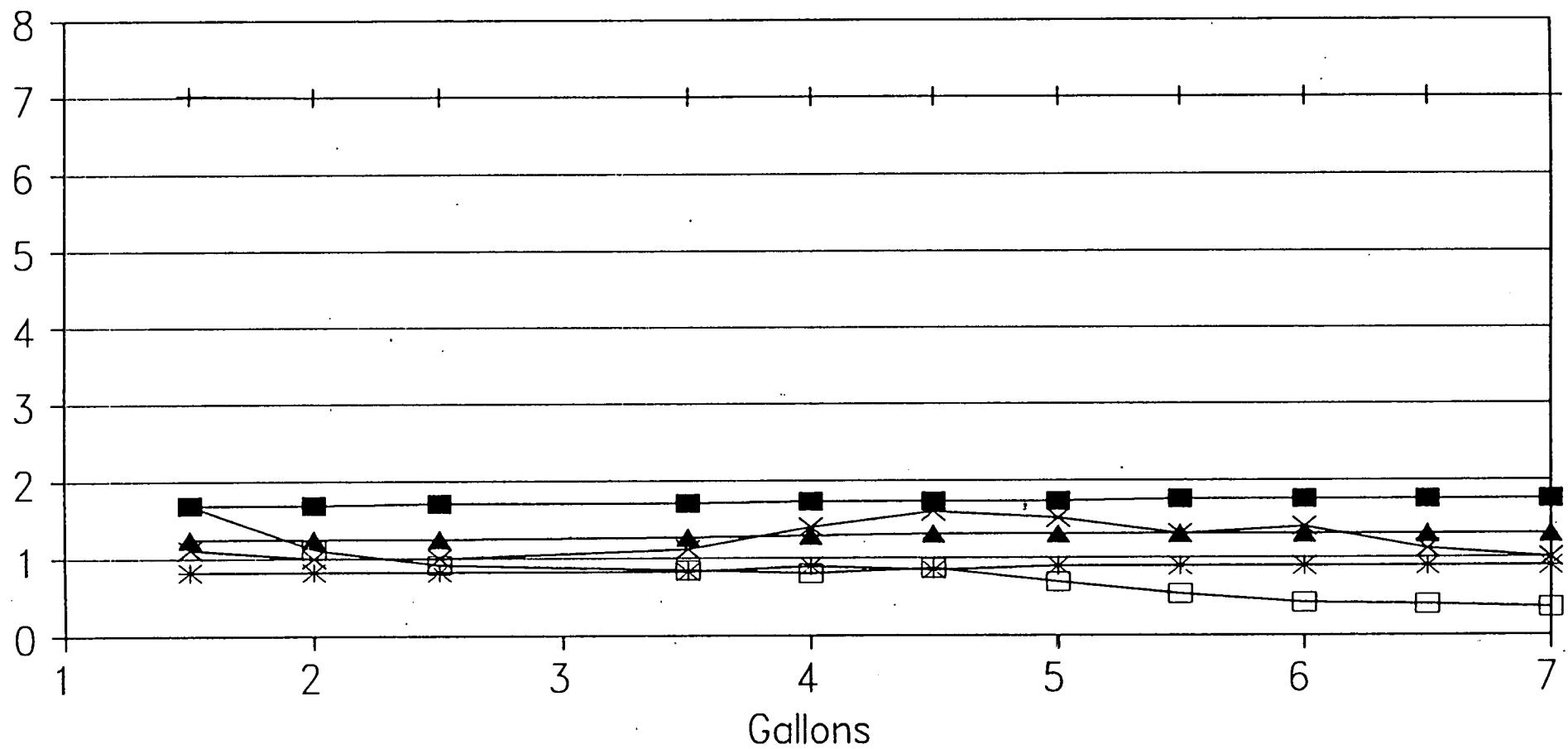
B53W13S
Purging Parameters

E-F-18



B53W15S
Purging Parameters

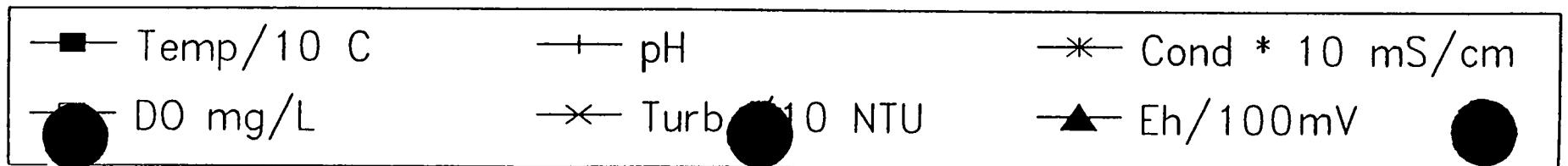
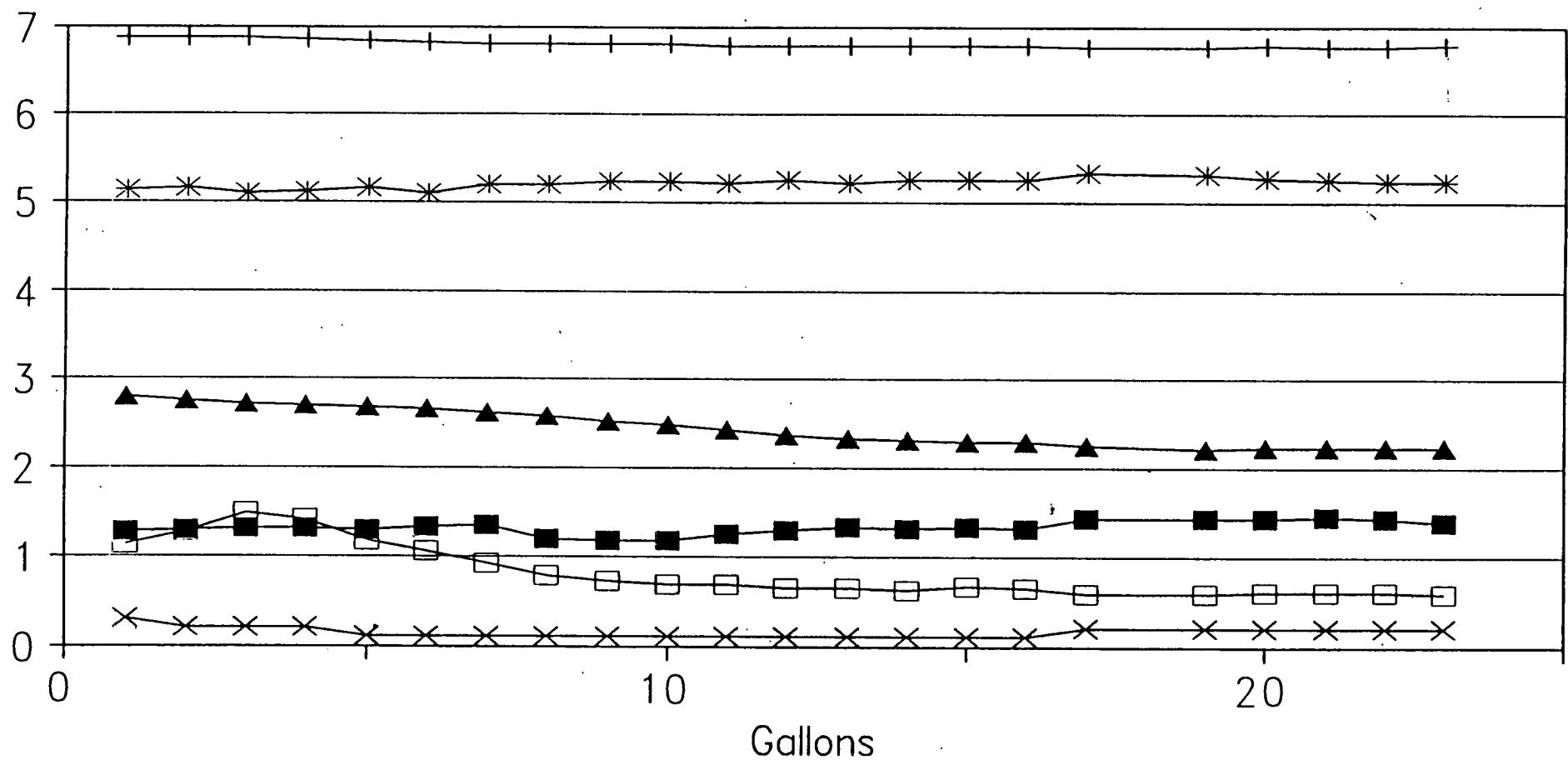
E-F-19



■ Temp / 10 °C	— pH	—* Cond* 10mS/cm
□ DO mg/L	—× Turb / 10 NTU	▲ Eh / 100 mV

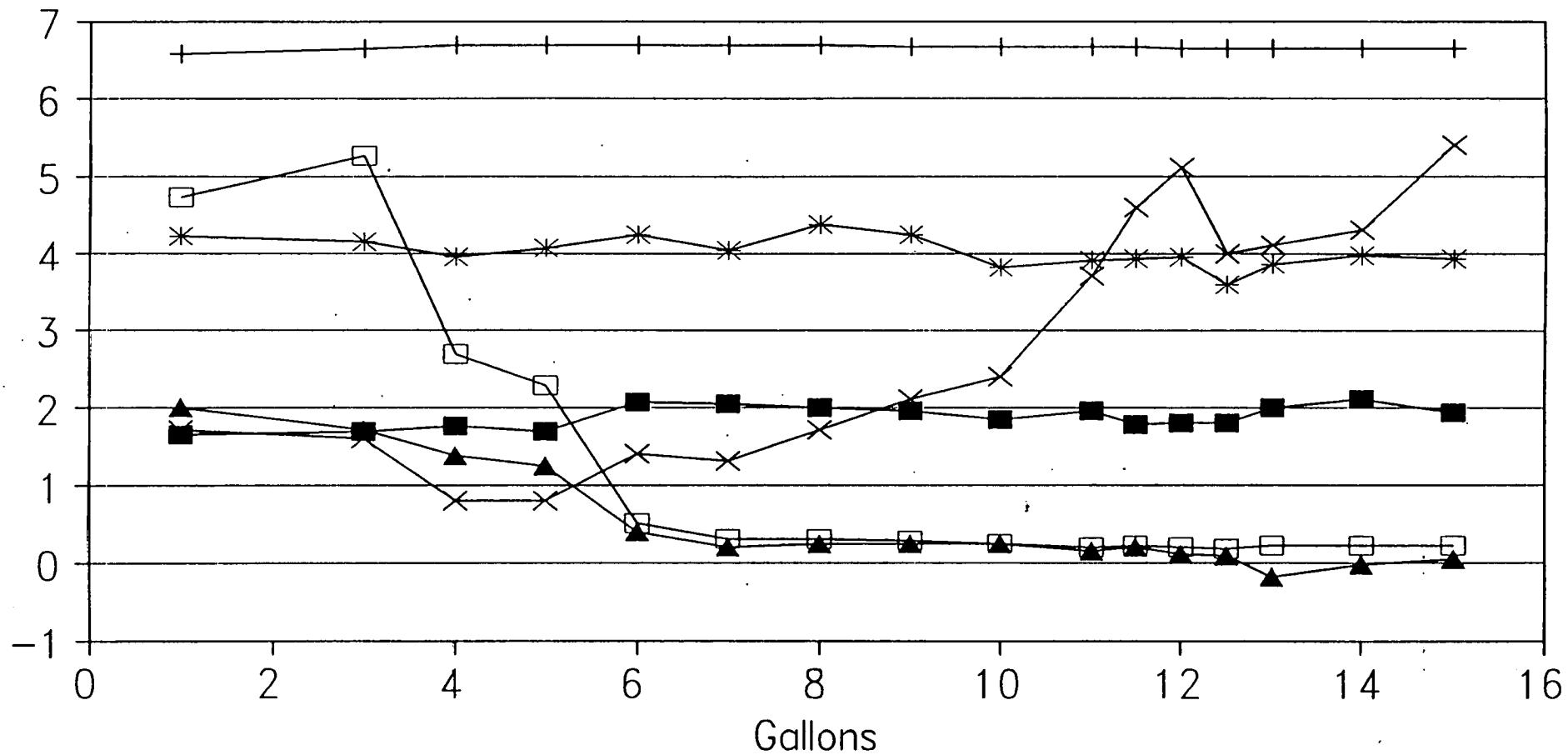
B53W17S

Purging Parameters



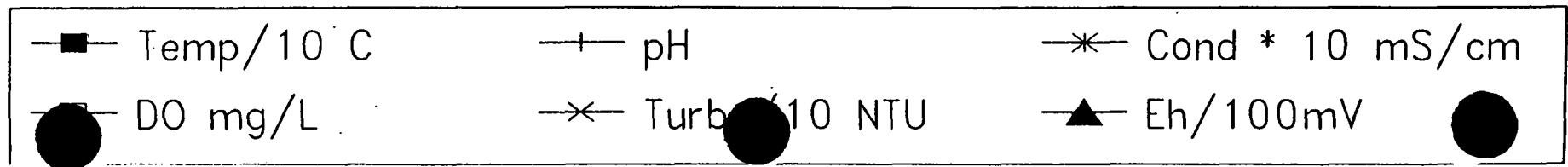
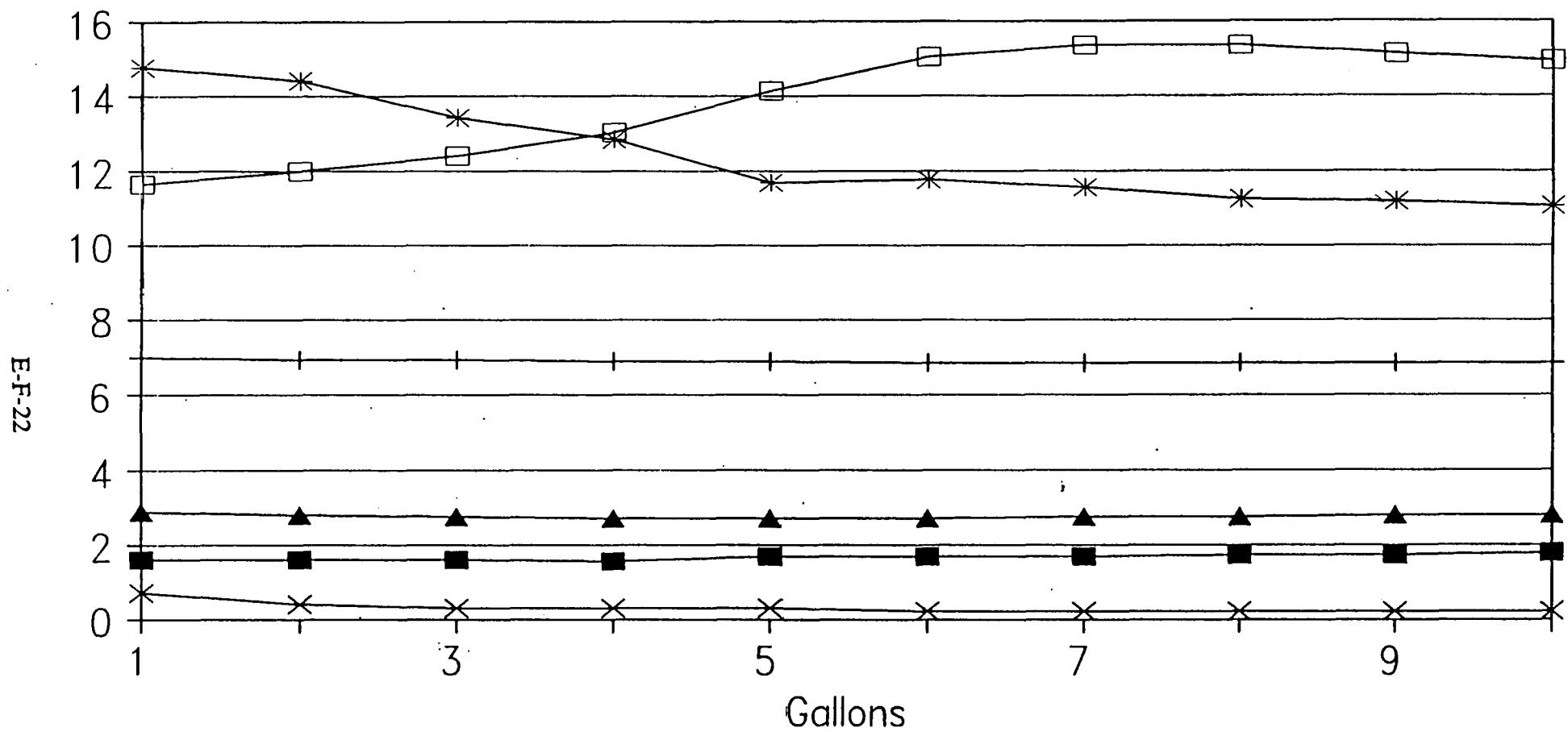
B53W18S
Purging Parameters

E-F-21



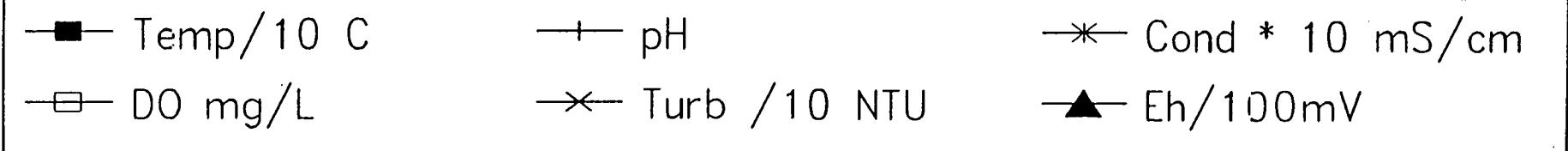
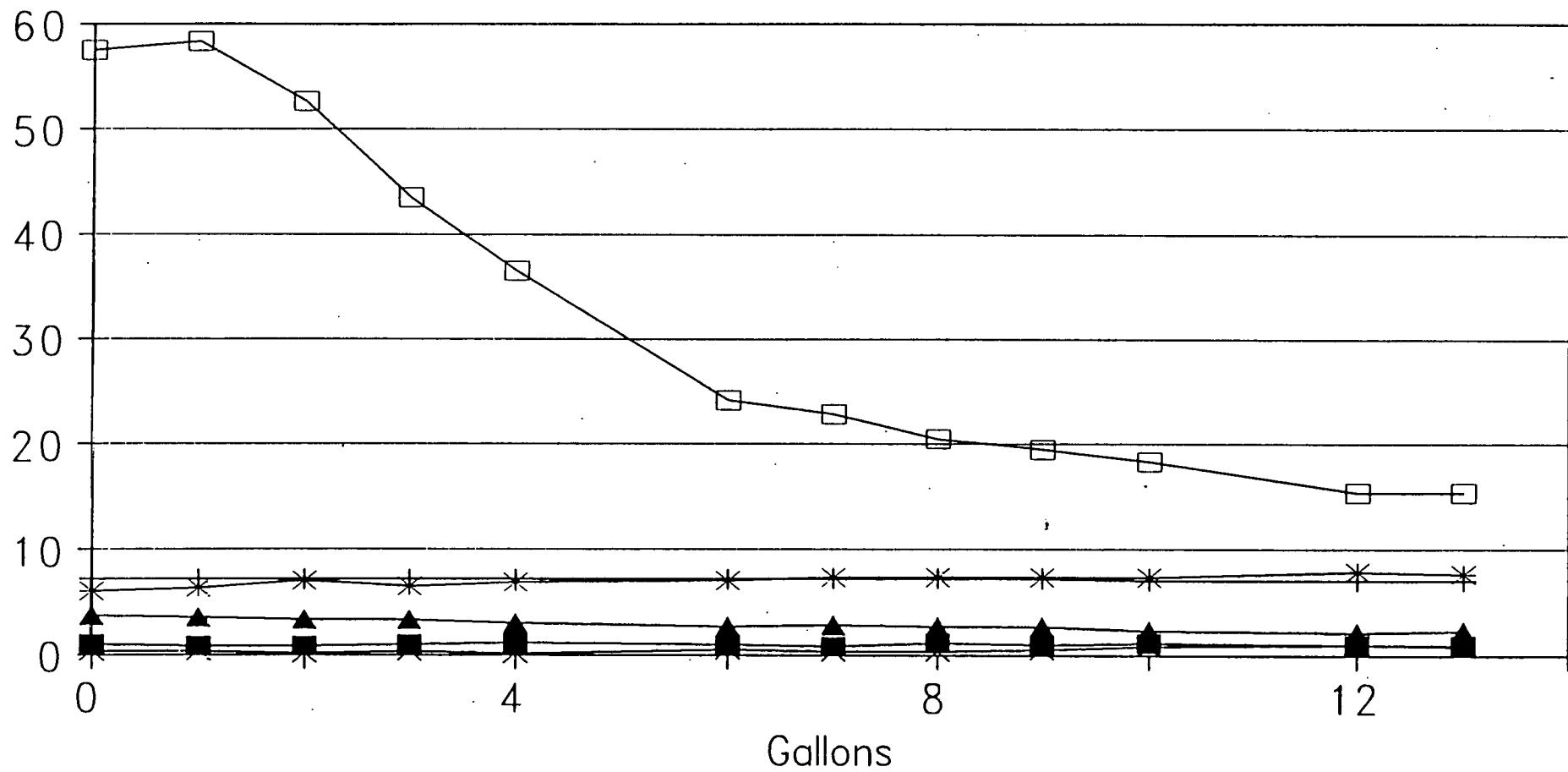
■ Temp/10 °C	+	pH	* Cond* 10 mS/cm
□ DO mg/L	×	Turb/10 NTU	▲ Eh/100 mV

B53W19S
Purging Parameters



B53W20S
Purging Parameters

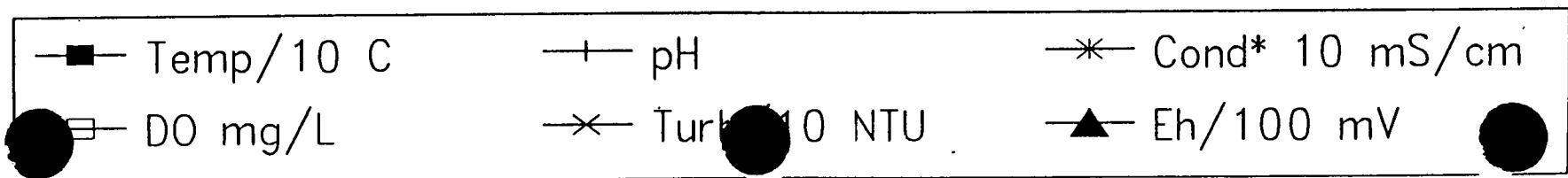
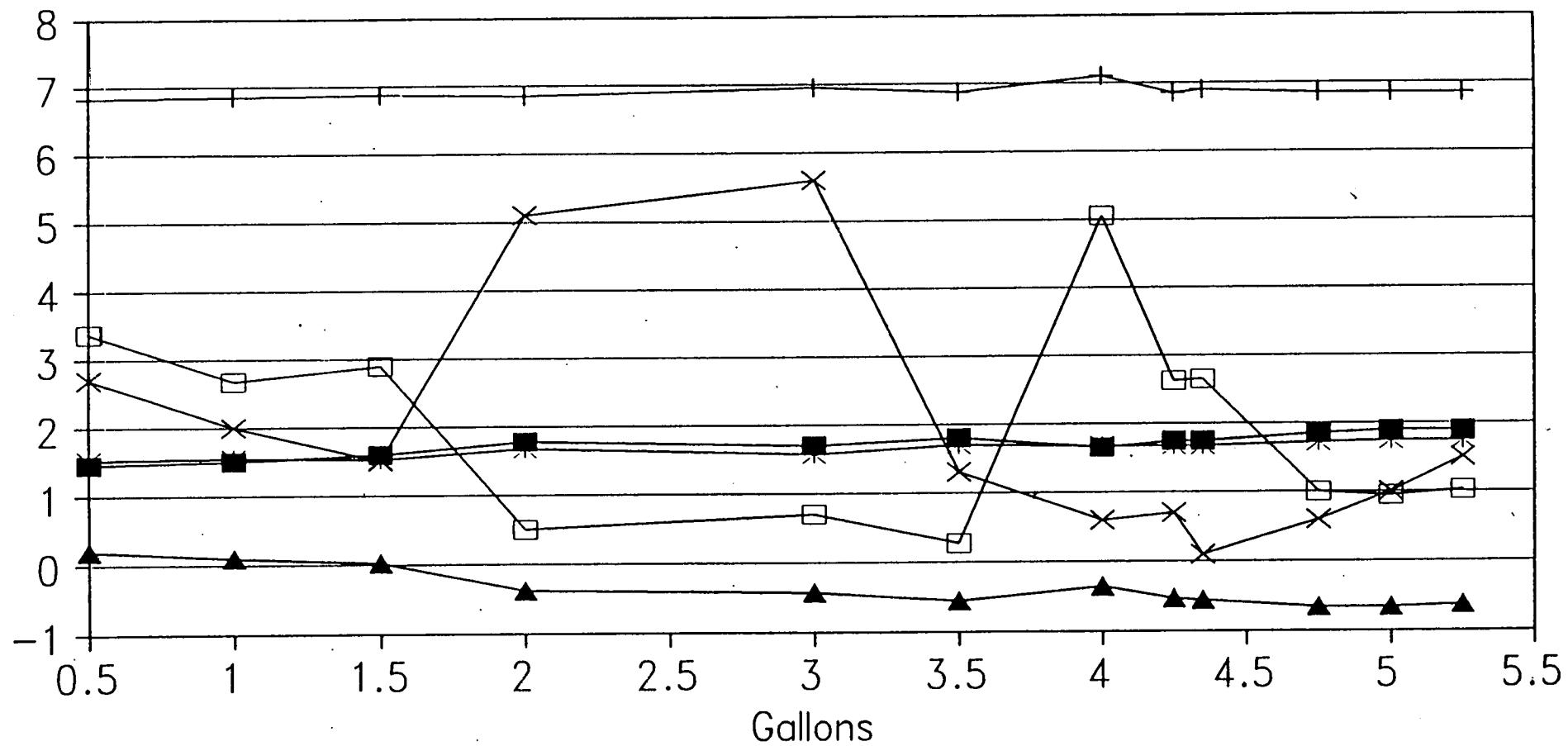
E-F-23



M10-8S

Purging Parameters

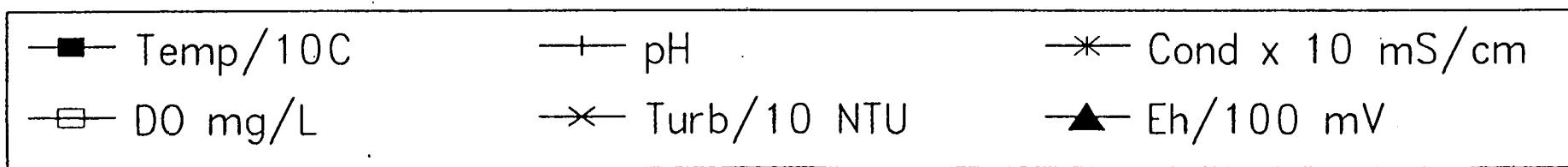
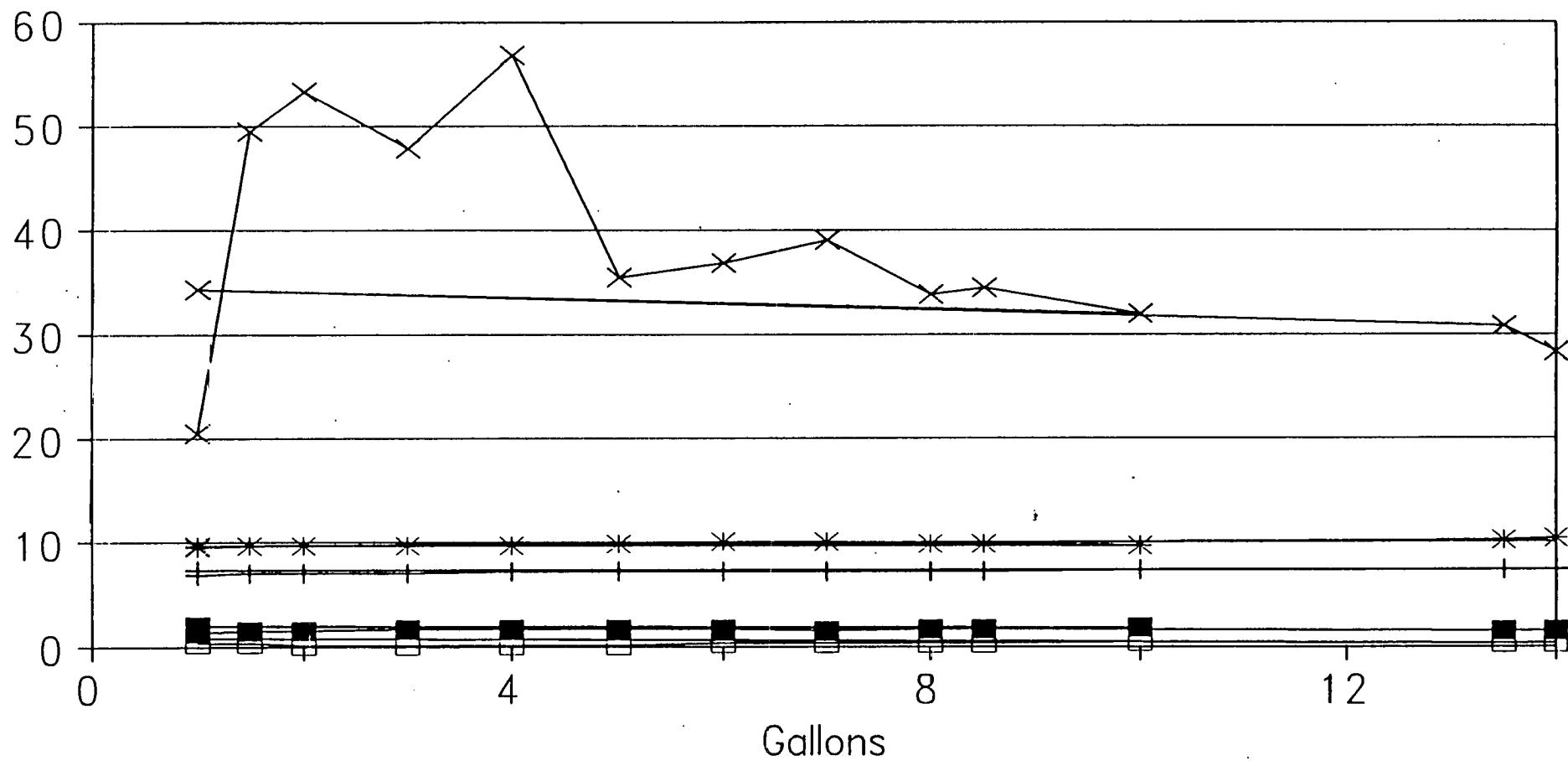
E-F-24



M10-15D

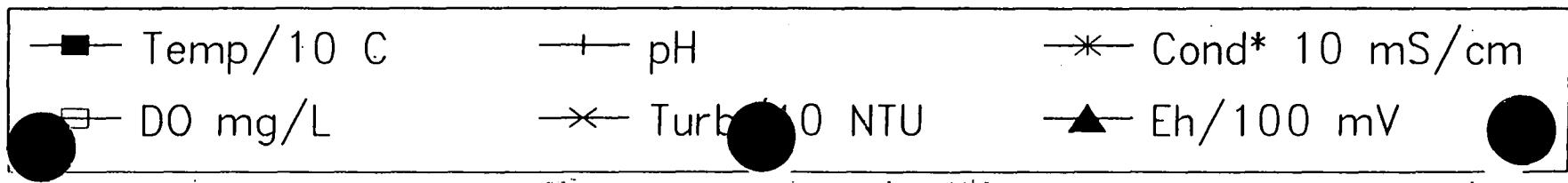
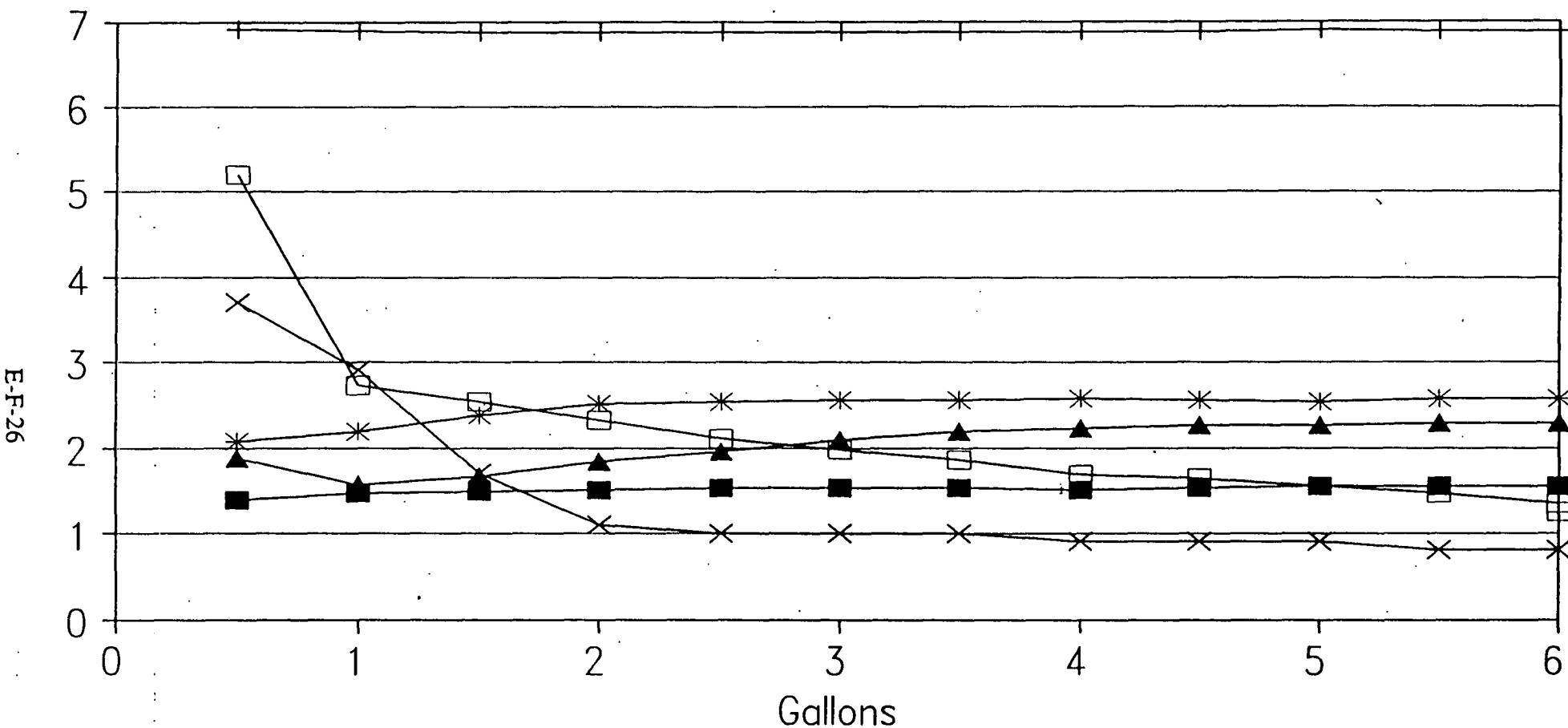
Purging Parameters

E-F-25



M10-15S

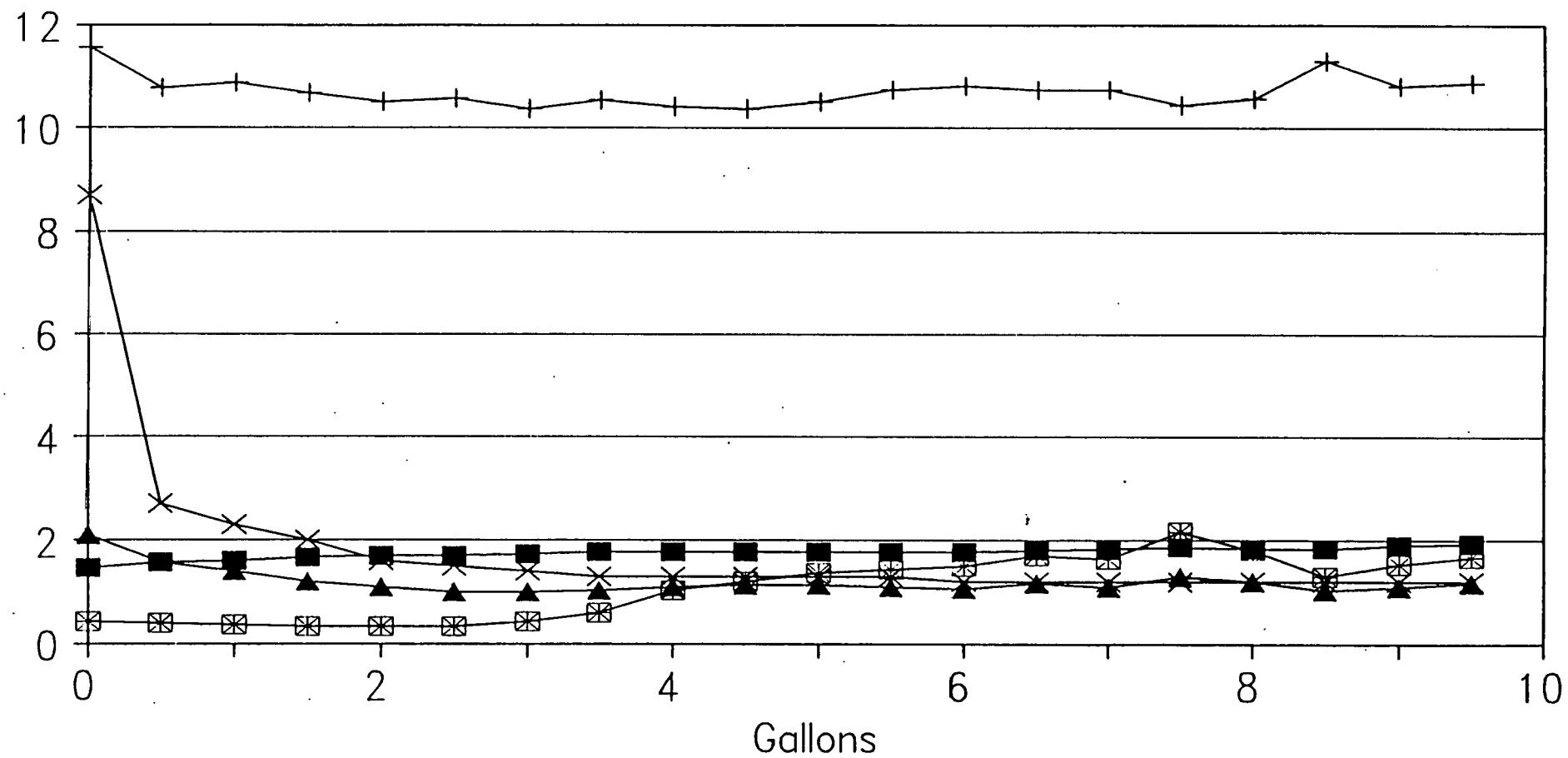
Purging Parameters



M10-25D

Purging Parameters

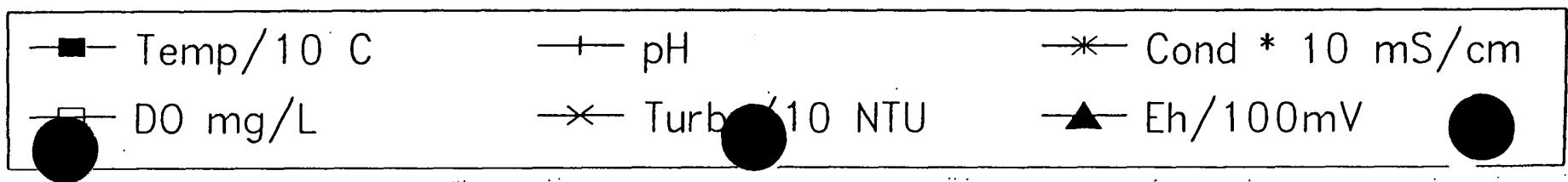
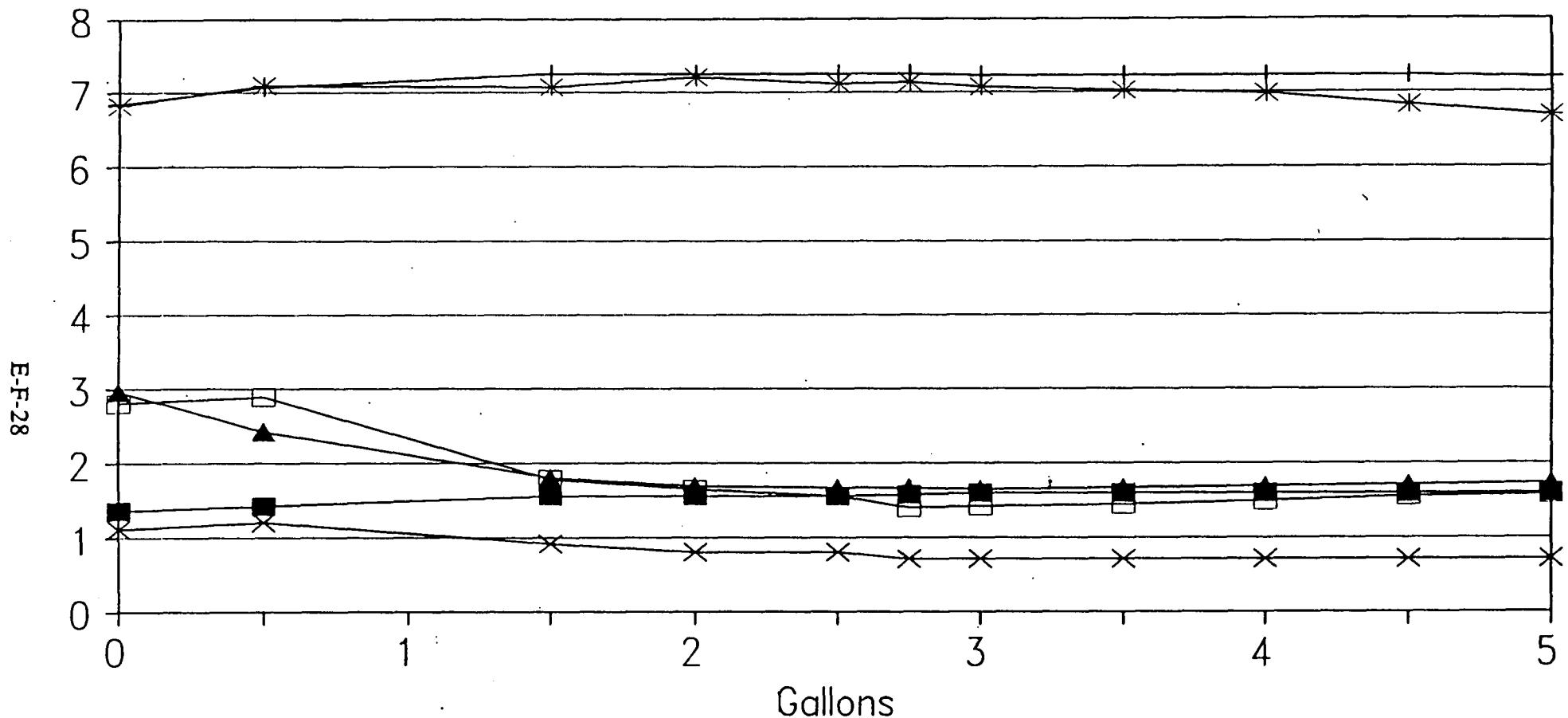
E-F-27



■ Temp /10 °C	— + pH	— * Cond * 10 mS/cm
□ DO mg/L	— × Turb /10 NTU	— ▲ Eh/100mV

M10-25S

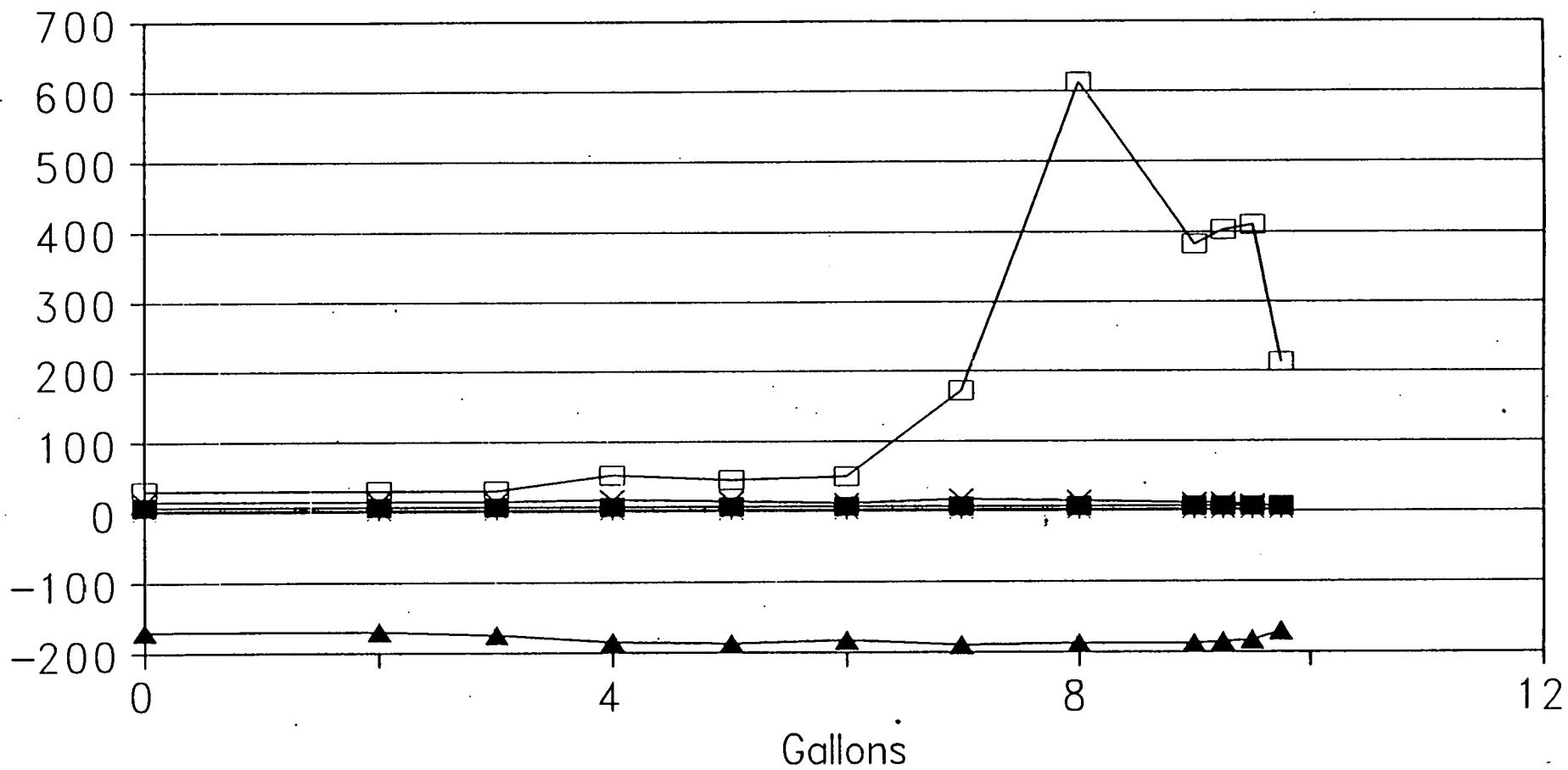
Purging Parameters



M13.5-8.5D

Purging Parameters

E-F-29



■ Eh	— Conductivity	→ DO Mg/L
□ Turbidity	→ Temperature	▲ Eh

M13.5-8.5S

Purging Parameters

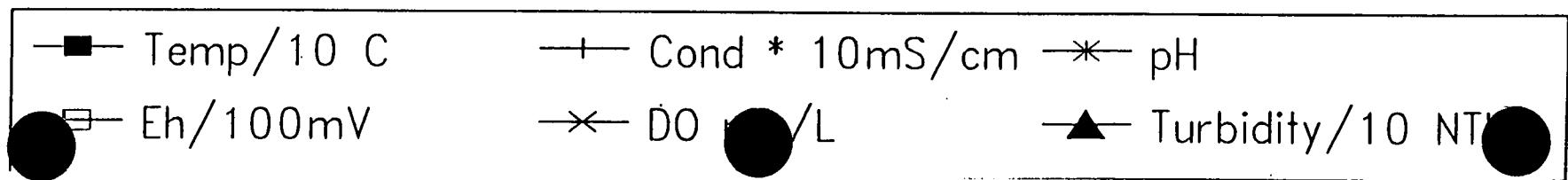
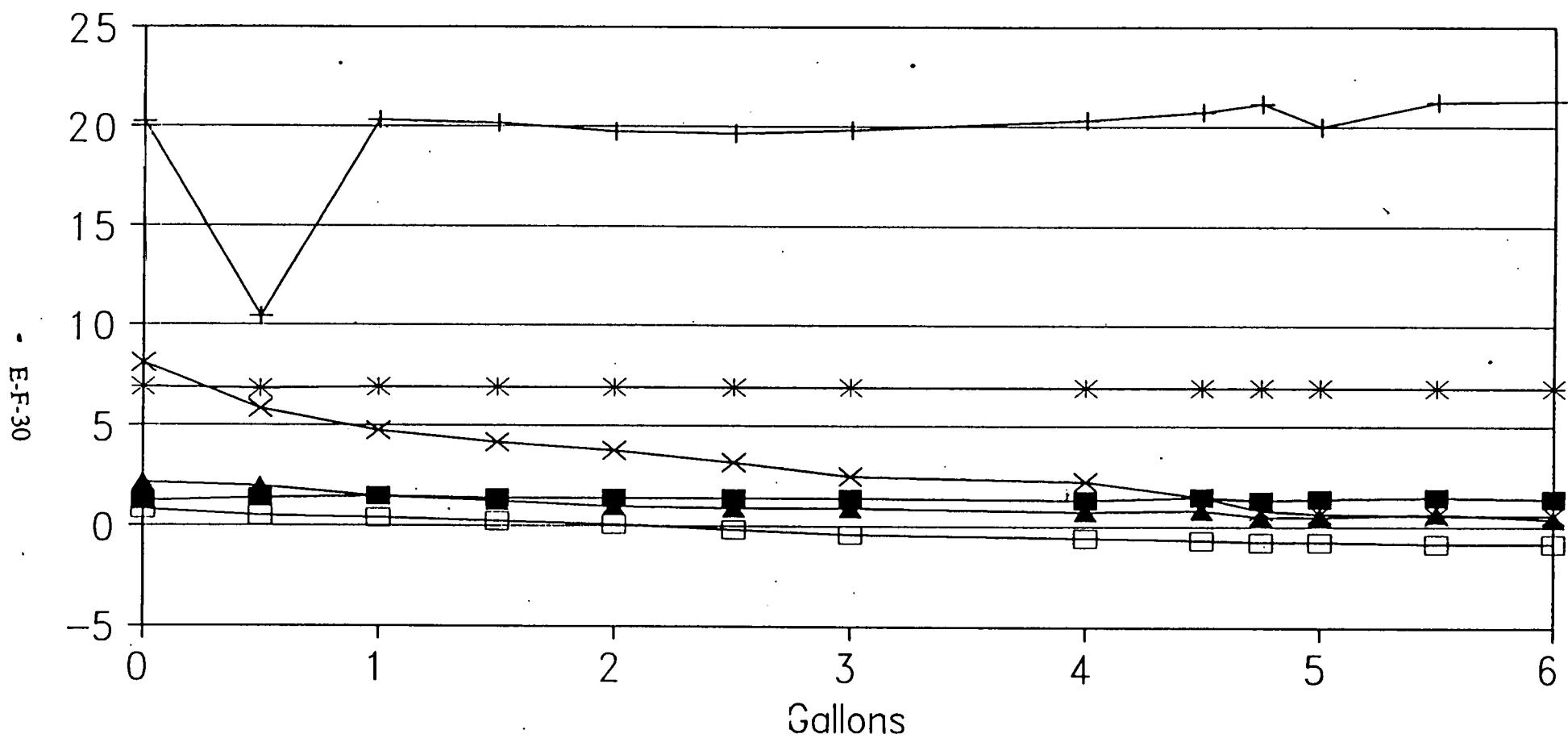


Table 1: Analytical Results for Volatile Organics Occurring
at Concentrations Above the Method Detection Limit

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W17S-GW	Trichloroethene	1,200.00	UG/L	100.00		D	07-DEC-93
153-M10-15D-GW	2-Butanone	12.00	UG/L	10.00		=	08-DEC-93
153-M10-15D-GW	TETRAHYDROFURAN	6.00	UG/L	0.00	NJ	J	08-DEC-93
153-M10-25D-GW	2-Butanone	12.00	UG/L	10.00		=	09-DEC-93
153-RB01-GW	Chloroform	27.00	UG/L	10.00		=	01-DEC-93
153-RB02-GW	Chloroform	42.00	UG/L	10.00		=	03-DEC-93
153-RB04A-GW	Chloroform	29.00	UG/L	10.00		=	06-DEC-93
153-RB04B-GW	Chloroform	23.00	UG/L	10.00		=	06-DEC-93
153-RB05A-GW	Chloroform	28.00	UG/L	10.00		=	09-DEC-93
153-RB05B-GW	Chloroform	35.00	UG/L	10.00		=	09-DEC-93
153-RB06A-GW	Chloroform	30.00	UG/L	10.00		=	10-DEC-93
153-RB08C-GW	Chloroform	39.00	UG/L	10.00		=	13-DEC-93
153-TB01-GW	Acetone	15.00	UG/L	10.00		B	01-DEC-93
153-TB02-GW	Acetone	13.00	UG/L	10.00		B	03-DEC-93
153-TB03-GW	Acetone	14.00	UG/L	10.00		B	06-DEC-93
153-TB04-GW	Acetone	17.00	UG/L	10.00		B	07-DEC-93
153-TB05-GW	Acetone	15.00	UG/L	10.00		B	08-DEC-93
153-TB06-GW	Acetone	23.00	UG/L	10.00		B	09-DEC-93
153-TB08-GW	Acetone	11.00	UG/L	10.00		B	13-DEC-93
153-TB09-GW	Acetone	12.00	UG/L	10.00		=	15-DEC-93
153-TB09-GW	TRIMETHYL-SILANOL	6.00	UG/L	0.00	NJ	J	15-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W05D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-B53W05D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	2-Butanone	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	2-Hexanone	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Acetone	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-B53W05D-GW	Benzene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Bromodichloromethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Bromoform	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Bromomethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Carbon Disulfide	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Chlorobenzene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Chloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Chloroform	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Chloromethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Dibromochloromethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Ethylbenzene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Methylene Chloride	2.00	UG/L	10.00	U	JB	10-DEC-93
153-B53W05D-GW	Styrene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Tetrachloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Toluene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Trichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Vinyl Chloride	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	Xylene (total)	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-B53W05S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05S-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05S-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-B53W05S-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W05S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	2-Butanone	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	2-Hexanone	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Acetone	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-B53W05S-GW	Benzene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Bromoform	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Bromomethane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Chlorobenzene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Chloroethane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Chloroform	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Chloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Ethylbenzene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Methylene Chloride	3.00	UG/L	10.00	U	JB	10-DEC-93
153-B53W05S-GW	Styrene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Toluene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Trichloroethene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	Xylene (total)	10.00	UG/L	10.00	U		10-DEC-93
153-B53W05S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		10-DEC-93
153-B53W06S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	2-Butanone	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	2-Hexanone	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		15-DEC-93
153-B53W06S-GW	Acetone	10.00	UG/L	10.00	U		15-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W06S-GW	Benzene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Bromodichloromethane	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Bromoform	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Bromomethane	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Carbon Disulfide	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Chlorobenzene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Chloroethane	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Chloroform	3.00	UG/L	10.00	J	J	15-DEC-93
153-B53W06S-GW	Chloromethane	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Dibromochloromethane	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Ethylbenzene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Methylene Chloride	2.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Styrene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Tetrachloroethene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Toluene	4.00	UG/L	10.00	J	J	15-DEC-93
153-B53W06S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Trichloroethene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Vinyl Chloride	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W06S-GW	Xylene (total)	4.00	UG/L	10.00	J	J	15-DEC-93
153-B53W06S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	J	15-DEC-93
153-B53W07D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	02-DEC-93
153-B53W07D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	2-Butanone	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	2-Hexanone	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Acetone	3.00	UG/L	10.00	U	JB	02-DEC-93
153-B53W07D-GW	Benzene	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Bromodichloromethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Bromoform	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Bromomethane	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Carbon Disulfide	10.00	UG/L	10.00	U	J	02-DEC-93
153-B53W07D-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	J	02-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W07D-GW	Chlorobenzene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Chloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Chloroform	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Chloromethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Dibromochloromethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Ethylbenzene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Methylene Chloride	8.00	UG/L	10.00	U	JB	02-DEC-93
153-B53W07D-GW	Styrene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Tetrachloroethene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Toluene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Trichloroethene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Vinyl Chloride	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	Xylene (total)	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	02-DEC-93
153-B53W07S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	2-Butanone	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	2-Hexanone	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Acetone	5.00	UG/L	10.00	U	JB	02-DEC-93
153-B53W07S-GW	Benzene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Bromodichloromethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Bromoform	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Bromomethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Carbon Disulfide	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Chlorobenzene	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Chloroethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Chloroform	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Chloromethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Dibromochloromethane	10.00	UG/L	10.00	U	02-DEC-93	
153-B53W07S-GW	Ethylbenzene	10.00	UG/L	10.00	U	02-DEC-93	

E-F-35

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W07S-GW	Methylene Chloride	12.00	UG/L	12.00	U	B	02-DEC-93
153-B53W07S-GW	Styrene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Tetrachloroethene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Toluene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Trichloroethene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Vinyl Chloride	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	Xylene (total)	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W07S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	02-DEC-93
153-B53W08D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-B53W08D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	2-Butanone	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-B53W08D-GW	2-Hexanone	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Acetone	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Benzene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Bromodichloromethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Bromoform	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Bromomethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Carbon Disulfide	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Chlorobenzene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Chloroethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Chloroform	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Chloromethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Dibromochloromethane	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Ethylbenzene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Methylene Chloride	4.00	UG/L	10.00	U	JB	03-DEC-93
153-B53W08D-GW	Styrene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Tetrachloroethene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Toluene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	03-DEC-93
153-B53W08D-GW	Trichloroethene	10.00	UG/L	10.00	U	U	03-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W08D-GW	Vinyl Chloride	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08D-GW	Xylene (total)	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-B53W08S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	2-Butanone	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-B53W08S-GW	2-Hexanone	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Acetone	2.00	UG/L	10.00	U	JB	03-DEC-93
153-B53W08S-GW	Benzene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Bromoform	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Bromomethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Chlorobenzene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Chloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Chloroform	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Chloromethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Ethylbenzene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Methylene Chloride	5.00	UG/L	10.00	U	JB	03-DEC-93
153-B53W08S-GW	Styrene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Toluene	3.00	UG/L	10.00	U	J	03-DEC-93
153-B53W08S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Trichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	Xylene (total)	10.00	UG/L	10.00	U		03-DEC-93
153-B53W08S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		03-DEC-93
153-B53W10S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	07-DEC-93
153-B53W10S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93

E-F 37

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W10S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	2-Butanone	8.00	UG/L	10.00	J		07-DEC-93
153-B53W10S-GW	2-Hexanone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Acetone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Benzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Bromoform	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Bromomethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Chlorobenzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Chloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Chloroform	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Chloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Ethylbenzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Methylene Chloride	1.00	UG/L	10.00	U	JB	07-DEC-93
153-B53W10S-GW	Styrene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Toluene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Trichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	Xylene (total)	10.00	UG/L	10.00	U		07-DEC-93
153-B53W10S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	07-DEC-93
153-B53W13S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W13S-GW	2-Butanone	10.00	UG/L	10.00	U		07-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W13S-GW	2-Hexanone	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Acetone	4.00	UG/L	10.00	U	JB	07-DEC-93
153-B53W13S-GW	Benzene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Bromodichloromethane	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Bromoform	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Bromomethane	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Carbon Disulfide	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Chlorobenzene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Chloroethane	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Chloroform	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Chloromethane	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Dibromochloromethane	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Ethylbenzene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Methylene Chloride	3.00	UG/L	10.00	U	JB	07-DEC-93
153-B53W13S-GW	Styrene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Tetrachloroethene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Toluene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Trichloroethene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Vinyl Chloride	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	Xylene (total)	10.00	UG/L	10.00		U	07-DEC-93
153-B53W13S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	07-DEC-93
153-B53W15S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93
153-B53W15S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	2-Butanone	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	2-Hexanone	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	Acetone	9.00	UG/L	10.00	U	JB	09-DEC-93
153-B53W15S-GW	Benzene	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	Bromodichloromethane	10.00	UG/L	10.00		U	09-DEC-93
153-B53W15S-GW	Bromoform	10.00	UG/L	10.00		U	09-DEC-93

E-F-39

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W15S-GW	Bromomethane	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Chlorobenzene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Chloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Chloroform	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Chloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Ethylbenzene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Methylene Chloride	3.00	UG/L	10.00	U	JB	09-DEC-93
153-B53W15S-GW	Styrene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Toluene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Trichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	Xylene (total)	10.00	UG/L	10.00	U		09-DEC-93
153-B53W15S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		09-DEC-93
153-B53W17S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	07-DEC-93
153-B53W17S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	1,2-Dichloroethene	1.00	UG/L	10.00	J		07-DEC-93
153-B53W17S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	2-Butanone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	2-Hexanone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Acetone	4.00	UG/L	10.00	U	JB	07-DEC-93
153-B53W17S-GW	Benzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Bromoform	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Bromomethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Chlorobenzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Chloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Chloroform	10.00	UG/L	10.00	U		07-DEC-93

E-F-40

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W17S-GW	Chloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Ethylbenzene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Methylene Chloride	3.00	UG/L	10.00	U	JB	07-DEC-93
153-B53W17S-GW	Styrene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Toluene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Trichloroethene	1,200.00	UG/L	100.00	D		07-DEC-93
153-B53W17S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	Xylene (total)	10.00	UG/L	10.00	U		07-DEC-93
153-B53W17S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		07-DEC-93
153-B53W18S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	13-DEC-93
153-B53W18S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	1,2-Dichloroethene	2.00	UG/L	10.00	J		13-DEC-93
153-B53W18S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	2-Butanone	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	2-Hexanone	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Acetone	2.00	UG/L	10.00	U	JB	13-DEC-93
153-B53W18S-GW	Benzene	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Bromoform	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Bromomethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Chlorobenzene	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Chloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Chloroform	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Chloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Ethylbenzene	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Methylene Chloride	5.00	UG/L	10.00	U	JB	13-DEC-93
153-B53W18S-GW	Styrene	10.00	UG/L	10.00	U		13-DEC-93
153-B53W18S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		13-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W18S-GW	Toluene	1.00	UG/L	10.00	U	J	13-DEC-93
153-B53W18S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	J	13-DEC-93
153-B53W18S-GW	Trichloroethene	9.00	UG/L	10.00	U	J	13-DEC-93
153-B53W18S-GW	Vinyl Chloride	10.00	UG/L	10.00	U	J	13-DEC-93
153-B53W18S-GW	Xylene (total)	10.00	UG/L	10.00	U	J	13-DEC-93
153-B53W18S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	J	13-DEC-93
153-B53W21S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-B53W21S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	2-Butanone	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	2-Hexanone	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Acetone	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Benzene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Bromodichloromethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Bromoform	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Bromomethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Carbon Disulfide	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Chlorobenzene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Chloroethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Chloroform	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Chloromethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Dibromochloromethane	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Ethylbenzene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Methylene Chloride	2.00	UG/L	10.00	U	JB	06-DEC-93
153-B53W21S-GW	Styrene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Tetrachloroethene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Toluene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Trichloroethene	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Vinyl Chloride	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	Xylene (total)	10.00	UG/L	10.00	U	U	06-DEC-93
153-B53W21S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	06-DEC-93

E-F-42

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-15D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	08-DEC-93
153-M10-15D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	2-Butanone	12.00	UG/L	10.00		=	08-DEC-93
153-M10-15D-GW	2-Hexanone	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Acetone	6.00	UG/L	10.00	U	JB	08-DEC-93
153-M10-15D-GW	Benzene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Bromodichloromethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Bromoform	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Bromomethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Carbon Disulfide	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Chlorobenzene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Chloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Chloroform	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Chloromethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Dibromochloromethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Ethylbenzene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Methylene Chloride	4.00	UG/L	10.00	U	JB	08-DEC-93
153-M10-15D-GW	Styrene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	TETRAHYDROFURAN	6.00	UG/L	0.00	NJ	J	08-DEC-93
153-M10-15D-GW	Tetrachloroethene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Toluene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Trichloroethene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Vinyl Chloride	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	Xylene (total)	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	08-DEC-93
153-M10-15S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15S-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	08-DEC-93
153-M10-15S-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	08-DEC-93

E-F-43

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-15S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	2-Butanone	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	2-Hexanone	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Acetone	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Benzene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Bromoform	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Bromomethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Chlorobenzene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Chloroethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Chloroform	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Chloromethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Ethylbenzene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Methylene Chloride	2.00	UG/L	10.00	U	JB	08-DEC-93
153-M10-15S-GW	Styrene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Toluene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Trichloroethene	32.00	UG/L	32.00	U	=	08-DEC-93
153-M10-15S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	Xylene (total)	10.00	UG/L	10.00	U		08-DEC-93
153-M10-15S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93
153-M10-25D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	2-Butanone	12.00	UG/L	10.00	=		09-DEC-93
153-M10-25D-GW	2-Hexanone	10.00	UG/L	10.00	U		09-DEC-93
153-M10-25D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		09-DEC-93

E-F-A

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-25D-GW	Acetone	5.00	UG/L	10.00	U	JB	09-DEC-93
153-M10-25D-GW	Benzene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Bromodichloromethane	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Bromoform	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Bromomethane	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Carbon Disulfide	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Chlorobenzene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Chloroethane	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Chloroform	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Chloromethane	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Dibromochloromethane	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Ethylbenzene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Methylene Chloride	5.00	UG/L	10.00	U	JB	09-DEC-93
153-M10-25D-GW	Styrene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Tetrachloroethene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Toluene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Trichloroethene	12.00	UG/L	12.00	U	=	09-DEC-93
153-M10-25D-GW	Vinyl Chloride	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	Xylene (total)	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	U	09-DEC-93
153-M10-25S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	08-DEC-93
153-M10-25S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	2-Butanone	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	2-Hexanone	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	Acetone	6.00	UG/L	10.00	U	JB	08-DEC-93
153-M10-25S-GW	Benzene	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	Bromodichloromethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	Bromoform	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	Bromomethane	10.00	UG/L	10.00	U	U	08-DEC-93
153-M10-25S-GW	Carbon Disulfide	10.00	UG/L	10.00	U	U	08-DEC-93

E-F-45

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-25S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Chlorobenzene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Chloroethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Chloroform	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Chloromethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Ethylbenzene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Methylene Chloride	4.00	UG/L	10.00	U	JB	08-DEC-93
153-M10-25S-GW	Styrene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Tetrachloroethene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Toluene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Trichloroethene	18.00	UG/L	18.00	U	=	08-DEC-93
153-M10-25S-GW	Vinyl Chloride	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	Xylene (total)	10.00	UG/L	10.00	U		08-DEC-93
153-M10-25S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		08-DEC-93
153-M10-8S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93
153-M10-8S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	2-Butanone	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	2-Hexanone	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Acetone	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Benzene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Bromodichloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Bromoform	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Bromomethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Carbon Disulfide	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Chlorobenzene	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Chloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Chloroform	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Chloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-M10-8S-GW	Dibromochloromethane	10.00	UG/L	10.00	U		09-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-8S-GW	Ethylbenzene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Methylene Chloride	2.00	UG/L	10.00	U	JB	09-DEC-93
153-M10-8S-GW	Styrene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Tetrachloroethene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Toluene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Trichloroethene	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Vinyl Chloride	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	Xylene (total)	10.00	UG/L	10.00		U	09-DEC-93
153-M10-8S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	09-DEC-93
153-M135-85D-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-M135-85D-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	2-Butanone	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	2-Hexanone	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Acetone	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Benzene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Bromodichloromethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Bromoform	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Bromomethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Carbon Disulfide	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Chlorobenzene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Chloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Chloroform	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Chloromethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Dibromochloromethane	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Ethylbenzene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Methylene Chloride	3.00	UG/L	10.00	U	JB	06-DEC-93
153-M135-85D-GW	Styrene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Tetrachloroethene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Toluene	10.00	UG/L	10.00		U	06-DEC-93
153-M135-85D-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	06-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M135-85D-GW	Trichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85D-GW	Vinyl Chloride	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85D-GW	Xylene (total)	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85D-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-M135-85S-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	2-Butanone	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	2-Hexanone	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Acetone	2.00	UG/L	10.00	U	JB	06-DEC-93
153-M135-85S-GW	Benzene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Bromo dichloromethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Bromoform	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Bromomethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Carbon Disulfide	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Chlorobenzene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Chloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Chloroform	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Chloromethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Dibromochloromethane	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Ethylbenzene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Methylene Chloride	2.00	UG/L	10.00	U	JB	06-DEC-93
153-M135-85S-GW	Styrene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Tetrachloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Toluene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Trichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Vinyl Chloride	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	Xylene (total)	10.00	UG/L	10.00	U	06-DEC-93	
153-M135-85S-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	06-DEC-93	
153-RB01-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	01-DEC-93	
153-RB01-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	01-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB01-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	2-Butanone	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	2-Hexanone	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Acetone	7.00	UG/L	10.00	U	JB	01-DEC-93
153-RB01-GW	Benzene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Bromodichloromethane	2.00	UG/L	10.00	J		01-DEC-93
153-RB01-GW	Bromoform	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Bromomethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Carbon Disulfide	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Chlorobenzene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Chloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Chloroform	27.00	UG/L	10.00	=		01-DEC-93
153-RB01-GW	Chloromethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Dibromochloromethane	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Ethylbenzene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Methylene Chloride	11.00	UG/L	11.00	U	B	01-DEC-93
153-RB01-GW	Styrene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Tetrachloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Toluene	2.00	UG/L	10.00	J		01-DEC-93
153-RB01-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Trichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Vinyl Chloride	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	Xylene (total)	10.00	UG/L	10.00	U		01-DEC-93
153-RB01-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		01-DEC-93
153-RB02-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-RB02-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-RB02-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		03-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB02-GW	2-Butanone	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-RB02-GW	2-Hexanone	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Acetone	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Benzene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Bromodichloromethane	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Bromoform	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Bromomethane	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Carbon Disulfide	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Chlorobenzene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Chloroethane	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Chloroform	42.00	UG/L	10.00		=	03-DEC-93
153-RB02-GW	Chloromethane	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Dibromochloromethane	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Ethylbenzene	1D.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Methylene Chloride	7.00	UG/L	10.00	U	JB	03-DEC-93
153-RB02-GW	Styrene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Tetrachloroethene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Toluene	3.00	UG/L	10.00		J	03-DEC-93
153-RB02-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Trichloroethene	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Vinyl Chloride	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	Xylene (total)	10.00	UG/L	10.00		U	03-DEC-93
153-RB02-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	03-DEC-93
153-RB04A-GW	1,1,1-Trichloroethane	2.00	UG/L	10.00		J	06-DEC-93
153-RB04A-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-RB04A-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	2-Butanone	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	2-Hexanone	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	4-Methyl-2-pentanone	1C.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	Acetone	12.00	UG/L	12.00	U	B	06-DEC-93
153-RB04A-GW	Benzene	10.00	UG/L	10.00		U	06-DEC-93
153-RB04A-GW	Bromodichloromethane	2.00	UG/L	10.00		J	06-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB04A-GW	Bromoform	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Bromomethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Carbon Disulfide	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Chlorobenzene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Chloroethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Chloroform	29.00	UG/L	10.00	=		06-DEC-93
153-RB04A-GW	Chloromethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Dibromochloromethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Ethylbenzene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Methylene Chloride	27.00	UG/L	27.00	U	B	06-DEC-93
153-RB04A-GW	Styrene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Tetrachloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Toluene	2.00	UG/L	10.00	J		06-DEC-93
153-RB04A-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Trichloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Vinyl Chloride	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	Xylene (total)	10.00	UG/L	10.00	U		06-DEC-93
153-RB04A-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-RB04B-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	2-Butanone	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	2-Hexanone	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Acetone	9.00	UG/L	10.00	U	JB	06-DEC-93
153-RB04B-GW	Benzene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Bromodichloromethane	1.00	UG/L	10.00	J		06-DEC-93
153-RB04B-GW	Bromoform	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Bromomethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Carbon Disulfide	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Chlorobenzene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Chloroethane	10.00	UG/L	10.00	U		06-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB04B-GW	Chloroform	23.00	UG/L	10.00	=		06-DEC-93
153-RB04B-GW	Chloromethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Dibromochloromethane	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Ethylbenzene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Methylene Chloride	9.00	UG/L	10.00	U	JB	06-DEC-93
153-RB04B-GW	Styrene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Tetrachloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Toluene	2.00	UG/L	10.00	J		06-DEC-93
153-RB04B-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Trichloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Vinyl Chloride	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	Xylene (total)	10.00	UG/L	10.00	U		06-DEC-93
153-RB04B-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-RB05A-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93
153-RB05A-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	2-Butanone	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	2-Hexanone	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Acetone	11.00	UG/L	11.00	U	B	09-DEC-93
153-RB05A-GW	Benzene	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Bromodichloromethane	2.00	UG/L	10.00	J		09-DEC-93
153-RB05A-GW	Bromoform	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Bromomethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Carbon Disulfide	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Chlorobenzene	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Chloroethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Chloroform	28.00	UG/L	10.00	=		09-DEC-93
153-RB05A-GW	Chloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Dibromochloromethane	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Ethylbenzene	10.00	UG/L	10.00	U		09-DEC-93
153-RB05A-GW	Methylene Chloride	25.00	UG/L	25.00	U	B	09-DEC-93
153-RB05A-GW	Styrene	10.00	UG/L	10.00	U		09-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB05A-GW	Tetrachloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05A-GW	Toluene	5.00	UG/L	10.00	J	09-DEC-93	
153-RB05A-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05A-GW	Trichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05A-GW	Vinyl Chloride	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05A-GW	Xylene (total)	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05A-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93
153-RB05B-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	2-Butanone	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	2-Hexanone	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Acetone	10.00	UG/L	10.00	U	B	09-DEC-93
153-RB05B-GW	Benzene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Bromodichloromethane	3.00	UG/L	10.00	J	09-DEC-93	
153-RB05B-GW	Bromoform	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Bromomethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Carbon Disulfide	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Chlorobenzene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Chloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Chloroform	35.00	UG/L	10.00	=	09-DEC-93	
153-RB05B-GW	Chloromethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Dibromochloromethane	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Ethylbenzene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Methylene Chloride	9.00	UG/L	10.00	U	JB	09-DEC-93
153-RB05B-GW	Styrene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Tetrachloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Toluene	2.00	UG/L	10.00	J	09-DEC-93	
153-RB05B-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Trichloroethene	10.00	UG/L	10.00	=	09-DEC-93	
153-RB05B-GW	Vinyl Chloride	10.00	UG/L	10.00	U	09-DEC-93	
153-RB05B-GW	Xylene (total)	10.00	UG/L	10.00	U	09-DEC-93	

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB05B-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	09-DEC-93
153-RB06A-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-RB06A-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,2-Dichloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,2-Dichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	1,2-Dichloropropane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	2-Butanone	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	2-Hexanone	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Acetone	6.00	UG/L	10.00	U	JB	10-DEC-93
153-RB06A-GW	Benzene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Bromodichloromethane	2.00	UG/L	10.00	J		10-DEC-93
153-RB06A-GW	Bromoform	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Bromomethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Carbon Disulfide	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Carbon Tetrachloride	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Chlorobenzene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Chloroethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Chloroform	30.00	UG/L	10.00	=		10-DEC-93
153-RB06A-GW	Chloromethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Dibromochloromethane	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Ethylbenzene	1.00	UG/L	10.00	J		10-DEC-93
153-RB06A-GW	Methylene Chloride	6.00	UG/L	10.00	U	JB	10-DEC-93
153-RB06A-GW	Styrene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Tetrachloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Toluene	8.00	UG/L	10.00	J		10-DEC-93
153-RB06A-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Trichloroethene	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Vinyl Chloride	10.00	UG/L	10.00		U	10-DEC-93
153-RB06A-GW	Xylene (total)	7.00	UG/L	10.00	J		10-DEC-93
153-RB06A-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00		U	10-DEC-93
153-RB08C-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00		U	13-DEC-93
153-RB08C-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	13-DEC-93
153-RB08C-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00		U	13-DEC-93
153-RB08C-GW	1,1-Dichloroethane	10.00	UG/L	10.00		U	13-DEC-93
153-RB08C-GW	1,1-Dichloroethene	10.00	UG/L	10.00		U	13-DEC-93

E-F-54

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB08C-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	2-Butanone	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	2-Hexanone	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Acetone	11.00	UG/L	11.00	U	B	13-DEC-93
153-RB08C-GW	Benzene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Bromodichloromethane	4.00	UG/L	10.00	J		13-DEC-93
153-RB08C-GW	Bromoform	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Bromomethane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Carbon Disulfide	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Chlorobenzene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Chloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Chloroform	39.00	UG/L	10.00	=		13-DEC-93
153-RB08C-GW	Chloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Dibromochloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Ethylbenzene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Methylene Chloride	4.00	UG/L	10.00	U	JB	13-DEC-93
153-RB08C-GW	Styrene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Tetrachloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Toluene	3.00	UG/L	10.00	J		13-DEC-93
153-RB08C-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Trichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Vinyl Chloride	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	Xylene (total)	10.00	UG/L	10.00	U		13-DEC-93
153-RB08C-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		13-DEC-93
153-TB01-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	01-DEC-93
153-TB01-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	2-Butanone	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	2-Hexanone	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		01-DEC-93

E-H-S

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB01-GW	Acetone	15.00	UG/L	10.00	B		01-DEC-93
153-TB01-GW	Benzene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Bromodichloromethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Bromoform	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Bromomethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Carbon Disulfide	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Chlorobenzene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Chloroethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Chloroform	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Chloromethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Dibromochloromethane	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Ethylbenzene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Methylene Chloride	8.00	UG/L	10.00	JB		01-DEC-93
153-TB01-GW	Styrene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Tetrachloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Toluene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Trichloroethene	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Vinyl Chloride	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	Xylene (total)	10.00	UG/L	10.00	U		01-DEC-93
153-TB01-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		01-DEC-93
153-TB02-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-TB02-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	2-Butanone	10.00	UG/L	10.00	UJ	U	03-DEC-93
153-TB02-GW	2-Hexanone	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	Acetone	13.00	UG/L	10.00	B		03-DEC-93
153-TB02-GW	Benzene	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	Bromodichloromethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	Bromoform	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	Bromomethane	10.00	UG/L	10.00	U		03-DEC-93
153-TB02-GW	Carbon Disulfide	10.00	UG/L	10.00	U		03-DEC-93

E-56

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB02-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Chlorobenzene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Chloroethane	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Chloroform	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Chloromethane	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Dibromochloromethane	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Ethylbenzene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Methylene Chloride	5.00	UG/L	10.00	JB	03-DEC-93	
153-TB02-GW	Styrene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Tetrachloroethene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Toluene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Trichloroethene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Vinyl Chloride	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	Xylene (total)	10.00	UG/L	10.00	U	03-DEC-93	
153-TB02-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	03-DEC-93	
153-TB03-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	06-DEC-93
153-TB03-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	2-Butanone	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	2-Hexanone	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Acetone	14.00	UG/L	10.00	B	06-DEC-93	
153-TB03-GW	Benzene	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Bromodichloromethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Bromoform	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Bromomethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Carbon Disulfide	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Chlorobenzene	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Chloroethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Chloroform	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Chloromethane	10.00	UG/L	10.00	U	06-DEC-93	
153-TB03-GW	Dibromochloromethane	10.00	UG/L	10.00	U	06-DEC-93	

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB03-GW	Ethylbenzene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Methylene Chloride	8.00	UG/L	10.00	JB		06-DEC-93
153-TB03-GW	Styrene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Tetrachloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Toluene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Trichloroethene	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Vinyl Chloride	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	Xylene (total)	10.00	UG/L	10.00	U		06-DEC-93
153-TB03-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		06-DEC-93
153-TB04-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	07-DEC-93
153-TB04-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	2-Butanone	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	2-Hexanone	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Acetone	17.00	UG/L	10.00	B		07-DEC-93
153-TB04-GW	Benzene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Bromodichloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Bromoform	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Bromomethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Carbon Disulfide	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Chlorobenzene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Chloroethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Chloroform	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Chloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Dibromochloromethane	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Ethylbenzene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Methylene Chloride	6.00	UG/L	10.00	JB		07-DEC-93
153-TB04-GW	Styrene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Tetrachloroethene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Toluene	10.00	UG/L	10.00	U		07-DEC-93
153-TB04-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		07-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB04-GW	Trichloroethene	10.00	UG/L	10.00	U	07-DEC-93	
153-TB04-GW	Vinyl Chloride	10.00	UG/L	10.00	U	07-DEC-93	
153-TB04-GW	Xylene (total)	10.00	UG/L	10.00	U	07-DEC-93	
153-TB04-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	07-DEC-93	
153-TB05-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	08-DEC-93
153-TB05-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	2-Butanone	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	2-Hexanone	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Acetone	15.00	UG/L	10.00	B	08-DEC-93	
153-TB05-GW	Benzene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Bromodichloromethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Bromoform	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Bromomethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Carbon Disulfide	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Chlorobenzene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Chloroethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Chloroform	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Chloromethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Dibromochloromethane	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Ethylbenzene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Methylene Chloride	6.00	UG/L	10.00	JB	08-DEC-93	
153-TB05-GW	Styrene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Tetrachloroethene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Toluene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Trichloroethene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Vinyl Chloride	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	Xylene (total)	10.00	UG/L	10.00	U	08-DEC-93	
153-TB05-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	08-DEC-93	
153-TB06-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	09-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB06-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	2-Butanone	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	2-Hexanone	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Acetone	23.00	UG/L	10.00	B	09-DEC-93	
153-TB06-GW	Benzene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Bromodichloromethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Bromoform	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Bromomethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Carbon Disulfide	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Chlorobenzene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Chloroethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Chloroform	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Chloromethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Dibromochloromethane	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Ethylbenzene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Methylene Chloride	7.00	UG/L	10.00	JB	09-DEC-93	
153-TB06-GW	Styrene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Tetrachloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Toluene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Trichloroethene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Vinyl Chloride	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	Xylene (total)	10.00	UG/L	10.00	U	09-DEC-93	
153-TB06-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	09-DEC-93	
153-TB07-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	10-DEC-93
153-TB07-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U	10-DEC-93	
153-TB07-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U	10-DEC-93	

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB07-GW	2-Butanone	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	2-Hexanone	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Acetone	9.00	UG/L	10.00	JB		10-DEC-93
153-TB07-GW	Benzene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Bromodichloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Bromoform	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Bromomethane	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Carbon Disulfide	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Chlorobenzene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Chloroethane	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Chloroform	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Chloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Dibromochloromethane	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Ethylbenzene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Methylene Chloride	8.00	UG/L	10.00	JB		10-DEC-93
153-TB07-GW	Styrene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Tetrachloroethene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Toluene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Trichloroethene	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Vinyl Chloride	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	Xylene (total)	10.00	UG/L	10.00	U		10-DEC-93
153-TB07-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		10-DEC-93
153-TB08-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	UJ	U	13-DEC-93
153-TB08-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	2-Butanone	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	2-Hexanone	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Acetone	11.00	UG/L	10.00	B		13-DEC-93
153-TB08-GW	Benzene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Bromodichloromethane	10.00	UG/L	10.00	U		13-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB08-GW	Bromoform	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Bromomethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Carbon Disulfide	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Chlorobenzene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Chloroethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Chloroform	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Chloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Dibromochloromethane	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Ethylbenzene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Methylene Chloride	7.00	UG/L	10.00	JB		13-DEC-93
153-TB08-GW	Styrene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Tetrachloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Toluene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Trichloroethene	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Vinyl Chloride	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	Xylene (total)	10.00	UG/L	10.00	U		13-DEC-93
153-TB08-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U		13-DEC-93
153-TB09-GW	1,1,1-Trichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,1,2,2-Tetrachloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,1,2-Trichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,1-Dichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,1-Dichloroethene	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,2-Dichloroethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,2-Dichloroethene	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	1,2-Dichloropropane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	2-Butanone	10.00	UG/L	10.00	UJ	U	15-DEC-93
153-TB09-GW	2-Hexanone	10.00	UG/L	10.00	UJ	U	15-DEC-93
153-TB09-GW	4-Methyl-2-pentanone	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Acetone	12.00	UG/L	10.00	=		15-DEC-93
153-TB09-GW	Benzene	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Bromodichloromethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Bromoform	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Bromomethane	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Carbon Disulfide	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Carbon Tetrachloride	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Chlorobenzene	10.00	UG/L	10.00	U		15-DEC-93
153-TB09-GW	Chloroethane	10.00	UG/L	10.00	U		15-DEC-93

Table 2: Analytical Results for Volatile Organics

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-TB09-GW	Chloroform	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Chloromethane	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Dibromochloromethane	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Ethylbenzene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Methylene Chloride	8.00	UG/L	10.00	JB	15-DEC-93	
153-TB09-GW	Styrene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	TRIMETHYL-SILANOL	6.00	UG/L	0.00	NJ	J	15-DEC-93
153-TB09-GW	Tetrachloroethene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Toluene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Trans-1,3-Dichloropropene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Trichloroethene	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Vinyl Chloride	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	Xylene (total)	10.00	UG/L	10.00	U	15-DEC-93	
153-TB09-GW	cis-1,3-Dichloropropene	10.00	UG/L	10.00	U	15-DEC-93	

Table 3: Analytical Results for Metals Occurring
at Concentrations Exceeding MCLs

Analyte	Sample ID Number	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
Arsenic, Total	153-M10-15D-GW	52.80	UG/L	4.00	=		08-DEC-93
Arsenic, Total	153-M135-85D-GW	70.00	UG/L	20.00	J	B	06-DEC-93
Arsenic, Total	153-B53W10D-GW	103.00	UG/L	8.00	J	=	03-DEC-93
Arsenic, Total	153-B53W05D-GW	110.00	UG/L	20.00	J	=	10-DEC-93
Chromium, Total	153-M10-15D-GW	56.80	UG/L	6.00	=		08-DEC-93
Chromium, Total	153-B53W06S-GW	58.00	UG/L	6.00	=		15-DEC-93
Chromium, Total	153-B53W09D-GW	64.20	UG/L	6.00	=		13-DEC-93
Chromium, Total	153-B53W04S-GW	72.90	UG/L	6.00	=		01-DEC-93
Chromium, Total	153-B53W10D-GW	84.10	UG/L	6.00	=		03-DEC-93
Selenium, Total	153-B53W21S-GW	20.00	UG/L	20.00	U		06-DEC-93
Selenium, Total	153-M135-85S-GW	20.00	UG/L	20.00	U		06-DEC-93
Selenium, Total	153-B53W12S-GW	162.00	UG/L	20.00	=		04-DEC-93
Selenium, Total	153-B53W17S-GW	178.00	UG/L	20.00	=		07-DEC-93
Selenium, Total	153-M10-15S-GW	545.00	UG/L	100.00	=		08-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W04D-GW	Aluminum, Total	53.50	UG/L	48.00		B	01-DEC-93
153-B53W04D-GW	Antimony, Total	46.00	UG/L	46.00		U	01-DEC-93
153-B53W04D-GW	Arsenic, Total	18.00	UG/L	2.00		=	01-DEC-93
153-B53W04D-GW	Barium, Total	677.00	UG/L	6.00		=	01-DEC-93
153-B53W04D-GW	Beryllium, Total	1.00	UG/L	1.00		U	01-DEC-93
153-B53W04D-GW	Boron, Total	117.00	UG/L	9.00	U	=	01-DEC-93
153-B53W04D-GW	Cadmium, Total	5.00	UG/L	5.00		U	01-DEC-93
153-B53W04D-GW	Calcium, Total	84,700.00	UG/L	28.00		=	01-DEC-93
153-B53W04D-GW	Chromium, Total	7.20	UG/L	6.00	U	B	01-DEC-93
153-B53W04D-GW	Cobalt, Total	7.20	UG/L	7.00		B	01-DEC-93
153-B53W04D-GW	Copper, Total	7.00	UG/L	7.00		U	01-DEC-93
153-B53W04D-GW	Iron, Total	3,310.00	UG/L	7.00		=	01-DEC-93
153-B53W04D-GW	Lead, Total	2.00	UG/L	2.00		U	01-DEC-93
153-B53W04D-GW	Magnesium, Total	41,100.00	UG/L	58.00		=	01-DEC-93
153-B53W04D-GW	Manganese, Total	2,410.00	UG/L	2.00		=	01-DEC-93
153-B53W04D-GW	Molybdenum, Total	39.00	UG/L	39.00		U	01-DEC-93
153-B53W04D-GW	Nickel, Total	13.00	UG/L	12.00		B	01-DEC-93
153-B53W04D-GW	Potassium, Total	9,470.00	UG/L	905.00		=	01-DEC-93
153-B53W04D-GW	Selenium, Total	2.00	UG/L	2.00		U	01-DEC-93
153-B53W04D-GW	Silver, Total	7.00	UG/L	7.00	UJ	U	01-DEC-93
153-B53W04D-GW	Sodium, Total	55,200.00	UG/L	47.00		=	01-DEC-93
153-B53W04D-GW	Thallium, Total	2.00	UG/L	2.00	UJ	U	01-DEC-93
153-B53W04D-GW	Vanadium, Total	3.00	UG/L	3.00		U	01-DEC-93
153-B53W04D-GW	Zinc, Total	144.00	UG/L	3.00	U	=	01-DEC-93
153-B53W04S-GW	Aluminum, Total	1,840.00	UG/L	48.00		=	01-DEC-93
153-B53W04S-GW	Antimony, Total	46.00	UG/L	46.00		U	01-DEC-93
153-B53W04S-GW	Arsenic, Total	3.90	UG/L	2.00		B	01-DEC-93
153-B53W04S-GW	Barium, Total	285.00	UG/L	6.00		=	01-DEC-93
153-B53W04S-GW	Beryllium, Total	1.00	UG/L	1.00		U	01-DEC-93
153-B53W04S-GW	Boron, Total	58.70	UG/L	9.00	U	B	01-DEC-93
153-B53W04S-GW	Cadmium, Total	5.00	UG/L	5.00		U	01-DEC-93
153-B53W04S-GW	Calcium, Total	79,800.00	UG/L	28.00		=	01-DEC-93
153-B53W04S-GW	Chromium, Total	72.90	UG/L	6.00		=	01-DEC-93
153-B53W04S-GW	Cobalt, Total	7.00	UG/L	7.00		U	01-DEC-93
153-B53W04S-GW	Copper, Total	36.90	UG/L	7.00		=	01-DEC-93
153-B53W04S-GW	Iron, Total	2,540.00	UG/L	7.00		=	01-DEC-93
153-B53W04S-GW	Lead, Total	5.50	UG/L	2.00		=	01-DEC-93
153-B53W04S-GW	Magnesium, Total	32,800.00	UG/L	58.00		=	01-DEC-93
153-B53W04S-GW	Manganese, Total	2,200.00	UG/L	2.00		=	01-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W04S-GW	Molybdenum, Total	39.00	UG/L	39.00	U		01-DEC-93
153-B53W04S-GW	Nickel, Total	52.40	UG/L	12.00	=		01-DEC-93
153-B53W04S-GW	Potassium, Total	2,880.00	UG/L	905.00	B		01-DEC-93
153-B53W04S-GW	Selenium, Total	2.00	UG/L	2.00	U		01-DEC-93
153-B53W04S-GW	Silver, Total	7.00	UG/L	7.00	UJ	U	01-DEC-93
153-B53W04S-GW	Sodium, Total	29,200.00	UG/L	47.00	=		01-DEC-93
153-B53W04S-GW	Thallium, Total	2.00	UG/L	2.00	UJ	U	01-DEC-93
153-B53W04S-GW	Vanadium, Total	4.70	UG/L	3.00	U	B	01-DEC-93
153-B53W04S-GW	Zinc, Total	114.00	UG/L	3.00	U	=	01-DEC-93
153-B53W05D-GW	Aluminum, Total	32.30	UG/L	14.00	U	B	10-DEC-93
153-B53W05D-GW	Antimony, Total	20.00	UG/L	20.00	U		10-DEC-93
153-B53W05D-GW	Arsenic, Total	110.00	UG/L	20.00	J	=	10-DEC-93
153-B53W05D-GW	Barium, Total	391.00	UG/L	4.00	=		10-DEC-93
153-B53W05D-GW	Beryllium, Total	1.80	UG/L	1.00	U	B	10-DEC-93
153-B53W05D-GW	Boron, Total	206.00	UG/L	26.00	U	=	10-DEC-93
153-B53W05D-GW	Cadmium, Total	2.00	UG/L	2.00	U		10-DEC-93
153-B53W05D-GW	Calcium, Total	97,200.00	UG/L	24.00	=		10-DEC-93
153-B53W05D-GW	Chromium, Total	3.00	UG/L	3.00	U		10-DEC-93
153-B53W05D-GW	Cobalt, Total	5.80	UG/L	5.00	U	B	10-DEC-93
153-B53W05D-GW	Copper, Total	3.00	UG/L	3.00	U		10-DEC-93
153-B53W05D-GW	Iron, Total	11,300.00	UG/L	5.00	=		10-DEC-93
153-B53W05D-GW	Lead, Total	2.00	UG/L	2.00	U		10-DEC-93
153-B53W05D-GW	Magnesium, Total	41,200.00	UG/L	42.00	=		10-DEC-93
153-B53W05D-GW	Manganese, Total	344.00	UG/L	2.00	=		10-DEC-93
153-B53W05D-GW	Molybdenum, Total	6.00	UG/L	6.00	U		10-DEC-93
153-B53W05D-GW	Nickel, Total	9.50	UG/L	8.00	U	B	10-DEC-93
153-B53W05D-GW	Potassium, Total	1,400.00	UG/L	693.00	B		10-DEC-93
153-B53W05D-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	10-DEC-93
153-B53W05D-GW	Silver, Total	3.00	UG/L	3.00	U		10-DEC-93
153-B53W05D-GW	Sodium, Total	46,600.00	UG/L	35.00	=		10-DEC-93
153-B53W05D-GW	Thallium, Total	2.00	UG/L	2.00	U		10-DEC-93
153-B53W05D-GW	Vanadium, Total	22.70	UG/L	3.00	U	B	10-DEC-93
153-B53W05D-GW	Zinc, Total	157.00	UG/L	3.00	UJ	=	10-DEC-93
153-B53W05S-GW	Aluminum, Total	15.50	UG/L	14.00	U	B	10-DEC-93
153-B53W05S-GW	Antimony, Total	20.00	UG/L	20.00	U		10-DEC-93
153-B53W05S-GW	Arsenic, Total	3.30	UG/L	2.00	J	B	10-DEC-93
153-B53W05S-GW	Barium, Total	349.00	UG/L	4.00	=		10-DEC-93
153-B53W05S-GW	Beryllium, Total	1.00	UG/L	1.00	U		10-DEC-93
153-B53W05S-GW	Boron, Total	41.70	UG/L	26.00	U	B	10-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W05S-GW	Cadmium, Total	3.20	UG/L	2.00		B	10-DEC-93
153-B53W05S-GW	Calcium, Total	107,000.00	UG/L	24.00		=	10-DEC-93
153-B53W05S-GW	Chromium, Total	3.00	UG/L	3.00		U	10-DEC-93
153-B53W05S-GW	Cobalt, Total	5.00	UG/L	5.00		U	10-DEC-93
153-B53W05S-GW	Copper, Total	3.00	UG/L	3.00		U	10-DEC-93
153-B53W05S-GW	Iron, Total	2,980.00	UG/L	5.00		=	10-DEC-93
153-B53W05S-GW	Lead, Total	2.00	UG/L	2.00		U	10-DEC-93
153-B53W05S-GW	Magnesium, Total	35,000.00	UG/L	42.00		=	10-DEC-93
153-B53W05S-GW	Manganese, Total	1,080.00	UG/L	2.00		=	10-DEC-93
153-B53W05S-GW	Molybdenum, Total	6.00	UG/L	6.00		U	10-DEC-93
153-B53W05S-GW	Nickel, Total	8.00	UG/L	8.00		U	10-DEC-93
153-B53W05S-GW	Potassium, Total	1,860.00	UG/L	693.00		B	10-DEC-93
153-B53W05S-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	10-DEC-93
153-B53W05S-GW	Silver, Total	3.00	UG/L	3.00		U	10-DEC-93
153-B53W05S-GW	Sodium, Total	13,600.00	UG/L	35.00		=	10-DEC-93
153-B53W05S-GW	Thallium, Total	2.00	UG/L	2.00		U	10-DEC-93
153-B53W05S-GW	Vanadium, Total	28.90	UG/L	3.00	U	B	10-DEC-93
153-B53W05S-GW	Zinc, Total	83.80	UG/L	3.00	UJ	=	10-DEC-93
153-B53W06D-GW	Aluminum, Total	856.00	UG/L	48.00		=	15-DEC-93
153-B53W06D-GW	Antimony, Total	46.00	UG/L	46.00		U	15-DEC-93
153-B53W06D-GW	Arsenic, Total	35.80	UG/L	2.00	J	=	15-DEC-93
153-B53W06D-GW	Barium, Total	388.00	UG/L	6.00		=	15-DEC-93
153-B53W06D-GW	Beryllium, Total	1.00	UG/L	1.00		U	15-DEC-93
153-B53W06D-GW	Boron, Total	185.00	UG/L	9.00		=	15-DEC-93
153-B53W06D-GW	Cadmium, Total	5.00	UG/L	5.00		U	15-DEC-93
153-B53W06D-GW	Calcium, Total	77,000.00	UG/L	28.00		=	15-DEC-93
153-B53W06D-GW	Chromium, Total	9.40	UG/L	6.00		B	15-DEC-93
153-B53W06D-GW	Cobalt, Total	7.00	UG/L	7.00		U	15-DEC-93
153-B53W06D-GW	Copper, Total	7.60	UG/L	7.00		B	15-DEC-93
153-B53W06D-GW	Iron, Total	5,190.00	UG/L	7.00		=	15-DEC-93
153-B53W06D-GW	Lead, Total	2.00	UG/L	2.00	UJ	U	15-DEC-93
153-B53W06D-GW	Magnesium, Total	40,300.00	UG/L	58.00		=	15-DEC-93
153-B53W06D-GW	Manganese, Total	260.00	UG/L	2.00		=	15-DEC-93
153-B53W06D-GW	Molybdenum, Total	39.00	UG/L	39.00		U	15-DEC-93
153-B53W06D-GW	Nickel, Total	14.50	UG/L	12.00		B	15-DEC-93
153-B53W06D-GW	Potassium, Total	2,000.00	UG/L	905.00		B	15-DEC-93
153-B53W06D-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	15-DEC-93
153-B53W06D-GW	Silver, Total	7.00	UG/L	7.00		U	15-DEC-93
153-B53W06D-GW	Sodium, Total	49,100.00	UG/L	47.00		=	15-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W06D-GW	Thallium, Total	2.00	UG/L	2.00	UJ	U	15-DEC-93
153-B53W06D-GW	Vanadium, Total	3.30	UG/L	3.00	U	B	15-DEC-93
153-B53W06D-GW	Zinc, Total	14.40	UG/L	3.00	U	B	15-DEC-93
153-B53W06S-GW	Aluminum, Total	829.00	UG/L	48.00		=	15-DEC-93
153-B53W06S-GW	Antimony, Total	46.00	UG/L	46.00		U	15-DEC-93
153-B53W06S-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	15-DEC-93
153-B53W06S-GW	Barium, Total	72.40	UG/L	6.00		B	15-DEC-93
153-B53W06S-GW	Beryllium, Total	1.00	UG/L	1.00		U	15-DEC-93
153-B53W06S-GW	Boron, Total	77.70	UG/L	9.00	U	B	15-DEC-93
153-B53W06S-GW	Cadmium, Total	5.00	UG/L	5.00		U	15-DEC-93
153-B53W06S-GW	Calcium, Total	270,000.00	UG/L	28.00		=	15-DEC-93
153-B53W06S-GW	Chromium, Total	58.00	UG/L	6.00		=	15-DEC-93
153-B53W06S-GW	Cobalt, Total	12.10	UG/L	7.00		B	15-DEC-93
153-B53W06S-GW	Copper, Total	130.00	UG/L	7.00		=	15-DEC-93
153-B53W06S-GW	Iron, Total	1,610.00	UG/L	7.00		=	15-DEC-93
153-B53W06S-GW	Lead, Total	2.60	UG/L	2.00	J	B	15-DEC-93
153-B53W06S-GW	Magnesium, Total	106,000.00	UG/L	58.00		=	15-DEC-93
153-B53W06S-GW	Manganese, Total	2,670.00	UG/L	2.00		=	15-DEC-93
153-B53W06S-GW	Molybdenum, Total	39.00	UG/L	39.00		U	15-DEC-93
153-B53W06S-GW	Nickel, Total	40.80	UG/L	12.00		=	15-DEC-93
153-B53W06S-GW	Potassium, Total	2,660.00	UG/L	905.00		B	15-DEC-93
153-B53W06S-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	15-DEC-93
153-B53W06S-GW	Silver, Total	7.00	UG/L	7.00		U	15-DEC-93
153-B53W06S-GW	Sodium, Total	34,100.00	UG/L	47.00		=	15-DEC-93
153-B53W06S-GW	Thallium, Total	20.00	UG/L	20.00		U	15-DEC-93
153-B53W06S-GW	Vanadium, Total	3.00	UG/L	3.00		U	15-DEC-93
153-B53W06S-GW	Zinc, Total	68.50	UG/L	3.00		=	15-DEC-93
153-B53W09D-GW	Aluminum, Total	195.00	UG/L	48.00		B	13-DEC-93
153-B53W09D-GW	Antimony, Total	46.00	UG/L	46.00		U	13-DEC-93
153-B53W09D-GW	Arsenic, Total	2.00	UG/L	2.00		U	13-DEC-93
153-B53W09D-GW	Barium, Total	133.00	UG/L	6.00		B	13-DEC-93
153-B53W09D-GW	Beryllium, Total	1.00	UG/L	1.00		U	13-DEC-93
153-B53W09D-GW	Boron, Total	479.00	UG/L	9.00		=	13-DEC-93
153-B53W09D-GW	Cadmium, Total	5.00	UG/L	5.00		U	13-DEC-93
153-B53W09D-GW	Calcium, Total	100,000.00	UG/L	28.00	J	=	13-DEC-93
153-B53W09D-GW	Chromium, Total	64.20	UG/L	6.00		=	13-DEC-93
153-B53W09D-GW	Cobalt, Total	7.00	UG/L	7.00		U	13-DEC-93
153-B53W09D-GW	Copper, Total	11.50	UG/L	7.00		B	13-DEC-93
153-B53W09D-GW	Iron, Total	543.00	UG/L	7.00	J	=	13-DEC-93

E-F-68

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W09D-GW	Lead, Total	2.90	UG/L	2.00	B	=	13-DEC-93
153-B53W09D-GW	Magnesium, Total	34,900.00	UG/L	58.00	J	=	13-DEC-93
153-B53W09D-GW	Manganese, Total	1,030.00	UG/L	2.00	J	=	13-DEC-93
153-B53W09D-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	13-DEC-93
153-B53W09D-GW	Nickel, Total	52.70	UG/L	12.00	U	=	13-DEC-93
153-B53W09D-GW	Potassium, Total	4,700.00	UG/L	905.00	B	=	13-DEC-93
153-B53W09D-GW	Selenium, Total	2.00	UG/L	2.00	U	=	13-DEC-93
153-B53W09D-GW	Silver, Total	7.00	UG/L	7.00	U	=	13-DEC-93
153-B53W09D-GW	Sodium, Total	75,800.00	UG/L	47.00	J	=	13-DEC-93
153-B53W09D-GW	Thallium, Total	2.00	UG/L	2.00	U	=	13-DEC-93
153-B53W09D-GW	Vanadium, Total	3.00	UG/L	3.00	U	=	13-DEC-93
153-B53W09D-GW	Zinc, Total	248.00	UG/L	3.00	=	=	13-DEC-93
153-B53W10D-GW	Aluminum, Total	6,530.00	UG/L	48.00	J	=	03-DEC-93
153-B53W10D-GW	Antimony, Total	46.00	UG/L	46.00	U	=	03-DEC-93
153-B53W10D-GW	Arsenic, Total	103.00	UG/L	8.00	J	=	03-DEC-93
153-B53W10D-GW	Barium, Total	582.00	UG/L	6.00	J	=	03-DEC-93
153-B53W10D-GW	Beryllium, Total	1.00	UG/L	1.00	U	=	03-DEC-93
153-B53W10D-GW	Boron, Total	139.00	UG/L	9.00	U	=	03-DEC-93
153-B53W10D-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	03-DEC-93
153-B53W10D-GW	Calcium, Total	96,600.00	UG/L	28.00	J	=	03-DEC-93
153-B53W10D-GW	Chromium, Total	84.10	UG/L	6.00	=	=	03-DEC-93
153-B53W10D-GW	Cobalt, Total	18.70	UG/L	7.00	B	=	03-DEC-93
153-B53W10D-GW	Copper, Total	21.70	UG/L	7.00	U	B	03-DEC-93
153-B53W10D-GW	Iron, Total	22,300.00	UG/L	7.00	J	=	03-DEC-93
153-B53W10D-GW	Lead, Total	19.50	UG/L	2.00	=	=	03-DEC-93
153-B53W10D-GW	Magnesium, Total	37,700.00	UG/L	58.00	J	=	03-DEC-93
153-B53W10D-GW	Manganese, Total	1,150.00	UG/L	2.00	J	=	03-DEC-93
153-B53W10D-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	03-DEC-93
153-B53W10D-GW	Nickel, Total	85.90	UG/L	12.00	=	=	03-DEC-93
153-B53W10D-GW	Potassium, Total	2,210.00	UG/L	905.00	B	=	03-DEC-93
153-B53W10D-GW	Selenium, Total	2.00	UG/L	2.00	U	=	03-DEC-93
153-B53W10D-GW	Silver, Total	7.00	UG/L	7.00	U	=	03-DEC-93
153-B53W10D-GW	Sodium, Total	41,200.00	UG/L	47.00	J	=	03-DEC-93
153-B53W10D-GW	Thallium, Total	2.00	UG/L	2.00	U	=	03-DEC-93
153-B53W10D-GW	Vanadium, Total	18.70	UG/L	3.00	B	=	03-DEC-93
153-B53W10D-GW	Zinc, Total	210.00	UG/L	3.00	J	=	03-DEC-93
153-B53W11D-GW	Aluminum, Total	977.00	UG/L	48.00	=	=	12-DEC-93
153-B53W11D-GW	Antimony, Total	46.00	UG/L	46.00	U	=	12-DEC-93
153-B53W11D-GW	Arsenic, Total	2.00	UG/L	2.00	U	=	12-DEC-93

E-F-69

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W11D-GW	Barium, Total	78.80	UG/L	6.00	U	B	12-DEC-93
153-B53W11D-GW	Beryllium, Total	1.00	UG/L	1.00		U	12-DEC-93
153-B53W11D-GW	Boron, Total	950.00	UG/L	9.00		=	12-DEC-93
153-B53W11D-GW	Cadmium, Total	5.00	UG/L	5.00		U	12-DEC-93
153-B53W11D-GW	Calcium, Total	33,800.00	UG/L	28.00	J	=	12-DEC-93
153-B53W11D-GW	Chromium, Total	39.10	UG/L	6.00		=	12-DEC-93
153-B53W11D-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	12-DEC-93
153-B53W11D-GW	Copper, Total	43.50	UG/L	7.00		=	12-DEC-93
153-B53W11D-GW	Iron, Total	1,110.00	UG/L	7.00	J	=	12-DEC-93
153-B53W11D-GW	Lead, Total	2.60	UG/L	2.00		B	12-DEC-93
153-B53W11D-GW	Magnesium, Total	18,800.00	UG/L	58.00	J	=	12-DEC-93
153-B53W11D-GW	Manganese, Total	179.00	UG/L	2.00	J	=	12-DEC-93
153-B53W11D-GW	Molybdenum, Total	39.00	UG/L	39.00		U	12-DEC-93
153-B53W11D-GW	Nickel, Total	28.80	UG/L	12.00	U	B	12-DEC-93
153-B53W11D-GW	Potassium, Total	35,600.00	UG/L	905.00		=	12-DEC-93
153-B53W11D-GW	Selenium, Total	2.00	UG/L	2.00		U	12-DEC-93
153-B53W11D-GW	Silver, Total	7.00	UG/L	7.00		U	12-DEC-93
153-B53W11D-GW	Sodium, Total	94,800.00	UG/L	47.00	J	=	12-DEC-93
153-B53W11D-GW	Thallium, Total	2.00	UG/L	2.00		U	12-DEC-93
153-B53W11D-GW	Vanadium, Total	4.90	UG/L	3.00	U	B	12-DEC-93
153-B53W11D-GW	Zinc, Total	85.80	UG/L	3.00		=	12-DEC-93
153-B53W11S-GW	Aluminum, Total	49.20	UG/L	48.00		B	14-DEC-93
153-B53W11S-GW	Antimony, Total	46.00	UG/L	46.00		U	14-DEC-93
153-B53W11S-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W11S-GW	Barium, Total	106.0C	UG/L	6.00		B	14-DEC-93
153-B53W11S-GW	Beryllium, Total	1.0G	UG/L	1.00		B	14-DEC-93
153-B53W11S-GW	Boron, Total	74.60	UG/L	9.00	U	B	14-DEC-93
153-B53W11S-GW	Cadmium, Total	5.00	UG/L	5.00		U	14-DEC-93
153-B53W11S-GW	Calcium, Total	89,500.00	UG/L	28.00		=	14-DEC-93
153-B53W11S-GW	Chromium, Total	7.40	UG/L	6.00		B	14-DEC-93
153-B53W11S-GW	Cobalt, Total	10.70	UG/L	7.00	U	B	14-DEC-93
153-B53W11S-GW	Copper, Total	9.20	UG/L	7.00		B	14-DEC-93
153-B53W11S-GW	Iron, Total	107.00	UG/L	7.00		=	14-DEC-93
153-B53W11S-GW	Lead, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W11S-GW	Magnesium, Total	43,100.00	UG/L	58.00		=	14-DEC-93
153-B53W11S-GW	Manganese, Total	163.00	UG/L	2.00		=	14-DEC-93
153-B53W11S-GW	Molybdenum, Total	39.00	UG/L	39.00		U	14-DEC-93
153-B53W11S-GW	Nickel, Total	12.20	UG/L	12.00		B	14-DEC-93
153-B53W11S-GW	Potassium, Total	1,460.00	UG/L	905.00		B	14-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W11S-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W11S-GW	Silver, Total	7.00	UG/L	7.00		U	14-DEC-93
153-B53W11S-GW	Sodium, Total	16,000.00	UG/L	47.00		=	14-DEC-93
153-B53W11S-GW	Thallium, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W11S-GW	Vanadium, Total	11.30	UG/L	3.00	U	B	14-DEC-93
153-B53W11S-GW	Zinc, Total	26.20	UG/L	3.00		=	14-DEC-93
153-B53W12D-GW	Aluminum, Total	110.00	UG/L	48.00		B	12-DEC-93
153-B53W12D-GW	Antimony, Total	46.00	UG/L	46.00		U	12-DEC-93
153-B53W12D-GW	Arsenic, Total	9.00	UG/L	2.00		B	12-DEC-93
153-B53W12D-GW	Barium, Total	180.00	UG/L	6.00		B	12-DEC-93
153-B53W12D-GW	Beryllium, Total	1.00	UG/L	1.00		B	12-DEC-93
153-B53W12D-GW	Boron, Total	274.00	UG/L	9.00		=	12-DEC-93
153-B53W12D-GW	Cadmium, Total	5.00	UG/L	5.00		U	12-DEC-93
153-B53W12D-GW	Calcium, Total	64,400.00	UG/L	28.00	J	=	12-DEC-93
153-B53W12D-GW	Chromium, Total	6.70	UG/L	6.00		B	12-DEC-93
153-B53W12D-GW	Cobalt, Total	11.80	UG/L	7.00	U	B	12-DEC-93
153-B53W12D-GW	Copper, Total	7.00	UG/L	7.00		U	12-DEC-93
153-B53W12D-GW	Iron, Total	564.00	UG/L	7.00	J	=	12-DEC-93
153-B53W12D-GW	Lead, Total	2.00	UG/L	2.00		U	12-DEC-93
153-B53W12D-GW	Magnesium, Total	27,900.00	UG/L	58.00	J	=	12-DEC-93
153-B53W12D-GW	Manganese, Total	1,330.00	UG/L	2.00	J	=	12-DEC-93
153-B53W12D-GW	Molybdenum, Total	39.00	UG/L	39.00		U	12-DEC-93
153-B53W12D-GW	Nickel, Total	15.90	UG/L	12.00	U	B	12-DEC-93
153-B53W12D-GW	Potassium, Total	18,500.00	UG/L	905.00		=	12-DEC-93
153-B53W12D-GW	Selenium, Total	2.00	UG/L	2.00		U	12-DEC-93
153-B53W12D-GW	Silver, Total	7.00	UG/L	7.00		U	12-DEC-93
153-B53W12D-GW	Sodium, Total	67,200.00	UG/L	47.00	J	=	12-DEC-93
153-B53W12D-GW	Thallium, Total	2.00	UG/L	2.00		U	12-DEC-93
153-B53W12D-GW	Vanadium, Total	10.20	UG/L	3.00	U	B	12-DEC-93
153-B53W12D-GW	Zinc, Total	34.00	UG/L	3.00	U	=	12-DEC-93
153-B53W12S-GW	Aluminum, Total	698.00	UG/L	48.00	J	=	04-DEC-93
153-B53W12S-GW	Antimony, Total	46.00	UG/L	46.00		U	04-DEC-93
153-B53W12S-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	04-DEC-93
153-B53W12S-GW	Barium, Total	318.00	UG/L	6.00	J	=	04-DEC-93
153-B53W12S-GW	Beryllium, Total	1.00	UG/L	1.00		U	04-DEC-93
153-B53W12S-GW	Boron, Total	118.00	UG/L	9.00	U	=	04-DEC-93
153-B53W12S-GW	Cadmium, Total	5.00	UG/L	5.00		U	04-DEC-93
153-B53W12S-GW	Calcium, Total	242,000.00	UG/L	28.00	J	=	04-DEC-93
153-B53W12S-GW	Chromium, Total	22.70	UG/L	6.00	U	=	04-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W12S-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	04-DEC-93
153-B53W12S-GW	Copper, Total	15.00	UG/L	7.00	U	B	04-DEC-93
153-B53W12S-GW	Iron, Total	876.00	UG/L	7.00	UJ	=	04-DEC-93
153-B53W12S-GW	Lead, Total	2.00	UG/L	2.00	U	=	04-DEC-93
153-B53W12S-GW	Magnesium, Total	130,000.00	UG/L	58.00	J	=	04-DEC-93
153-B53W12S-GW	Manganese, Total	456.00	UG/L	2.00	J	=	04-DEC-93
153-B53W12S-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	04-DEC-93
153-B53W12S-GW	Nickel, Total	25.80	UG/L	12.00	U	B	04-DEC-93
153-B53W12S-GW	Potassium, Total	1,250.00	UG/L	905.00	B	=	04-DEC-93
153-B53W12S-GW	Selenium, Total	162.00	UG/L	20.00	=	=	04-DEC-93
153-B53W12S-GW	Silver, Total	7.00	UG/L	7.00	U	=	04-DEC-93
153-B53W12S-GW	Sodium, Total	96,500.00	UG/L	47.00	J	=	04-DEC-93
153-B53W12S-GW	Thallium, Total	20.00	UG/L	20.00	U	=	04-DEC-93
153-B53W12S-GW	Vanadium, Total	3.80	UG/L	3.00	U	B	04-DEC-93
153-B53W12S-GW	Zinc, Total	72.60	UG/L	3.00	UJ	=	04-DEC-93
153-B53W15S-GW	Aluminum, Total	58.00	UG/L	48.00	B	=	09-DEC-93
153-B53W15S-GW	Antimony, Total	46.00	UG/L	46.00	U	=	09-DEC-93
153-B53W15S-GW	Arsenic, Total	2.00	UG/L	2.00	U	=	09-DEC-93
153-B53W15S-GW	Barium, Total	99.70	UG/L	6.00	B	=	09-DEC-93
153-B53W15S-GW	Beryllium, Total	1.00	UG/L	1.00	U	=	09-DEC-93
153-B53W15S-GW	Boron, Total	193.00	UG/L	9.00	=	=	09-DEC-93
153-B53W15S-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	09-DEC-93
153-B53W15S-GW	Calcium, Total	93,700.00	UG/L	28.00	=	=	09-DEC-93
153-B53W15S-GW	Chromium, Total	6.00	UG/L	6.00	U	=	09-DEC-93
153-B53W15S-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	09-DEC-93
153-B53W15S-GW	Copper, Total	7.00	UG/L	7.00	U	=	09-DEC-93
153-B53W15S-GW	Iron, Total	129.00	UG/L	7.00	=	=	09-DEC-93
153-B53W15S-GW	Lead, Total	2.00	UG/L	2.00	U	=	09-DEC-93
153-B53W15S-GW	Magnesium, Total	45,300.00	UG/L	58.00	=	=	09-DEC-93
153-B53W15S-GW	Manganese, Total	118.00	UG/L	2.00	=	=	09-DEC-93
153-B53W15S-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	09-DEC-93
153-B53W15S-GW	Nickel, Total	12.00	UG/L	12.00	U	=	09-DEC-93
153-B53W15S-GW	Potassium, Total	905.00	UG/L	905.00	U	=	09-DEC-93
153-B53W15S-GW	Selenium, Total	3.30	UG/L	2.00	B	=	09-DEC-93
153-B53W15S-GW	Silver, Total	7.00	UG/L	7.00	U	=	09-DEC-93
153-B53W15S-GW	Sodium, Total	23,300.00	UG/L	47.00	=	=	09-DEC-93
153-B53W15S-GW	Thallium, Total	2.00	UG/L	2.00	U	=	09-DEC-93
153-B53W15S-GW	Vanadium, Total	3.00	UG/L	3.00	U	=	09-DEC-93
153-B53W15S-GW	Zinc, Total	26.60	UG/L	3.00	U	=	09-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W17S-GW	Aluminum, Total	14.00	UG/L	14.00		U	07-DEC-93
153-B53W17S-GW	Antimony, Total	22.50	UG/L	20.00	U	B	07-DEC-93
153-B53W17S-GW	Arsenic, Total	2.00	UG/L	2.00		U	07-DEC-93
153-B53W17S-GW	Barium, Total	296.00	UG/L	4.00		=	07-DEC-93
153-B53W17S-GW	Beryllium, Total	1.80	UG/L	1.00	U	B	07-DEC-93
153-B53W17S-GW	Boron, Total	45.40	UG/L	26.00	U	B	07-DEC-93
153-B53W17S-GW	Cadmium, Total	2.00	UG/L	2.00		U	07-DEC-93
153-B53W17S-GW	Calcium, Total	514,000.00	UG/L	24.00		=	07-DEC-93
153-B53W17S-GW	Chromium, Total	3.90	UG/L	3.00		B	07-DEC-93
153-B53W17S-GW	Cobalt, Total	5.00	UG/L	5.00		U	07-DEC-93
153-B53W17S-GW	Copper, Total	3.00	UG/L	3.00		U	07-DEC-93
153-B53W17S-GW	Iron, Total	49.20	UG/L	5.00	U	B	07-DEC-93
153-B53W17S-GW	Lead, Total	2.00	UG/L	2.00		U	07-DEC-93
153-B53W17S-GW	Magnesium, Total	277,000.00	UG/L	42.00		=	07-DEC-93
153-B53W17S-GW	Manganese, Total	253.00	UG/L	2.00		=	07-DEC-93
153-B53W17S-GW	Molybdenum, Total	6.00	UG/L	6.00		U	07-DEC-93
153-B53W17S-GW	Nickel, Total	9.40	UG/L	8.00	U	B	07-DEC-93
153-B53W17S-GW	Potassium, Total	3,120.00	UG/L	693.00		B	07-DEC-93
153-B53W17S-GW	Selenium, Total	178.00	UG/L	20.00		=	07-DEC-93
153-B53W17S-GW	Silver, Total	3.00	UG/L	3.00		U	07-DEC-93
153-B53W17S-GW	Sodium, Total	134,000.00	UG/L	35.00		=	07-DEC-93
153-B53W17S-GW	Thallium, Total	2.00	UG/L	2.00	R	U	07-DEC-93
153-B53W17S-GW	Vanadium, Total	87.10	UG/L	8.00	U	=	07-DEC-93
153-B53W17S-GW	Zinc, Total	13.40	UG/L	3.00		B	07-DEC-93
153-B53W18S-GW	Aluminum, Total	48.00	UG/L	48.00		U	13-DEC-93
153-B53W18S-GW	Antimony, Total	46.00	UG/L	46.00		U	13-DEC-93
153-B53W18S-GW	Arsenic, Total	2.00	UG/L	2.00		U	13-DEC-93
153-B53W18S-GW	Barium, Total	536.00	UG/L	6.00		=	13-DEC-93
153-B53W18S-GW	Beryllium, Total	1.00	UG/L	1.00		U	13-DEC-93
153-B53W18S-GW	Boron, Total	34.60	UG/L	9.00	U	B	13-DEC-93
153-B53W18S-GW	Cadmium, Total	5.00	UG/L	5.00		U	13-DEC-93
153-B53W18S-GW	Calcium, Total	307,000.00	UG/L	28.00	J	=	13-DEC-93
153-B53W18S-GW	Chromium, Total	19.20	UG/L	6.00		=	13-DEC-93
153-B53W18S-GW	Cobalt, Total	7.40	UG/L	7.00	U	B	13-DEC-93
153-B53W18S-GW	Copper, Total	7.00	UG/L	7.00		U	13-DEC-93
153-B53W18S-GW	Iron, Total	581.00	UG/L	7.00	J	=	13-DEC-93
153-B53W18S-GW	Lead, Total	2.00	UG/L	2.00		U	13-DEC-93
153-B53W18S-GW	Magnesium, Total	161,000.00	UG/L	58.00	J	=	13-DEC-93
153-B53W18S-GW	Manganese, Total	1,480.00	UG/L	2.00	J	=	13-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W18S-GW	Molybdenum, Total	39.00	UG/L	39.00	U		13-DEC-93
153-B53W18S-GW	Nickel, Total	148.00	UG/L	12.00	=		13-DEC-93
153-B53W18S-GW	Potassium, Total	1,210.00	UG/L	905.00	B		13-DEC-93
153-B53W18S-GW	Selenium, Total	2.00	UG/L	2.00	U		13-DEC-93
153-B53W18S-GW	Silver, Total	7.00	UG/L	7.00	U		13-DEC-93
153-B53W18S-GW	Sodium, Total	186,000.00	UG/L	47.00	J	=	13-DEC-93
153-B53W18S-GW	Thallium, Total	20.00	UG/L	20.00	U		13-DEC-93
153-B53W18S-GW	Vanadium, Total	3.00	UG/L	3.00	U		13-DEC-93
153-B53W18S-GW	Zinc, Total	65.10	UG/L	3.00	=		13-DEC-93
153-B53W19S-GW	Aluminum, Total	48.00	UG/L	48.00	U		05-DEC-93
153-B53W19S-GW	Antimony, Total	46.00	UG/L	46.00	U		05-DEC-93
153-B53W19S-GW	Arsenic, Total	2.40	UG/L	2.00	J	B	05-DEC-93
153-B53W19S-GW	Barium, Total	126.00	UG/L	6.00	J	B	05-DEC-93
153-B53W19S-GW	Beryllium, Total	1.00	UG/L	1.00	U		05-DEC-93
153-B53W19S-GW	Boron, Total	146.00	UG/L	9.00	U	=	05-DEC-93
153-B53W19S-GW	Cadmium, Total	5.00	UG/L	5.00	U		05-DEC-93
153-B53W19S-GW	Calcium, Total	103,000.00	UG/L	28.00	J	=	05-DEC-93
153-B53W19S-GW	Chromium, Total	29.70	UG/L	6.00	U	=	05-DEC-93
153-B53W19S-GW	Cobalt, Total	7.00	UG/L	7.00	U		05-DEC-93
153-B53W19S-GW	Copper, Total	7.00	UG/L	7.00	U		05-DEC-93
153-B53W19S-GW	Iron, Total	134.00	UG/L	7.00	UJ	=	05-DEC-93
153-B53W19S-GW	Lead, Total	2.00	UG/L	2.00	U		05-DEC-93
153-B53W19S-GW	Magnesium, Total	43,400.00	UG/L	58.00	J	=	05-DEC-93
153-B53W19S-GW	Manganese, Total	20.10	UG/L	2.00	UJ	=	05-DEC-93
153-B53W19S-GW	Molybdenum, Total	39.00	UG/L	39.00	U		05-DEC-93
153-B53W19S-GW	Nickel, Total	46.70	UG/L	12.00	U	=	05-DEC-93
153-B53W19S-GW	Potassium, Total	1,330.00	UG/L	905.00	B		05-DEC-93
153-B53W19S-GW	Selenium, Total	3.40	UG/L	2.00	B		05-DEC-93
153-B53W19S-GW	Silver, Total	7.00	UG/L	7.00	U		05-DEC-93
153-B53W19S-GW	Sodium, Total	76,800.00	UG/L	47.00	J	=	05-DEC-93
153-B53W19S-GW	Thallium, Total	2.00	UG/L	2.00	U		05-DEC-93
153-B53W19S-GW	Vanadium, Total	3.00	UG/L	3.00	U		05-DEC-93
153-B53W19S-GW	Zinc, Total	82.00	UG/L	3.00	UJ	=	05-DEC-93
153-B53W20S-GW	Aluminum, Total	501.00	UG/L	48.00	J	=	05-DEC-93
153-B53W20S-GW	Antimony, Total	46.00	UG/L	46.00	U		05-DEC-93
153-B53W20S-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	05-DEC-93
153-B53W20S-GW	Barium, Total	186.00	UG/L	6.00	J	B	05-DEC-93
153-B53W20S-GW	Beryllium, Total	1.00	UG/L	1.00	U		05-DEC-93
153-B53W20S-GW	Boron, Total	77.50	UG/L	9.00	U	B	05-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W20S-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	05-DEC-93
153-B53W20S-GW	Calcium, Total	93,500.00	UG/L	28.00	J	=	05-DEC-93
153-B53W20S-GW	Chromium, Total	21.60	UG/L	6.00	U	=	05-DEC-93
153-B53W20S-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	05-DEC-93
153-B53W20S-GW	Copper, Total	7.00	UG/L	7.00	U	=	05-DEC-93
153-B53W20S-GW	Iron, Total	642.00	UG/L	7.00	UJ	=	05-DEC-93
153-B53W20S-GW	Lead, Total	2.00	UG/L	2.00	U	=	05-DEC-93
153-B53W20S-GW	Magnesium, Total	46,100.00	UG/L	58.00	J	=	05-DEC-93
153-B53W20S-GW	Manganese, Total	229.00	UG/L	2.00	J	=	05-DEC-93
153-B53W20S-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	05-DEC-93
153-B53W20S-GW	Nickel, Total	22.10	UG/L	12.00	U	B	05-DEC-93
153-B53W20S-GW	Potassium, Total	3,390.00	UG/L	905.00	B	=	05-DEC-93
153-B53W20S-GW	Selenium, Total	2.40	UG/L	2.00	B	=	05-DEC-93
153-B53W20S-GW	Silver, Total	7.00	UG/L	7.00	U	=	05-DEC-93
153-B53W20S-GW	Sodium, Total	9,850.00	UG/L	47.00	J	=	05-DEC-93
153-B53W20S-GW	Thallium, Total	2.00	UG/L	2.00	U	=	05-DEC-93
153-B53W20S-GW	Vanadium, Total	3.80	UG/L	3.00	U	B	05-DEC-93
153-B53W20S-GW	Zinc, Total	74.80	UG/L	3.00	UJ	=	05-DEC-93
153-B53W21S-GW	Aluminum, Total	168.00	UG/L	48.00	UJ	B	06-DEC-93
153-B53W21S-GW	Antimony, Total	46.00	UG/L	46.00	U	=	06-DEC-93
153-B53W21S-GW	Arsenic, Total	10.10	UG/L	2.00	J	=	06-DEC-93
153-B53W21S-GW	Barium, Total	290.00	UG/L	6.00	J	=	06-DEC-93
153-B53W21S-GW	Beryllium, Total	1.00	UG/L	1.00	U	=	06-DEC-93
153-B53W21S-GW	Boron, Total	100.00	UG/L	9.00	U	=	06-DEC-93
153-B53W21S-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	06-DEC-93
153-B53W21S-GW	Calcium, Total	297,000.00	UG/L	28.00	J	=	06-DEC-93
153-B53W21S-GW	Chromium, Total	13.20	UG/L	6.00	U	=	06-DEC-93
153-B53W21S-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-B53W21S-GW	Copper, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-B53W21S-GW	Iron, Total	16,000.00	UG/L	7.00	J	=	06-DEC-93
153-B53W21S-GW	Lead, Total	2.00	UG/L	2.00	U	=	06-DEC-93
153-B53W21S-GW	Magnesium, Total	87,500.00	UG/L	58.00	J	=	06-DEC-93
153-B53W21S-GW	Manganese, Total	2,920.00	UG/L	2.00	J	=	06-DEC-93
153-B53W21S-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	06-DEC-93
153-B53W21S-GW	Nickel, Total	12.80	UG/L	12.00	U	B	06-DEC-93
153-B53W21S-GW	Potassium, Total	3,420.00	UG/L	905.00	B	=	06-DEC-93
153-B53W21S-GW	Selenium, Total	20.00	UG/L	20.00	U	=	06-DEC-93
153-B53W21S-GW	Silver, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-B53W21S-GW	Sodium, Total	58,100.00	UG/L	47.00	J	=	06-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-B53W21S-GW	Thallium, Total	2.00	UG/L	2.00		U	06-DEC-93
153-B53W21S-GW	Vanadium, Total	3.00	UG/L	3.00		U	06-DEC-93
153-B53W21S-GW	Zinc, Total	72.80	UG/L	3.00	UJ	=	06-DEC-93
153-B53W22S-GW	Aluminum, Total	48.00	UG/L	48.00		U	14-DEC-93
153-B53W22S-GW	Antimony, Total	46.00	UG/L	46.00		U	14-DEC-93
153-B53W22S-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W22S-GW	Barium, Total	91.10	UG/L	6.00		B	14-DEC-93
153-B53W22S-GW	Beryllium, Total	1.00	UG/L	1.00		U	14-DEC-93
153-B53W22S-GW	Boron, Total	46.10	UG/L	9.00	U	B	14-DEC-93
153-B53W22S-GW	Cadmium, Total	5.00	UG/L	5.00		U	14-DEC-93
153-B53W22S-GW	Calcium, Total	92,500.00	UG/L	28.00		=	14-DEC-93
153-B53W22S-GW	Chromium, Total	8.60	UG/L	6.00		B	14-DEC-93
153-B53W22S-GW	Cobalt, Total	7.00	UG/L	7.00		U	14-DEC-93
153-B53W22S-GW	Copper, Total	7.00	UG/L	7.00		U	14-DEC-93
153-B53W22S-GW	Iron, Total	81.10	UG/L	7.00		B	14-DEC-93.
153-B53W22S-GW	Lead, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W22S-GW	Magnesium, Total	44,500.00	UG/L	58.00		=	14-DEC-93
153-B53W22S-GW	Manganese, Total	160.00	UG/L	2.00		=	14-DEC-93
153-B53W22S-GW	Molybdenum, Total	39.00	UG/L	39.00		U	14-DEC-93
153-B53W22S-GW	Nickel, Total	12.00	UG/L	12.00		U	14-DEC-93
153-B53W22S-GW	Potassium, Total	1,010.00	UG/L	905.00		B	14-DEC-93
153-B53W22S-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	14-DEC-93
153-B53W22S-GW	Silver, Total	7.00	UG/L	7.00		U	14-DEC-93
153-B53W22S-GW	Sodium, Total	15,900.00	UG/L	47.00		=	14-DEC-93
153-B53W22S-GW	Thallium, Total	2.00	UG/L	2.00		U	14-DEC-93
153-B53W22S-GW	Vanadium, Total	5.50	UG/L	3.00	U	B	14-DEC-93
153-B53W22S-GW	Zinc, Total	31.00	UG/L	3.00		=	14-DEC-93
153-M10-15D-GW	Aluminum, Total	694.00	UG/L	48.00		=	08-DEC-93
153-M10-15D-GW	Antimony, Total	46.00	UG/L	46.00		U	08-DEC-93
153-M10-15D-GW	Arsenic, Total	52.80	UG/L	4.00		=	08-DEC-93
153-M10-15D-GW	Barium, Total	308.00	UG/L	6.00		=	08-DEC-93
153-M10-15D-GW	Beryllium, Total	1.00	UG/L	1.00		U	08-DEC-93
153-M10-15D-GW	Boron, Total	148.00	UG/L	9.00		=	08-DEC-93
153-M10-15D-GW	Cadmium, Total	5.00	UG/L	5.00		U	08-DEC-93
153-M10-15D-GW	Calcium, Total	80,100.00	UG/L	28.00		=	08-DEC-93
153-M10-15D-GW	Chromium, Total	56.80	UG/L	6.00		=	08-DEC-93
153-M10-15D-GW	Cobalt, Total	7.50	UG/L	7.00		B	08-DEC-93
153-M10-15D-GW	Copper, Total	13.90	UG/L	7.00		B	08-DEC-93
153-M10-15D-GW	Iron, Total	10,100.00	UG/L	7.00		=	08-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-15D-GW	Lead, Total	8.40	UG/L	2.00	U	=	08-DEC-93
153-M10-15D-GW	Magnesium, Total	29,900.00	UG/L	58.00		=	08-DEC-93
153-M10-15D-GW	Manganese, Total	1,830.00	UG/L	2.00		=	08-DEC-93
153-M10-15D-GW	Molybdenum, Total	39.00	UG/L	39.00		U	08-DEC-93
153-M10-15D-GW	Nickel, Total	50.80	UG/L	12.00		=	08-DEC-93
153-M10-15D-GW	Potassium, Total	4,900.00	UG/L	905.00		B	08-DEC-93
153-M10-15D-GW	Selenium, Total	2.00	UG/L	2.00		U	08-DEC-93
153-M10-15D-GW	Silver, Total	7.00	UG/L	7.00		U	08-DEC-93
153-M10-15D-GW	Sodium, Total	31,500.00	UG/L	47.00		=	08-DEC-93
153-M10-15D-GW	Thallium, Total	2.00	UG/L	2.00		U	08-DEC-93
153-M10-15D-GW	Vanadium, Total	3.60	UG/L	3.00		B	08-DEC-93
153-M10-15D-GW	Zinc, Total	66.30	UG/L	3.00		=	08-DEC-93
153-M10-15S-GW	Aluminum, Total	158.00	UG/L	48.00	U	B	08-DEC-93
153-M10-15S-GW	Antimony, Total	46.00	UG/L	46.00		U	08-DEC-93
153-M10-15S-GW	Arsenic, Total	2.00	UG/L	2.00		U	08-DEC-93
153-M10-15S-GW	Barium, Total	191.00	UG/L	6.00		B	08-DEC-93
153-M10-15S-GW	Beryllium, Total	1.00	UG/L	1.00		U	08-DEC-93
153-M10-15S-GW	Boron, Total	346.00	UG/L	9.00		=	08-DEC-93
153-M10-15S-GW	Cadmium, Total	5.00	UG/L	5.00		U	08-DEC-93
153-M10-15S-GW	Calcium, Total	250,000.00	UG/L	28.00		=	08-DEC-93
153-M10-15S-GW	Chromium, Total	6.20	UG/L	6.00		B	08-DEC-93
153-M10-15S-GW	Cobalt, Total	7.00	UG/L	7.00		U	08-DEC-93
153-M10-15S-GW	Copper, Total	7.00	UG/L	7.00		U	08-DEC-93
153-M10-15S-GW	Iron, Total	235.00	UG/L	7.00		=	08-DEC-93
153-M10-15S-GW	Lead, Total	2.00	UG/L	2.00		U	08-DEC-93
153-M10-15S-GW	Magnesium, Total	124,000.00	UG/L	58.00		=	08-DEC-93
153-M10-15S-GW	Manganese, Total	64.00	UG/L	2.00		=	08-DEC-93
153-M10-15S-GW	Molybdenum, Total	39.00	UG/L	39.00		U	08-DEC-93
153-M10-15S-GW	Nickel, Total	12.00	UG/L	12.00		U	08-DEC-93
153-M10-15S-GW	Potassium, Total	905.00	UG/L	905.00		U	08-DEC-93
153-M10-15S-GW	Selenium, Total	545.00	UG/L	100.00		=	08-DEC-93
153-M10-15S-GW	Silver, Total	7.00	UG/L	7.00		U	08-DEC-93
153-M10-15S-GW	Sodium, Total	69,700.00	UG/L	47.00		=	08-DEC-93
153-M10-15S-GW	Thallium, Total	2.00	UG/L	2.00		U	08-DEC-93
153-M10-15S-GW	Vanadium, Total	5.50	UG/L	3.00		B	08-DEC-93
153-M10-15S-GW	Zinc, Total	29.60	UG/L	3.00	U	=	08-DEC-93
153-M10-25D-GW	Aluminum, Total	204.00	UG/L	48.00		=	09-DEC-93
153-M10-25D-GW	Antimony, Total	46.00	UG/L	46.00		U	09-DEC-93
153-M10-25D-GW	Arsenic, Total	6.30	UG/L	2.00		B	09-DEC-93

E-F-77

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-25D-GW	Barium, Total	351.00	UG/L	6.00	=		09-DEC-93
153-M10-25D-GW	Beryllium, Total	1.00	UG/L	1.00	U		09-DEC-93
153-M10-25D-GW	Boron, Total	40.50	UG/L	9.00	U	B	09-DEC-93
153-M10-25D-GW	Cadmium, Total	5.00	UG/L	5.00	U		09-DEC-93
153-M10-25D-GW	Calcium, Total	121,000.00	UG/L	28.00	=		09-DEC-93
153-M10-25D-GW	Chromium, Total	39.40	UG/L	6.00	=		09-DEC-93
153-M10-25D-GW	Cobalt, Total	7.00	UG/L	7.00	U		09-DEC-93
153-M10-25D-GW	Copper, Total	7.00	UG/L	7.00	U		09-DEC-93
153-M10-25D-GW	Iron, Total	577.00	UG/L	7.00	=		09-DEC-93
153-M10-25D-GW	Lead, Total	2.00	UG/L	2.00	U		09-DEC-93
153-M10-25D-GW	Magnesium, Total	40,500.00	UG/L	58.00	=		09-DEC-93
153-M10-25D-GW	Manganese, Total	3,240.00	UG/L	2.00	=		09-DEC-93
153-M10-25D-GW	Molybdenum, Total	39.00	UG/L	39.00	U		09-DEC-93
153-M10-25D-GW	Nickel, Total	15.50	UG/L	12.00	U	B	09-DEC-93
153-M10-25D-GW	Potassium, Total	2,460.00	UG/L	905.00	B		09-DEC-93
153-M10-25D-GW	Selenium, Total	2.00	UG/L	2.00	U		09-DEC-93
153-M10-25D-GW	Silver, Total	7.00	UG/L	7.00	U		09-DEC-93
153-M10-25D-GW	Sodium, Total	54,100.00	UG/L	47.00	=		09-DEC-93
153-M10-25D-GW	Thallium, Total	2.00	UG/L	2.00	U		09-DEC-93
153-M10-25D-GW	Vanadium, Total	3.00	UG/L	3.00	U		09-DEC-93
153-M10-25D-GW	Zinc, Total	28.40	UG/L	3.00	U	=	09-DEC-93
153-M10-25S-GW	Aluminum, Total	48.00	UG/L	48.00	U		08-DEC-93
153-M10-25S-GW	Antimony, Total	46.00	UG/L	46.00	U		08-DEC-93
153-M10-25S-GW	Arsenic, Total	2.00	UG/L	2.00	U		08-DEC-93
153-M10-25S-GW	Barium, Total	92.00	UG/L	6.00	B		08-DEC-93
153-M10-25S-GW	Beryllium, Total	1.00	UG/L	1.00	U		08-DEC-93
153-M10-25S-GW	Boron, Total	245.00	UG/L	9.00	=		08-DEC-93
153-M10-25S-GW	Cadmium, Total	5.00	UG/L	5.00	U		08-DEC-93
153-M10-25S-GW	Calcium, Total	80,600.00	UG/L	28.00	=		08-DEC-93
153-M10-25S-GW	Chromium, Total	7.00	UG/L	6.00	B		08-DEC-93
153-M10-25S-GW	Cobalt, Total	7.00	UG/L	7.00	U		08-DEC-93
153-M10-25S-GW	Copper, Total	7.00	UG/L	7.00	U		08-DEC-93
153-M10-25S-GW	Iron, Total	365.00	UG/L	7.00	=		08-DEC-93
153-M10-25S-GW	Lead, Total	2.00	UG/L	2.00	U		08-DEC-93
153-M10-25S-GW	Magnesium, Total	30,700.00	UG/L	58.00	=		08-DEC-93
153-M10-25S-GW	Manganese, Total	256.00	UG/L	2.00	=		08-DEC-93
153-M10-25S-GW	Molybdenum, Total	39.00	UG/L	39.00	U		08-DEC-93
153-M10-25S-GW	Nickel, Total	12.00	UG/L	12.00	U		08-DEC-93
153-M10-25S-GW	Potassium, Total	905.00	UG/L	905.00	U		08-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M10-25S-GW	Selenium, Total	2.00	UG/L	2.00	U	=	08-DEC-93
153-M10-25S-GW	Silver, Total	7.00	UG/L	7.00	U	=	08-DEC-93
153-M10-25S-GW	Sodium, Total	14,100.00	UG/L	47.00	=	=	08-DEC-93
153-M10-25S-GW	Thallium, Total	2.00	UG/L	2.00	U	=	08-DEC-93
153-M10-25S-GW	Vanadium, Total	3.00	UG/L	3.00	U	=	08-DEC-93
153-M10-25S-GW	Zinc, Total	38.30	UG/L	3.00	=	=	08-DEC-93
153-M135-85D-GW	Aluminum, Total	968.00	UG/L	48.00	J	=	06-DEC-93
153-M135-85D-GW	Antimony, Total	46.00	UG/L	46.00	U	=	06-DEC-93
153-M135-85D-GW	Arsenic, Total	70.00	UG/L	20.00	J	B	06-DEC-93
153-M135-85D-GW	Barium, Total	482.00	UG/L	6.00	J	=	06-DEC-93
153-M135-85D-GW	Beryllium, Total	1.00	UG/L	1.00	U	=	06-DEC-93
153-M135-85D-GW	Boron, Total	152.00	UG/L	9.00	U	=	06-DEC-93
153-M135-85D-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	06-DEC-93
153-M135-85D-GW	Calcium, Total	89,600.00	UG/L	28.00	J	=	06-DEC-93
153-M135-85D-GW	Chromium, Total	33.00	UG/L	6.00	U	=	06-DEC-93
153-M135-85D-GW	Cobalt, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-M135-85D-GW	Copper, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-M135-85D-GW	Iron, Total	8,010.00	UG/L	7.00	J	=	06-DEC-93
153-M135-85D-GW	Lead, Total	2.00	UG/L	2.00	U	=	06-DEC-93
153-M135-85D-GW	Magnesium, Total	36,400.00	UG/L	58.00	J	=	06-DEC-93
153-M135-85D-GW	Manganese, Total	338.00	UG/L	2.00	J	=	06-DEC-93
153-M135-85D-GW	Molybdenum, Total	39.00	UG/L	39.00	U	=	06-DEC-93
153-M135-85D-GW	Nickel, Total	34.20	UG/L	12.00	U	B	06-DEC-93
153-M135-85D-GW	Potassium, Total	1,960.00	UG/L	905.00	B	=	06-DEC-93
153-M135-85D-GW	Selenium, Total	2.00	UG/L	2.00	U	=	06-DEC-93
153-M135-85D-GW	Silver, Total	7.00	UG/L	7.00	U	=	06-DEC-93
153-M135-85D-GW	Sodium, Total	54,700.00	UG/L	47.00	J	=	06-DEC-93
153-M135-85D-GW	Thallium, Total	2.00	UG/L	2.00	U	=	06-DEC-93
153-M135-85D-GW	Vanadium, Total	4.10	UG/L	3.00	B	=	06-DEC-93
153-M135-85D-GW	Zinc, Total	44.60	UG/L	3.00	UJ	=	06-DEC-93
153-M135-85S-GW	Aluminum, Total	48.00	UG/L	48.00	U	=	06-DEC-93
153-M135-85S-GW	Antimony, Total	46.00	UG/L	46.00	U	=	06-DEC-93
153-M135-85S-GW	Arsenic, Total	13.40	UG/L	2.00	J	=	06-DEC-93
153-M135-85S-GW	Barium, Total	305.00	UG/L	6.00	J	=	06-DEC-93
153-M135-85S-GW	Beryllium, Total	1.00	UG/L	1.00	U	=	06-DEC-93
153-M135-85S-GW	Boron, Total	120.00	UG/L	9.00	U	=	06-DEC-93
153-M135-85S-GW	Cadmium, Total	5.00	UG/L	5.00	U	=	06-DEC-93
153-M135-85S-GW	Calcium, Total	309,000.00	UG/L	28.00	J	=	06-DEC-93
153-M135-85S-GW	Chromium, Total	12.30	UG/L	6.00	U	=	06-DEC-93

E-F-79

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-M135-85S-GW	Cobalt, Total	7.90	UG/L	7.00	B	06-DEC-93	
153-M135-85S-GW	Copper, Total	7.00	UG/L	7.00	U	06-DEC-93	
153-M135-85S-GW	Iron, Total	16,600.00	UG/L	7.00	J	=	06-DEC-93
153-M135-85S-GW	Lead, Total	2.00	UG/L	2.00	U	06-DEC-93	
153-M135-85S-GW	Magnesium, Total	91,400.00	UG/L	58.00	J	=	06-DEC-93
153-M135-85S-GW	Manganese, Total	3,080.00	UG/L	2.00	J	=	06-DEC-93
153-M135-85S-GW	Molybdenum, Total	39.00	UG/L	39.00	U	06-DEC-93	
153-M135-85S-GW	Nickel, Total	22.30	UG/L	12.00	U	B	06-DEC-93
153-M135-85S-GW	Potassium, Total	4,000.00	UG/L	905.00	B	06-DEC-93	
153-M135-85S-GW	Selenium, Total	20.00	UG/L	20.00	U	06-DEC-93	
153-M135-85S-GW	Silver, Total	7.00	UG/L	7.00	U	06-DEC-93	
153-M135-85S-GW	Sodium, Total	65,100.00	UG/L	47.00	J	=	06-DEC-93
153-M135-85S-GW	Thallium, Total	2.00	UG/L	2.00	U	06-DEC-93	
153-M135-85S-GW	Vanadium, Total	3.00	UG/L	3.00	U	06-DEC-93	
153-M135-85S-GW	Zinc, Total	62.20	UG/L	3.00	UJ	=	06-DEC-93
153-RB01-GW	Aluminum, Total	55.80	UG/L	48.00	B	01-DEC-93	
153-RB01-GW	Antimony, Total	46.00	UG/L	46.00	U	01-DEC-93	
153-RB01-GW	Arsenic, Total	2.00	UG/L	2.00	U	01-DEC-93	
153-RB01-GW	Barium, Total	12.30	UG/L	6.00	B	01-DEC-93	
153-RB01-GW	Beryllium, Total	1.00	UG/L	1.00	U	01-DEC-93	
153-RB01-GW	Boron, Total	42.60	UG/L	9.00	B	01-DEC-93	
153-RB01-GW	Cadmium, Total	5.00	UG/L	5.00	U	01-DEC-93	
153-RB01-GW	Calcium, Total	196.00	UG/L	28.00	B	01-DEC-93	
153-RB01-GW	Chromium, Total	6.60	UG/L	6.00	B	01-DEC-93	
153-RB01-GW	Cobalt, Total	7.00	UG/L	7.00	U	01-DEC-93	
153-RB01-GW	Copper, Total	7.00	UG/L	7.00	U	01-DEC-93	
153-RB01-GW	Iron, Total	48.90	UG/L	7.00	B	01-DEC-93	
153-RB01-GW	Lead, Total	2.00	UG/L	2.00	U	01-DEC-93	
153-RB01-GW	Magnesium, Total	111.00	UG/L	58.00	B	01-DEC-93	
153-RB01-GW	Manganese, Total	3.80	UG/L	2.00	B	01-DEC-93	
153-RB01-GW	Molybdenum, Total	39.00	UG/L	39.00	U	01-DEC-93	
153-RB01-GW	Nickel, Total	12.00	UG/L	12.00	U	01-DEC-93	
153-RB01-GW	Potassium, Total	905.00	UG/L	905.00	U	01-DEC-93	
153-RB01-GW	Selenium, Total	2.00	UG/L	2.00	U	01-DEC-93	
153-RB01-GW	Silver, Total	7.00	UG/L	7.00	UJ	U	01-DEC-93
153-RB01-GW	Sodium, Total	165.00	UG/L	47.00	B	01-DEC-93	
153-RB01-GW	Thallium, Total	2.00	UG/L	2.00	U	01-DEC-93	
153-RB01-GW	Vanadium, Total	6.30	UG/L	3.00	B	01-DEC-93	
153-RB01-GW	Zinc, Total	62.30	UG/L	3.00	=	01-DEC-93	

E-T-08

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Eni Flag	Lab Flag	Date Collected
153-RB03-GW	Aluminum, Total	75.80	UG/L	48.00	J	B	04-DEC-93
153-RB03-GW	Antimony, Total	46.00	UG/L	46.00		U	04-DEC-93
153-RB03-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	04-DEC-93
153-RB03-GW	Barium, Total	6.20	UG/L	6.00	J	B	04-DEC-93
153-RB03-GW	Beryllium, Total	1.00	UG/L	1.00		U	04-DEC-93
153-RB03-GW	Boron, Total	63.60	UG/L	9.00	U	B	04-DEC-93
153-RB03-GW	Cadmium, Total	5.00	UG/L	5.00		U	04-DEC-93
153-RB03-GW	Calcium, Total	1,190.00	UG/L	28.00	J	B	04-DEC-93
153-RB03-GW	Chromium, Total	15.00	UG/L	6.00		=	04-DEC-93
153-RB03-GW	Cobalt, Total	7.00	UG/L	7.00		U	04-DEC-93
153-RB03-GW	Copper, Total	20.70	UG/L	7.00		B	04-DEC-93
153-RB03-GW	Iron, Total	245.00	UG/L	7.00	J	=	04-DEC-93
153-RB03-GW	Lead, Total	2.00	UG/L	2.00		U	04-DEC-93
153-RB03-GW	Magnesium, Total	233.00	UG/L	58.00	J	B	04-DEC-93
153-RB03-GW	Manganese, Total	7.50	UG/L	2.00	J	B	04-DEC-93
153-RB03-GW	Molybdenum, Total	39.00	UG/L	39.00		U	04-DEC-93
153-RB03-GW	Nickel, Total	16.90	UG/L	12.00		B	04-DEC-93
153-RB03-GW	Potassium, Total	905.00	UG/L	905.00		U	04-DEC-93
153-RB03-GW	Selenium, Total	2.00	UG/L	2.00		U	04-DEC-93
153-RB03-GW	Silver, Total	7.00	UG/L	7.00		U	04-DEC-93
153-RB03-GW	Sodium, Total	428.00	UG/L	47.00	J	B	04-DEC-93
153-RB03-GW	Thallium, Total	2.00	UG/L	2.00		U	04-DEC-93
153-RB03-GW	Vanadium, Total	3.00	UG/L	3.00		U	04-DEC-93
153-RB03-GW	Zinc, Total	260.00	UG/L	3.00	J	=	04-DEC-93
153-RB04A-GW	Aluminum, Total	48.00	UG/L	48.00		U	06-DEC-93
153-RB04A-GW	Antimony, Total	46.00	UG/L	46.00		U	06-DEC-93
153-RB04A-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	06-DEC-93
153-RB04A-GW	Barium, Total	6.00	UG/L	6.00	J	U	06-DEC-93
153-RB04A-GW	Beryllium, Total	1.00	UG/L	1.00		U	06-DEC-93
153-RB04A-GW	Boron, Total	36.70	UG/L	9.00	J	B	06-DEC-93
153-RB04A-GW	Cadmium, Total	5.00	UG/L	5.00		U	06-DEC-93
153-RB04A-GW	Calcium, Total	158.00	UG/L	28.00	UJ	B	06-DEC-93
153-RB04A-GW	Chromium, Total	18.40	UG/L	6.00	J	=	06-DEC-93
153-RB04A-GW	Cobalt, Total	7.00	UG/L	7.00		U	06-DEC-93
153-RB04A-GW	Copper, Total	7.00	UG/L	7.00		U	06-DEC-93
153-RB04A-GW	Iron, Total	139.00	UG/L	7.00	UJ	=	06-DEC-93
153-RB04A-GW	Lead, Total	2.00	UG/L	2.00		U	06-DEC-93
153-RB04A-GW	Magnesium, Total	77.80	UG/L	58.00	UJ	B	06-DEC-93
153-RB04A-GW	Manganese, Total	3.10	UG/L	2.00	UJ	B	06-DEC-93

E-F-81

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB04A-GW	Molybdenum, Total	39.00	UG/L	39.00	U	B	06-DEC-93
153-RB04A-GW	Nickel, Total	14.50	UG/L	12.00	U	B	06-DEC-93
153-RB04A-GW	Potassium, Total	905.00	UG/L	905.00	U	B	06-DEC-93
153-RB04A-GW	Selenium, Total	2.00	UG/L	2.00	U	B	06-DEC-93
153-RB04A-GW	Silver, Total	7.00	UG/L	7.00	U	B	06-DEC-93
153-RB04A-GW	Sodium, Total	91.10	UG/L	47.00	UJ	B	06-DEC-93
153-RB04A-GW	Thallium, Total	2.00	UG/L	2.00	U	B	06-DEC-93
153-RB04A-GW	Vanadium, Total	3.00	UG/L	3.00	U	B	06-DEC-93
153-RB04A-GW	Zinc, Total	18.60	UG/L	3.00	UJ	B	06-DEC-93
153-RB04B-GW	Aluminum, Total	48.00	UG/L	48.00	U	B	06-DEC-93
153-RB04B-GW	Antimony, Total	46.00	UG/L	46.00	U	B	06-DEC-93
153-RB04B-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	06-DEC-93
153-RB04B-GW	Barium, Total	6.00	UG/L	6.00	J	U	06-DEC-93
153-RB04B-GW	Beryllium, Total	1.00	UG/L	1.00	U	B	06-DEC-93
153-RB04B-GW	Boron, Total	36.30	UG/L	9.00	U	B	06-DEC-93
153-RB04B-GW	Cadmium, Total	5.00	UG/L	5.00	U	B	06-DEC-93
153-RB04B-GW	Calcium, Total	138.00	UG/L	28.00	UJ	B	06-DEC-93
153-RB04B-GW	Chromium, Total	6.00	UG/L	6.00	U	B	06-DEC-93
153-RB04B-GW	Cobalt, Total	7.00	UG/L	7.00	U	B	06-DEC-93
153-RBD4B-GW	Copper, Total	7.00	UG/L	7.00	U	B	06-DEC-93
153-RB04B-GW	Iron, Total	59.50	UG/L	7.00	UJ	B	06-DEC-93
153-RB04B-GW	Lead, Total	2.00	UG/L	2.00	U	B	06-DEC-93
153-RB04B-GW	Magnesium, Total	58.00	UG/L	58.00	J	U	06-DEC-93
153-RB04B-GW	Manganese, Total	2.00	UG/L	2.00	J	U	06-DEC-93
153-RB04B-GW	Molybdenum, Total	39.00	UG/L	39.00	U	B	06-DEC-93
153-RB04B-GW	Nickel, Total	12.00	UG/L	12.00	U	B	06-DEC-93
153-RB04B-GW	Potassium, Total	905.00	UG/L	905.00	U	B	06-DEC-93
153-RB04B-GW	Selenium, Total	2.00	UG/L	2.00	U	B	06-DEC-93
153-RB04B-GW	Silver, Total	7.00	UG/L	7.00	U	B	06-DEC-93
153-RB04B-GW	Sodium, Total	47.00	UG/L	47.00	J	U	06-DEC-93
153-RB04B-GW	Thallium, Total	2.00	UG/L	2.00	U	B	06-DEC-93
153-RB04B-GW	Vanadium, Total	3.00	UG/L	3.00	U	B	06-DEC-93
153-RB04B-GW	Zinc, Total	23.20	UG/L	3.00	UJ	=	06-DEC-93
153-RB05A-GW	Aluminum, Total	61.70	UG/L	48.00	B	B	09-DEC-93
153-RB05A-GW	Antimony, Total	46.00	UG/L	46.00	U	B	09-DEC-93
153-RB05A-GW	Arsenic, Total	2.00	UG/L	2.00	U	B	09-DEC-93
153-RB05A-GW	Barium, Total	6.00	UG/L	6.00	U	B	09-DEC-93
153-RB05A-GW	Beryllium, Total	1.00	UG/L	1.00	U	B	09-DEC-93
153-RB05A-GW	Boron, Total	19.30	UG/L	9.00	U	B	09-DEC-93

E-F-82

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB05A-GW	Cadmium, Total	5.00	UG/L	5.00		U	09-DEC-93
153-RB05A-GW	Calcium, Total	369.00	UG/L	28.00	U	B	09-DEC-93
153-RB05A-GW	Chromium, Total	9.70	UG/L	6.00		B	09-DEC-93
153-RB05A-GW	Cobalt, Total	7.00	UG/L	7.00		U	09-DEC-93
153-RB05A-GW	Copper, Total	8.10	UG/L	7.00		B	09-DEC-93
153-RB05A-GW	Iron, Total	145.00	UG/L	7.00		=	09-DEC-93
153-RB05A-GW	Lead, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05A-GW	Magnesium, Total	129.00	UG/L	58.00	U	B	09-DEC-93
153-RB05A-GW	Manganese, Total	7.80	UG/L	2.00		B	09-DEC-93
153-RB05A-GW	Molybdenum, Total	39.00	UG/L	39.00		U	09-DEC-93
153-RB05A-GW	Nickel, Total	12.00	UG/L	12.00		U	09-DEC-93
153-RB05A-GW	Potassium, Total	905.00	UG/L	905.00		U	09-DEC-93
153-RB05A-GW	Selenium, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05A-GW	Silver, Total	7.00	UG/L	7.00		U	09-DEC-93
153-RB05A-GW	Sodium, Total	280.00	UG/L	47.00	U	B	09-DEC-93
153-RB05A-GW	Thallium, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05A-GW	Vanadium, Total	3.00	UG/L	3.00		U	09-DEC-93
153-RB05A-GW	Zinc, Total	48.60	UG/L	3.00		=	09-DEC-93
153-RB05B-GW	Aluminum, Total	48.00	UG/L	48.00		U	09-DEC-93
153-RB05B-GW	Antimony, Total	46.00	UG/L	46.00		U	09-DEC-93
153-RB05B-GW	Arsenic, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05B-GW	Barium, Total	6.00	UG/L	6.00		U	09-DEC-93
153-RB05B-GW	Beryllium, Total	1.00	UG/L	1.00		U	09-DEC-93
153-RB05B-GW	Boron, Total	11.80	UG/L	9.00	U	B	09-DEC-93
153-RB05B-GW	Cadmium, Total	5.00	UG/L	5.00		U	09-DEC-93
153-RB05B-GW	Calcium, Total	178.00	UG/L	28.00	U	B	09-DEC-93
153-RB05B-GW	Chromium, Total	6.00	UG/L	6.00		U	09-DEC-93
153-RB05B-GW	Cobalt, Total	7.00	UG/L	7.00		U	09-DEC-93
153-RB05B-GW	Copper, Total	7.00	UG/L	7.00		U	09-DEC-93
153-RB05B-GW	Iron, Total	39.50	UG/L	7.00	U	B	09-DEC-93
153-RB05B-GW	Lead, Total	18.20	UG/L	2.00		=	09-DEC-93
153-RB05B-GW	Magnesium, Total	72.80	UG/L	58.00	U	B	09-DEC-93
153-RB05B-GW	Manganese, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05B-GW	Molybdenum, Total	39.00	UG/L	39.00		U	09-DEC-93
153-RB05B-GW	Nickel, Total	12.00	UG/L	12.00		U	09-DEC-93
153-RB05B-GW	Potassium, Total	905.00	UG/L	905.00		U	09-DEC-93
153-RB05B-GW	Selenium, Total	2.00	UG/L	2.00		U	09-DEC-93
153-RB05B-GW	Silver, Total	7.00	UG/L	7.00		U	09-DEC-93
153-RB05B-GW	Sodium, Total	47.00	UG/L	47.00		U	09-DEC-93

E-F-83

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB05B-GW	Thallium, Total	2.00	UG/L	2.00	U		09-DEC-93
153-RB05B-GW	Vanadium, Total	3.00	UG/L	3.00	U		09-DEC-93
153-RB05B-GW	Zinc, Total	17.10	UG/L	3.00	B		09-DEC-93
153-RB06A-GW	Aluminum, Total	14.00	UG/L	14.00	U		10-DEC-93
153-RB06A-GW	Antimony, Total	20.00	UG/L	20.00	U		10-DEC-93
153-RB06A-GW	Arsenic, Total	2.00	UG/L	2.00	UJ	U	10-DEC-93
153-RB06A-GW	Barium, Total	4.00	UG/L	4.00	U		10-DEC-93
153-RB06A-GW	Beryllium, Total	1.00	UG/L	1.00	U		10-DEC-93
153-RB06A-GW	Boron, Total	49.50	UG/L	26.00	B		10-DEC-93
153-RB06A-GW	Cadmium, Total	2.00	UG/L	2.00	U		10-DEC-93
153-RB06A-GW	Calcium, Total	195.00	UG/L	24.00	B		10-DEC-93
153-RB06A-GW	Chromium, Total	5.30	UG/L	3.00	B		10-DEC-93
153-RB06A-GW	Cobalt, Total	5.00	UG/L	5.00	=		10-DEC-93
153-RB06A-GW	Copper, Total	3.80	UG/L	3.00	B		10-DEC-93
153-RB06A-GW	Iron, Total	53.90	UG/L	5.00	B		10-DEC-93
153-RB06A-GW	Lead, Total	2.00	UG/L	2.00	U		10-DEC-93
153-RB06A-GW	Magnesium, Total	66.90	UG/L	42.00	B		10-DEC-93
153-RB06A-GW	Manganese, Total	2.00	UG/L	2.00	U		10-DEC-93
153-RB06A-GW	Molybdenum, Total	6.00	UG/L	6.00	U		10-DEC-93
153-RB06A-GW	Nickel, Total	8.00	UG/L	8.00	U		10-DEC-93
153-RB06A-GW	Potassium, Total	693.00	UG/L	693.00	U		10-DEC-93
153-RB06A-GW	Selenium, Total	2.00	UG/L	2.00	UJ	U	10-DEC-93
153-RB06A-GW	Silver, Total	3.00	UG/L	3.00	U		10-DEC-93
153-RB06A-GW	Sodium, Total	323.00	UG/L	35.00	B		10-DEC-93
153-RB06A-GW	Thallium, Total	2.00	UG/L	2.00	U		10-DEC-93
153-RB06A-GW	Vanadium, Total	12.20	UG/L	3.00	U	B	10-DEC-93
153-RB06A-GW	Zinc, Total	40.40	UG/L	3.00	UJ	=	10-DEC-93
153-RB08C-GW	Aluminum, Total	53.30	UG/L	48.00	B		13-DEC-93
153-RB08C-GW	Antimony, Total	46.00	UG/L	46.00	U		13-DEC-93
153-RB08C-GW	Arsenic, Total	2.00	UG/L	2.00	U		13-DEC-93
153-RB08C-GW	Barium, Total	8.40	UG/L	6.00	U	B	13-DEC-93
153-RB08C-GW	Beryllium, Total	1.00	UG/L	1.00	U		13-DEC-93
153-RB08C-GW	Boron, Total	15.90	UG/L	9.00	U	B	13-DEC-93
153-RB08C-GW	Cadmium, Total	5.00	UG/L	5.00	U		13-DEC-93
153-RB08C-GW	Calcium, Total	154.00	UG/L	28.00	J	B	13-DEC-93
153-RB08C-GW	Chromium, Total	6.30	UG/L	6.00	B		13-DEC-93
153-RB08C-GW	Cobalt, Total	7.00	UG/L	7.00	U		13-DEC-93
153-RB08C-GW	Copper, Total	7.00	UG/L	7.00	U		13-DEC-93
153-RB08C-GW	Iron, Total	96.20	UG/L	7.00	J	B	13-DEC-93

Table 5: Analytical Results for Metals

Sample ID Number	Analyte	Result	Units	Detection Limit	Bni Flag	Lab Flag	Date Collected
153-RB08C-GW	Lead, Total	2.00	UG/L	2.00	U	B	13-DEC-93
153-RB08C-GW	Magnesium, Total	112.00	UG/L	58.00	J	B	13-DEC-93
153-RB08C-GW	Manganese, Total	3.10	UG/L	2.00	UJ	B	13-DEC-93
153-RB08C-GW	Molybdenum, Total	39.00	UG/L	39.00	U	B	13-DEC-93
153-RB08C-GW	Nickel, Total	12.70	UG/L	12.00	B	B	13-DEC-93
153-RB08C-GW	Potassium, Total	905.00	UG/L	905.00	U	B	13-DEC-93
153-RB08C-GW	Selenium, Total	2.00	UG/L	2.00	U	B	13-DEC-93
153-RB08C-GW	Silver, Total	7.00	UG/L	7.00	U	B	13-DEC-93
153-RB08C-GW	Sodium, Total	60.50	UG/L	47.00	UJ	B	13-DEC-93
153-RB08C-GW	Thallium, Total	2.00	UG/L	2.00	U	B	13-DEC-93
153-RB08C-GW	Vanadium, Total	4.20	UG/L	3.00	U	B	13-DEC-93
153-RB08C-GW	Zinc, Total	14.10	UG/L	3.00	U	B	13-DEC-93

E-F-85